Appendix 7B

Existing Baseline

Appendix 7B

Existing Baseline

Existing Baseline

Designated Sites

Statutory Designations

7.26.7 Fifteen statutory designated sites were identified within 15 km of the Site. They comprised three Special Area of Conservation (SAC) within 15 km, and 12 Sites of Special Scientific Interest (SSSI), one of which is also designated as a National Nature Reserve (NNR), within 5 km. They are detailed in Table 7.11 and 7.12 below.

Table 7.11: European Statutory designated sites within 15 km of the Site.

Site Name	Designation	Features
Coedydd Nedd a Mellte	SAC	Annex I habitats that are a primary reason for selection of this site include Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. Coedydd Nedd a Mellte is a very large and diverse example of old sessile oak wood in south Wales. The woods extend along a series of deeply incised valleys and ravines, and contain complex mosaics of sessile oak *Quercus petraea* woodland, ash *Fraxinus excelsior* woodland (some of which is referable to Annex I type 9180 *Tilio-Acerion* forests of slopes, screes and ravines), and transitions to lowland woodland types. The whole site is biologically rich, with many woodland plant communities represented and rich bryophyte and lichen assemblages. Notable higher plant species include wood fescue *Festuca altissima* and the ferns *Dryopteris aemula, Hymenophyllum tunbrigense* and *Asplenium viride*.
Cwm Cadlan	SAC	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinia caeruleae*) for which this is considered to be one of the best areas in the United Kingdom. Alkaline fens for which this is considered to be one of the best areas in the United Kingdom.
Blaen Cynon	SAC	The SAC comprises four compartments. The site is designated for its population of marsh fritillary and is known to contribute towards supporting a metapopulation of the marsh fritillary in the Penderyn/Hirwaun area.

Table 7.12: Nationally Statutory designated sites within 5 km of the Site

Site Name	Designation	Features
Nant Llech	SSSI	The Nant Lech, flowing off the Millstone Grit rocks and on to Coal Measure shales has carved a steep-sided valley of special interest on account of its rich variety of woodland and cliff plant communities. A range of woodland types has formed in response to variations in soil moisture content and soil chemistry. Bird life is rich and the uncommon soldier beetle (*Podabrus alpinus*) has been recorded from the wood.
Gors Llwyn, Onllwyn	SSSI	This site contains a range of peat-depositing vegetation communities. Peat deposition has been sufficiently great in part of the site to form a dome shaped mass of peat above the general water table, known as a raised mire. There are very few other examples of this formation known in mid and south Wales. North-east of the complex of mires is an area of acidic pasture. Drier ridges divide up a series of wet flushes which support a range of wetland species e.g. whorled caraway (*Carum verticillatum*), meadow thistle (*Cirsium dissectum*) and sharp-flowered rush (*Juncus acutiflorus*). These plants form a clearly defined community of extremely limited distribution in Europe, occurring only along the southern Atlantic seaboard.
Caeau Ton-y-Fildre	SSSI	The site comprises two unimproved herb-rich pastures on the north bank of Nant y Bryn.

Site Name	Designation	Features
		The western field supports a wide range of species characteristic of damp, flushed peaty pasture, including globeflower (*Trollius europaeus*), meadow thistle, whorled caraway and marsh arrowgrass (*Triglochin palustris*). Notable species in the eastern field include greater butterfly-orchid (*Platanthera chlorantha*), saw-wort (*Serratula tinctorial*), dyer's greenweed (*Genista tinctora*) and petty whin (*G. anglica*). Over 100 species of flowering plants and ferns having been recorded. The area also supports invertebrates, especially butterflies.
Waun Ton-y-Spyddaden	SSSI	A series of small, unimproved, herb-rich hay meadows lying on a very gentle slope. The site demonstrates well the effects of traditional management on the moorland vegetation to be found on the better soils in this part of Wales. A vivid gradation in plant communities can be seen as the slope descends from north to south. At the top end is a typical moorland community of mat-grass (*Nardus stricta*), heath rush (*Juncus* squarrosus), deergrass (*Scirpus cespitosus*) and sheep's-fescue (*Festuca ovina*). This changes into grass heath communities of brown bent (*Agrostis canina*), red fescue (*Festuca rubra*), lousewort (*Pedicularis sylvatica*) and heath spotted-orchid (*Dactylorhiza maculata* spp. e*ricetorum*), which in turn grade into purple moor-grass/sedge associations.
Rhos Hen-Glyn-Isaf	SSSI	This site comprises an extensive and varied area of damp/wet heathy pasture above the valley of the River Giedd, near Ystradgynlais. It is noted for its wide variety of plant species, including several that are uncommon in Brecknock. A large part of the site supports a sward dominated by purple moor-grass, sedges and common cottongrass (*Eriophorum angustifolium*). Other species include bog pimpernel (*Anagallis tenella*), round-leaved sundew (*Drosera rotundifolia*)., few-flowered spike-rush (*Eleocharis quinqueflora*), common butter-wort (*Pinguicula vulgari*) and devil's-bit scabious (*Succisa pratensis*). Additional interest is provided by stands of alder (*Alnus glutinosa*) and by ditches which support species such as hemp-agrimony (*Eupatorium cannabinum*), bogbean (*Menyanthes trifoliata*), bog pondweed (*Potamogeton polygonifolius*) and the locally uncommon fern (*Osmunda regalis*).
Mynydd Du	SSSI	This is an important upland site of special interest for its vegetation, open water and birdlife. In addition to the Old Red Sandstone there are significant outcrops of Carboniferous Limestone and Millstone Grit. The summit ridges are notable for their extensive grassland, dominated in the main by matgrass. Small areas still support heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus.* The north and east facing cliffs of Bannau Sir Gaer and Bannau Brycheiniog support an interesting arctic-alpine flora, with such species as northern bedstraw (*Galium boreale*), dwarf willow (*Salix herbacea*), lesser meadow-rue (*Thalictrum minus*) and roseroot (*Sedum rosea*), together with a rich moss and liverwort flora.
Ogof Ffynnon Ddu	SSSI	The site contains part of an extensive cave system which has at least 40 kilometres of passages, the largest length in any Welsh cave, situated within a vertical range of 300 metres, which is the greatest in any cave in Britain. A number of rare crustacean species restricted to subterranean habitats are of particular note.

Site Name	Designation	Features
Ogof Ffynnon Ddu - Pant Mawr	SSSI, NNR	The undulating upland plateau above the cave system supports the finest limestone pavement in mid and south Wales. It is rich in plant species, including such rarities as lily-of-the valley (*Convallaria majalis*), soft-leaved sedge (*C. montana*), mountain melick (*Melica nutans*), lesser meadow-rue (*Thalictrum minus*) and the nationally rare hairy greenweed (*Genista pilosa*). These areas of sheltered, deep heather provide suitable habitat for nightjar (*Caprimulgus europaeus*), offering probably one of the last breeding localities in Brecknock for this summer-visiting bird. Also present within the site are a number of peat-bottomed pools with a well-developed upland dragonfly and damselfly population.
Nant y Rhos	SSSI	The site consists of a single, gently sloping enclosure on the west side of the Nant y Rhos, 2.5 km south-east of Ystalyfera, at an altitude of 140 m above sea level. The geology of this area comprises Middle Coal Measure shales, overlain for the most part by boulder clay. The site is of special interest for its species-rich fen meadow vegetation, which includes large populations of meadow thistle and whorled caraway. Most of the site supports vegetation that is dominated by purple moor-grass, accompanied by a range of characteristic associates including meadow thistle, flea sedge (*Carex pulicaris*), carnation sedge (*C. panicea*) and tawny sedge (*C. hostiana*).
Craig y Rhiwarth	SSSI	The west-facing limestone escarpment of Craig y Rhiwarth on the east bank of the Afon Tawe, above Craig-ynos, supports some of the finest limestone plant communities in Brecknock. The limestone is covered in places by acidic boulder clay, where communities of plants demanding more acidic conditions are confined and contrast with the calcicolous communities elsewhere. Areas of acidic glacial drift support contrasting oak and birch woodland and contribute to the great species diversity of the site, with over 170 species of higher plants and a similar number of lower plants known to grow here.
Dyffrynoedd Nedd a Mellte a Moel Penderyn	SSSI	Dyffrynnoedd Nedd a Mellte, a Moel Penderyn is of special interest for its extensive and diverse semi-natural woodland, important populations of several flowering plants and supporting outstanding assemblages of mosses, liverworts and lichens. The site includes a range of geological features, well-exposed in the cliffs and rocky river beds. These include exposures at Moel Penderyn, Craig y Ddinas and Bwa Maen and geomorphological features within parts of the valleys of the Hepste and Mellte are also of special interest. This site includes the wooded valleys of the rivers Nedd and Mellte, and their tributaries above Pontneddfechan, as they pass through a Millstone Grit and limestone plateau, and Moel Penderyn, which lies to the east. The plateau lies at about 300 m, the rivers having eroded deep, narrow valleys with gorges, river cliffs, block scree and waterfalls.
Caeau Nant y Llechau	SSSI	This is the largest area of traditional unimproved hay meadow known in Brecknock. The collection of gently sloping, south-east facing fields on the upper valley side of the Nedd support a wealth of plant species. Developed on boulder clay overlying millstone grit, flushed in part by springs and drained by a number of well wooded streams, the varying topography is reflected in the diverse flora, with over 110 species of higher plants recorded from the grassland areas.

Non-Statutory Designations

7.26.8 Non-statutory designated sites within 1 km of the Site were returned in the desk study records from Aderyn. Eight sites were identified, which are adopted Sites of Importance for Nature Conservation (SINCs). They are listed in Table 7.13 below.

Table 7.13: Non-statutory designated sites within 1 km of the Site

Site Name	Designation	Features
Gorsllwyn Meadows	SINC	This site is mostly marshy grassland with areas of upland fen/swamp and wet woodland. The site as a whole contains at least 50 indicator species of purple moorgrass and rush pastures. notable species include marsh helleborine (*Epipactis palustris*), brookweed (*Samolus valerandi*), marsh arrowgrass, marsh cinquefoil (*Potentilla palustris*), Marsh pennywort (*Hydrocotyle vulgaris*), bogbean and water horsetail (*Equisetum fluviatile*).
Onllwyn Coal Washery	SINC	A site of open mosaic on previously developed land adjacent to the Onllwyn Washery, which is largely made up of a raised area of reclaimed coal tip. The site supports over 82 plant species. Notable species include sand sedge (*Carex arenaria*), a significant indicator species of Open Mosaic Coal Tip Habitats.
Dyffryn Cellwen	SINC	A small area of unimproved marshy grassland near Dyffryn Cellwen, which is grazed by horses. Part of the site is very wet and supports a significant population of marsh cinquefoil. Other notable species include marsh arrowgrass, whorled caraway, lesser skullcap (*Scutellaria minor*), sneezewort (*Achillea ptarmica*) and devil's-bit scabious.
Intervalley Road, Banwen	SINC	This site comprised a marshy grassland field, crossed by a small ditch, an abandoned railway line supportng sparse species-rich neutral grassland and adjacent areas of marshy and species-poor semi-improved grassland with small areas of dense and scattered scrub and planted trees. The site was bordered to the east and north by roads and to the west by a line of trees and rugby ground.
Adjacent to Gorsllwyn	SINC	The site comprises a series of fields supporting marshy grassland, acid grassland and semi-improved neutral grassland, bordered to the north by a small stream, the south and east by a road and open to the west. There is a small ditch to the south and small areas of dense and scattered scrub are present.
Banwen Pond	SINC	This former colliery site includes marshy, acid and neutral grasslands, heath and scrub along with a large fishing pond and smaller wildlife ponds
Aberhenwaun Uchaf	SINC	The site supports extensive marshy grassland with areas of acid grassland, semi-improved neutral grassland and scattered scrub. The qualifying features include lowland meadow, lowland dry acid grassland and purple moor grass and rush pasture. Devil's bit sacbious is also present.
Land behind Marigold Place	SINC	The site is dominated by purple moor grass with mosaics of wet heath and acid grassland. Qualifying features include purple moor grass and rush pasture, lowland meadows, lowland dry acid grassland and invertebrates including dingy skipper, marsh fritillary ad narrow-bordered bee hawkmoth. Devil's bit sacbious is also present.

Habitats

Desk Study

Local Biodiversity Record Centre Search

7.26.9 Other notable habitats within 1 km were returned in the desk study records from Aderyn. The only notable habitats within the site, are areas of ancient woodland, shown in Figure 7.4.

7.26.10 There were 57 areas of ancient woodland within 1 km, one of which is within the Project / Site boundary (as shown in Figure 7.4). A site investigation (Appendix 7R, Volume 2) confirms that the PAWS within the Site Boundary has been misrecorded; as the AWS has been surface mined and backfilled with overburden shales. There are a number of other areas of recorded ancint woodland which occur within the wider Study Area, but which would not be affected by the Project.

7.26.11 Numerous records of notable vascular plants were returned by Aderyn within the search area. These included: small-flowered sticky eyebright (*Euphrasia officinalis subsp. anglica*), bluebell (*Hyacinthoides non-scripta*), globeflower (*Trollius europaeus*) and eyebright (*Euphrasia officinalis subsp. pratensis*). None of these were within the site boundary however.

7.26.12 Numerous records of notable bryophytes and lichen plants were returned by Aderyn within the search area, but not recorded within the Site. These included: the Witches' Whiskers lichen (*Usnea florida*), and lichens (*Parmotrema perlatum, Usnea articulate, Pachyphiale carneola, Pannaria conoplea, Parmeliella triptophylla, Phyllopsora rosei, Sticta canariensis (dufourii), S. fuliginosa and S. limbata*), scarce turf moss (*Rhytidiadelphus subpinnatus*) and the varnished hook-moss (*Hamatocaulis vernicosus*).

Review of existing ecology reports (associated with the Celtic Energy 2011 ES)

7.26.13 Habitats recorded on Site during previous Extended Phase 1 Habitat surveys (undertaken to inform Celtic Energy's 2011 ES) included plantation woodland, broadleaved woodland, hedgerows, scrub, acid marshy / grassland, mire, ephemeral/short perennial, watercourses and standing water.

7.26.14 An Extended Phase 1 Habitat survey of the Site in 2016 did not record any significant changes to habitats present on Site, except for fluctuating water levels within water bodies and the extension of the surface mine.

7.26.15 Grassland vegetation and areas dominated by purple moor grass (*Molinia caerula*) were subject to NVC surveys in 2010, to inform the

2011 ES. Five NVC community types were present within the Site: M3 - *Eriophorum angustifolium* bog pool community, U4b - *Festuca ovia – Agrostis capiliaris – Galium saxatile* grassland; *Holcus lanatus – Trifolium repens* sub-community, U5d - *Nardus stricta – Galium saxatile* grassland; *Calluna vulgaris – Danthonia decumbens* sub-community, U5 - *Nardus stricta – Galium saxatile* grassland and M25 - *Molinia caerula – Potentilla erecta* mire.

7.26.16 The bryophyte and lichen survey undertaken in 2012 did not identify any specially protected species, but the reasonably diverse flora present would qualify as being of 'high conservation interest' under the assessment criteria detailed in a report by Miller *et al.* (2007) for the then Countryside Council for Wales[62]. Notable species identified included: *Sphagnum denticulatum, S. inundatum, Stereocaulon dactylophyllum, Arthrorhaphis grisea, Cladonia cervicornis* ssp. *verticillata, Cladonia macrophylla, Cladonia ramulosa, Hyptrachnya afrorevoluta* and *Syzygospora physciacearum.*

7.26.17 Restored grassland areas on Site (area immediately east of the overburden mound) were subject to NVC surveys again in 2013. NVC communities that best fit the vegetation communities present on site included: MG 6b - *Lolium perenne-Cynosurus cristatus* grassland, *Anthoxanthum odoratum* subcommunity and U1e *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland, *Galium saxatile-Potentilla erecta* sub-community.

7.26.18 The Addendum to Condition 45 (of the planning application 18/1070/REM) describes habitats within part of the Site (comprising the overburden mound and areas immediately to the west and east), and how their nature conservation value has increased since surveys undertaken in 2010, to inform the 2011 ES. It states that'the overburden mound has developed an area of higher conservation interest and one that has several Section 42 Priority habitat types[63]. These now encompass the upper third tier and its top, and the western and eastern slopes of the overburden mound, as well as the lower two south facing tiers. Juxtaposed with the western slopes of the overburden mound there is 29 ha of undisturbed land within the Site and which has been placed under management during the Site operations. This land comprises both acid grassland and mire communities which is similar to those developed on the mound and which are too listed as Section 42 habitats of conservation importance. Furthermore, the 2012 survey of the 42 ha of restored land to the east of the mound identified it also to be of high importance, also listed as Section 42 habitats, and for its Nationally rare and scarce lichen flora.

[62] Miller, H. S., Clarkson, B. and Smith, P. L. (2007). A Strategic Conservation Assessment of Heathland and Associated Habitats on the Coal Spoils of South Wales. CCW Science Report No. 772, 95pp.

[63] Under the Natural Environment and Communities Act 2006 but which is now superseded by the Environment (Wales) Act 2016. Section 7 of the Environment Act, requires a list of species and habitats of principal importance for conservation in wales to be published.

Hence together, the undisturbed land, the overburden mound and the restored land currently provide a 120 ha continuum of mosaics of highly (Section 42) important nature conservation habitats.'

Field surveys

Extended Phase 1 Habitat Survey

7.26.19 Forty habitat types were identified within the Site. These are described below and shown on Figure 7.5 and detailed in the Extended Phase 1 Habitat Report in Appendix 7C (Volume 2).

Broadleaved woodland – semi-natural

7.26.20 There were areas of semi-natural broadleaved woodland on the edges of the Site. Species compositions were broadly similar throughout the site and comprised willow (*Salix* sp.), silver birch (*Betula pendula*), hawthorn (*Crataegus monogyna*), rowan (*Sorbus acuparia*), sessile oak (*Quercus petraea*) and hazel (*Corylus avellana*). Along the access road to the Nant Helen site, there was a small area of large mature oak trees with a bluebell (*Hyacinthoides non-scripta*) understorey (TN51, Figure 7.5). This area of woodland is on the Ancient Woodland Inventory.

Broadleaved woodland – plantation

7.26.21 Small areas of semi-mature planted woodland were present throughout the Site and formed some of the previously restored mining areas. Species compositions were similar to those of the semi-natural woodlands on Site.

Coniferous woodland – plantation

7.26.22 A large conifer plantation was present in the north-west of the Site and extends outside of the site boundary. Larch trees (*Larix* sp.) were the dominant species, with pine (*Pinus* sp.) and spruce (*Picea* sp.) also present. The ground flora was sparse and was dominated by mosses and common wintergreen (*Pyrola minor*), which occurred extensively through the plantation. Bee orchids were identified within the woodland, but they were outside of the site boundary (TN1, Figure 7.5). In parts of the woodland, the understorey supported establishing broadleaved species such as oak and birch.

7.26.23 It is noted that part of this area is recorded as PAWS (in the Ancient Woodland Inventory[64]), although did not support any indicator species of ancient woodland. Furthermore, a separate technical note (Appendix 7R, Volume 2) confirms that the plantation is on backfilled material following mining and extending over the area recorded as a

[64] https://naturalresources.wales/evidence-and-data/research-and-reports/ancient-woodland-inventory/?lang=en

PAWS; rather than as implied, the plantation replacing semi-natural woodland on the in situ woodland soils.

Mixed woodland – plantation

7.26.24 This habitat type was present in restored mining areas on Site. Species present included: larch, spruce, hazel, hawthorn, field maple (*Acer campestre)* and willow species.

Scrub – dense / continuous

7.26.25 Dense scrub was present around settling lagoons in the south-east of the Site. Bramble, European gorse (*Ulex europeaus*), dogwood (*Cornus sanguinea*), willow and self-seeded birch trees were present.

Scrub – scattered

7.26.26 Scattered willow and gorse scrub was present throughout the Site. Other species present included bramble and birch seedlings.

Broadleaved parkland / scattered trees (A3.1)

7.26.27 Scattered broadleaved trees were present throughout the site. Species present included English oak (*Quercus robur*), willow, hawthorn and rowan.

Coniferous parkland / scattered trees

7.26.28 An area of scattered larch, pine and spruce trees was present in the north of the Site.

Coniferous woodland – recently felled

7.26.29 A recently felled conifer plantation was present in the south-west, just outside the site boundary. It has been colonised by scrub species including bramble and willow. Stacked logs were present throughout the area.

Neutral grassland – unimproved

7.26.30 Areas were present alongside tracks within the Washery and comprised a moderately diverse flora including grasses: Yorkshire fog (*Holcus lanatus*), sweet vernal grass (*Anthoxanthum odoratum*), false oat-grass (A*rrhenatherum elatius*), crested dogs tail (*Cynosurus cristatus*), creeping bent (*Agrostis stolonifera*), and sedges: glaucous sedge (C*arex flacca*) and black sedge (*C. nigra*). Herbs included common yellow rattle (*Rhinanthus minor*), cowslip (*Primula veris*), hairy tare (*Vicia hirsuta*), cuckoo flower (*Cardamine pratensis*) and marsh thistle (*Cirsium palustre*). In unmanaged areas, ruderal and scrub species were present including rose-bay willowherb (*Chamerion angustifolium*), docks (*Rumex* spp), rushes (*Juncu*s spp) and tufted hair grass (*Deschampsia cespitosa*), in addition to willow and hawthorn scrub, and oak saplings.

Acid grassland – semi-improved

7.26.31 The centre of the Site comprised short acid grassland. Species present included red fescue (*Festuca rubra*), sheep's fescue (*F. ovina*), cat's ear (*Hypochaeris radicata*), heath grass (*Danthonia decumbens*), bent grass (*Agrostis* sp.), tormentil (*Potentilla erecta*), pearly everlasting (*Anaphalis margaritacea*) and wild strawberry (*Fragaria vesca*).

Improved grassland

7.26.32 Grazed fields were present to the east of the Site. They were dominated by perennial rye-grass (*Lolium perenne*). Other species present included Yorkshire fog, white clover (*Trifolium repens*) and rush species.

Marsh / marshy grassland

7.26.33 Large areas of the site comprised grasslands dominated by rushes. Species present included hard rush (*Juncus inflexus*), soft rush (*Juncus effusus*), yarrow (*Achillea millefolium*), meadowsweet (*Filipendula ulmaria*), cock's foot (*Dactyla glomeratus*), valerian (*Valeriana* sp.), common sorrel (*Rumex acetosa*), ribwort plantain (*Plantago lanceolata*), vetch species (*Viccia* spp.), Yorkshire fog and teasel (*Dipsacus fullonum*). Some areas of this habitat were dominated by purple moor grass. These grasslands were often heavily grazed by sheep, cattle and horses.

Poor semi-improved grassland

7.26.34 A species-poor semi-improved grassland was present south of the improved fields. Species here included: Yorkshire-fog, soft rush, creeping thistle (*Cirsium arvense*), creeping buttercup (*Ranunculus repens)* and stitchwort (*Stellaria* sp.)

Bracken – scattered

7.26.35 Stands of bracken (*Pteridium aquilinum*) were present within grasslands outside the site boundary to the west.

Dry dwarf shrub heath – acid

7.26.36 This habitat, which occurred in the north east corner of the site and in a smaller area which was restored from previous mining activities; was dominated by common heather (*Calluna vulgaris*). Other species present included purple moor grass (*Molinia caerulea*), bilberry (*Vaccinium myrtillus*), soft rush, marsh willowherb (*Epibolium palustre*), hawthorn, Yorkshire fog, willow, bracken, foxglove, red fescue, silver birch, rowan, and Cladonia lichens (*Cladonia* spp.).

Wet dwarf shrub heath

7.26.37 The area that was restored from previous mining activities in the centre of the site comprised an area of wet heath. Common heather

and cross-leaved heather (*Eric tetralix*) were present, along with purple moor grass and sphagnum mosses (*Sphagnum* spp.).

Dry heath / acid grassland

7.26.38 An area of heath / acid grassland mosaic was present south of the overburden mound. Species present included: common heather and European gorse, mouse-ear-hawkweed (*Pilosella officinarum*), cowslip (*Primula veris*) and great wood-rush (*Luzula sylvatica*), with locally abundant willowherb (*Epibolium* sp.).

Acid / neutral flush

7.26.39 A flush was present within the field in the restored mining area and was dominated by rush species. Water was present at the time of the survey.

Fen – basin mire

7.26.40 A fen was present within the restored mining area, likely to be fed by the flush within the same field. Common cotton-grass (*Eriophorum angustifolium*) and common club-rush were present (*Schoenoplectus lacustris*).

7.26.41 Deep peat also occurs at this location, which was translocated (from the Mynydd Du peat deposit) as part of a previous habitat restoration project undertaken by Celtic Energy.

Swamp

7.26.42 A reedbed was present on site close to settling lagoons. The vegetation here was dominated by common reed (*Phragmites australis*).

Standing water

7.26.43 Numerous lagoons and settling ponds were present across the site. The lagoons were generally bordered by scattered scrub or ruderal vegetation with reedmace (*Typha* spp.) often present. Four ponds were present in the centre of the site in a previously restored mining area. These were bordered by rushes, reedmace and sphagnum mosses.

Running water

7.26.44 Various drains and streams were present throughout the Site. These were typically up to 1 m wide with beds formed of rocks. The River Dulais flows east to west, from the Washery, in the south eastern corner of the site.

Acid / neutral natural inland cliff

7.26.45 A sharp rock face was present in the acid grassland towards the south of the site.

Quarry

7.26.46 The opencast mine site comprises a large quarry to the north-west of the Site. A pool of standing water is present at the bottom of the quarry.

Spoil

7.26.47 Multiple spoil heaps were present on Site, comprised of coal.

Amenity grassland

7.26.48 A small area of amenity grassland formed an island along Onllwyn Road in Onllwyn village.

Ephemeral / short perennial

7.26.49 Various areas of the mine site had been colonised by ephemeral / short perennial vegetation. Colt's foot (*Tussilago farfara*) was abundant. Foxglove (*Digitalis purpurea*), mouse-ear hawkweed, and mosses were also present.

Intact hedge – species-poor

7.26.50 Hawthorn-dominated hedges formed borders between fields in the east of the Site.

Species-poor intact hedge with fence

7.26.51 A network of species-poor hedgerows was present in the restored land to the east of the Site. Hawthorn was the dominant species present. A stock fence ran along the hedges and earth banks were present on both sides.

Defunct hedge – species-poor

7.26.52 Species poor hedges with large gaps were present in the restored area to the east of the Site. The dominant species present was hawthorn with occasional willow.

Fence

7.26.53 Stock fences formed borders around fields throughout the Site.

Fence with trees

7.26.54 Part of the access road to Site was bordered by a fence with broadleaved trees, including oak, hazel, hawthorn and willow.

Wall

7.26.55 A length of brick wall was present along an access road connecting the Nant Helen site to the coal Washery.

Dry ditch

7.26.56 Dry ditches formed borders between fields to the west of the site.

Earth bank

7.26.57 Earth banks were present on both sides of species-poor hedgerows in the east of the Site.

Buildings

7.26.58 Single-storey buildings and cabins were present at the Nant Helen opencast mine site.

Bare ground

7.26.59 Areas of bare ground were present on site in the operational mining areas.

Gravel / hard standing

7.26.60 Car parks and operational areas on site comprised areas of hard standing.

Tarmac surface

7.26.61 Tarmac access roads were present at the Nant Helen opencast mine site. The site is bordered to the north and east by the A4221 and to the south by the A4109.

NVC surveys

Field Study

7.26.62 The NVC survey identified a number of vegetation communities within the broad habitats as described above in the Extended Phase 1 Habitat survey. Those within or adjacent to the Site boundary are detailed in Table 7.14 below and in Figure 7.6 (in addition to being detailed within the NVC report in Appendix 7D, Volume 2).

Table 7.14: NVC survey results

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
Semi-natural broad-leaved woodland	Small examples of W11 upland oak woodland, and W9 upland mixed ash woodland present near site perimeter.	This is mostly attributable to the NVC category W11 *Quercus petraea – Betula pubescens – Oxalis acetosella* woodland (Q 70, 81 and 82, Figure 6, are typical of this habitat, Figure 7.6).	W11	-
Plantation and scrub woodland	Relatively young habitats with limited botanical diversity.	Some of the broad-leaved woodland shown on the habitat map comprises plantation woodland, planted as part of coal spoil restoration projects. Canopy species including field maple and grey alder (*Alnus incana*) are frequent in the plantations but would not be expected to occur in these situations naturally. Other relatively new woodland appears to have established from scrub on damp ground. For the purposes of this study these younger woodlands have been grouped together. Quadrats 53, 68 and 83 appear to have been established as plantations (See Figure 7.6). Quadrats 20 and 86 are examples of scrub woodland (which may have been planted) and Quadrat 1 is an example of young Alder woodland (Figure 6). These woodlands are all characterised by a high proportion of bramble in their understorey, and there are often remnants of grassland flora persisting in the shade (e.g. red fescue, soft rush, common bent (*Agrostis capillaris*), common spotted orchid (*Dactylorhiza fuchsi*i)). They mostly lack old-woodland indicator species, although a few, such as wood sedge (*Carex sylvatica*), enchanter's nightshade (*Circaea lutetiana*) and wood avens (*Geum urbanum*) occur locally. Broad-leaved helleborine orchids (*Epipactis helleborine*) are present in many of the young woodlands on coal spoil; often in large numbers. These young woodlands are difficult to place within the NVC because they are in a transitional state between scrub and woodland. The plantations have a man-made canopy composition and most of the young woodlands have grassland elements in the ground flora. W21 *Crataegus monogyna – Hedera helix* scrub is a reasonable	W21/W6	Sherard's downy rose (*Rosa sherardii*) (or a possible hybrid of it), several non-native invasive Cotoneaster species, particularly hollyberry cotoneaster (*Cotoneaster bullatus*), and Bird cherry (*Prunus pardus*) (probably planted).

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		match for much of the plantation woodland, while some damper scrub woodland has elements of W6 *Alnus glutinosa – Urtica dioica* woodland (e.g. Q11).		
Conifer plantation	Relatively young and even-aged, with only a sparse ground flora. The large population of Common Wintergreen is of importance in a county context.	Conifer plantations were not sampled using quadrats, because the dense tree canopy only supports a sparse ground flora and the plant community was not expected to have much value for nature conservation value. A walk-through of the plantation at the north-west of the Study Area found that although the vegetation beneath the canopy of lodgepole pine (*Pinus contorta*), larch and sitka spruce (*Picea sitchensis*) was sparse it was of at least local value due to a very large population of common wintergreen (with many thousands of plants present). The moderately diverse range of other species in the ground flora was dominated by mosses and liverworts. Frequent seedlings of sessile oak and downy birch (*Betula pubescens*) may give an indication of the type of woodland that might develop in this area naturally.	Unclassified	Common wintergreen.
Acid grassland – unimproved (in mosaic with dry heathland)	Patchily distributed through much of the Study Area and mainly represented by U1 and U4 grassland, sometimes forming mosaics with other vegetation. Most of the acid grassland is relatively species-poor and in a heavily-grazed state.	At this site acid grassland typically exists as part of a mosaic with marshy grassland and heath vegetation. It tends to occur patchily, especially on well-drained sloping ground, where succession to heath is limited by grazing. Much of it also varies in the openness of the sward, depending on slope and grazing intensity. In some cases, where it is developing on relatively young coal spoil it may also be a transitional stage that might eventually become heath. Much of the acid grassland within the site would be best classified semi-improved acid grassland (which is discussed later) due to the heavy grazing of sheep and likely past influences of reprofiling and soil conditioning work carried out to restore coal spoil. In terms of the NVC the acid grassland forming relatively open swards on dry, stony slopes and spoil heaps is best assigned to U1 *Festuca ovina – Agrostis capillaris – Rumex acetosella* grassland. It supports a relatively high proportion of annuals, bryophytes and lichens. However, it differs from the typical published U1 community as sheep's sorrel (*Rumex acestosella*) is relatively scarce.	U1/U4	-

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
Semi-improved acid grassland	Many extensive examples, especially on well-drained slopes associated with former mining activity. Including some areas with high densities of ant-hills.	A high proportion of the heavily grazed, short grassland on the site is best classified as semi-improved acid grassland. Most is grazed by sheep and cattle, but a few fields near the Washery (represented by Quadrats 119, 124, 126 and 127, Figure 6) are grazed by horses. One of the features of the older semi-improved grassland is the abundance of ant-hills. For the purposes of this study the 'ant-hill grassland' was sampled separately from the other semi-improved acid grassland, because of its very distinct appearance. This fits the NVC community U4 *Festuca ovina – Agrostis capillaris – Galium saxatile grassland.* Other semi-improved acid grassland is present that also has a closed sward but does not support the same frequency of ant-hills. Some of this is of relatively recent origin (the large spoil heap where Q30 and 37 were recorded is only about 30 years old). Some appears to be on natural clay soil rather than coal spoil, and with a high proportion of sweet vernal-grass (*Anthoxanthum odoratum*), red fescue and crested dog's-tail (*Cynosurus cristatus*) is close to MG5 semi-improved neutral grassland (e.g. Q69, 79 and 80, Figure 7.6). Much of the semi-improved grassland has patchy rushes (especially Soft Rush), and some is transitional with damp grassland (e.g. Q35, which has a high frequency of Purple Moor-grass and has affinity with M25 mire). A few areas with more prominent Mat Grass resemble U5 *Nardus stricta – Galium saxatile* grassland. However, the majority of this close-sward acid grassland still broadly conforms to the NVC community U4 *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland	U4 / U5	-
Neutral grassland	Mostly limited to small patches and roadside strips, mainly MG5 and MG1 but very variable in species diversity.	Unimproved and semi-improved neutral grassland at this site is mostly limited to small patches and road-side strips, where there is more base-enrichment in soils than the more prevalent acid grassland communities. In this case it is likely that the base minerals have originated from shale in coal waste or limestone associated with road building, and this is especially likely with the developing grasslands at the Washery (Quadrats 98, 99 and 100). Most are probably best classified as 'unimproved' neutral grassland because it is unlikely that there has been any intentional grassland improvement in most of these areas, except occasional grass cutting. There is a wide	MG5	-

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		range of species in these rather fragmented habitats, reflecting the mix of acid and base minerals in the soils derived from coal spoil. In terms of the NVC the neutral grassland communities are probably closest to MG5 *Centaurea nigra* - *Cynosurus cristatus* grassland, although some patches of rougher, unmanaged grassland are closer to MG1 *Arrhenatherum elatius* grassland (which was more species-poor and not sampled). In addition to the species recorded in the quadrats, the neutral grassland also included small amounts of Restharrow, Cowslip and Hairy Tare.		
Sparse grassland on coal spoil and Washery sidings	Many variations on U1 grassland. There is a full spectrum of cover and diversity from almost bare spoil to very high diversity vegetation which includes locally uncommon species.	Much of the Study Area supports sparse vegetation on recently disturbed coal spoil. Similarly, the railway sidings at the Washery support sparse vegetation on the limestone ballast forming the tracks, which is also mixed with fine material from the coal. The flora supports a high proportion of annual and low-growing ruderal species, as well as early colonists more typical of heath and grassland vegetation, and seedlings of trees and scrub. Bryophytes and lichens are also locally prominent. The flora supports many species indicative of acid soils, but there are many base-loving species too. This mix is typical of coal spoil and results in a very variable, flower-rich and often high diversity flora. In Phase 1 habitat classification this would usually be classified as 'ephemeral / short perennial vegetation', although it is often not freely draining as the shale in the coal spoil breaks down into clays. It is not easy to define in terms of the NVC, probably because of the wide variation in the range of species that co-exist on the coal spoil and the presence of so many base-loving plants. The closest matches are probably U1 *Festuca ovina – Agrostis capillaris – Rumex acetosella* grassland community (Quadrats 38 and 72, Figure 7.6, are good examples of a typical U1 flora on coal spoil), but much of the spoil flora bears little resemblance to U1 and is probably best left unclassified. While the Onllwyn sidings and Washery spoil support a diverse ephemeral / short perennial community on the drier ground, there are damper areas within this area that support a higher proportion of wetland plants. Two quadrats from this	Unclassified	Small cudweed (*Filago minima*), viviparous fescue (*Festuca vivipara*) within the main site. Brown sedge (*Carex brunnescens*), eye bright (*Euphrasia arctica* ssp *borealis*) and bee orchid (*Ophrys apifera*) within the Washery.

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		vegetation are presented separately from the others because they are clearly developing towards a damp grassland flora rather than acid grassland or heath. Southern Marsh-orchids, Ragged Robin and a variety of sedges are a prominent feature of most of the damp areas of developing grassland at the Washery. The locally rare plant Brookweed is associated with several damp areas by the sidings. This damp, base-enriched grassland has similarities to some sand dune slack vegetation (e.g. SD15 or SD17), or forms of the M22 mire community. However, it is not a close match for any of the published NVC communities.		
Dry heath / Dry heath and acid mosaic	The Study Area supports very few examples of heath with >25% cover by dwarf shrub species that would qualify as the S7 habitat 'upland heathland'. The largest area is in the restoration area in the centre of the site, which supports H1 heath. Heath is mostly only present as mosaic component amongst acid grassland on former colliery slopes.	Heath is a feature of several areas on older coal spoil, especially where it has not been limited by grazing or shaded by scrub. The largest stands of heath are in the centre of the site which supports a mix of dry heath, wet heath and marshy grassland. Dry heath is also found on steeper slopes of coal spoil, often forming a mosaic with acid grassland (e.g. in Quadrats 40, 60 and 73, Figure 7.6). Most stands of dry heath are dominated by common heather and readily conform to the published NVC community H1 *Calluna vulgaris – Festuca ovina* heath.	H1	-
Wet heath / marshy grassland mosaic	Only a few small examples present, and mostly M25 mire, grading into other habitat mosaics. All that were seen support a good range of species.	Wet heath is not a common feature within the site, and where it occurs it is generally a fragmentary form within a mosaic of marshy grassland and mire vegetation. The examples sampled are all dominated by purple moor-grass, and the shrubs are a relatively minor element. In terms of the NVC this type of vegetation is best classified as M25 *Molinia caerulea – Potentilla erecta* mire (possibly close to the M25a *Erica tetralix* sub-community).	M25	-
Sphagnum-rich bog vegetation	Only a few small areas are present, but they all support uncommon plants and all occur in association with other diverse marshy grassland and heath.	Several wet areas with Cotton-grasses and *Sphagnum* mosses are present around the margins of the restored coal workings, typically only in small quantity and/ or filling ditches. The peaty substratum supports a number of species typical of upland peat bogs, including common cotton-grass , Hare's-tail cotton-grass (*Eriophorum vaginatum*), star sedge (*Carex echinata*), white sedge (*carex albida*), round-leaved Sundew and a good number of Sphagnum species, locally with standing water and	M6	Royal fern (centre of the site in restored peatland)

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		Bog Pondweed in wetter parts. A young plant of royal Fern (*Osmunda regalis*) was also found in this habitat. Only two quadrats were collected from this vegetation. Quadrat 48 is from a bog pool and Quadrat 42 is from a ditch. Both are probably forms of the published NVC community M6 *Carex echinata - Sphagnum fallax/ S.denticulatum* mire. Only two quadrats were collected from this vegetation. Quadrat 48 is from a bog pool and Quadrat 42 (Figure 6) is from a ditch. Both are probably forms of the published NVC community M6 *Carex echinata - Sphagnum fallax/ S.denticulatum* mire.		
Marshy grassland	Several relatively large areas are present that are dominated by Purple Moor-grass (M25 mire) and rush pasture (M23 mire). The most diverse would qualify as the S7 habitat 'Purple Moor-grass and rush pastures'. An extensive area of diverse, minerotrophic M23 / M24 marshy grassland is present in wet fields with coal spoil north of the Washery. A high proportion of marshy grassland on recently restored farmland is species poor MG10 rush pasture with negligible value.	Large areas of the site comprised grasslands dominated by rushes. Species present included hard rush (*Juncus inflexus*), soft rush (*Juncus effusus*), yarrow (*Achillea millefolium*), meadowsweet (*Filipendula ulmaria*), cock's foot (*Dactyla glomeratus*), valerian (*Valeriana* sp.), common sorrel (*Rumex acetosa*), ribwort plantain (*Plantago lanceolata),* vetch species (*Vivcia* spp.), Yorkshire fog (*Holcus lanatus*) and teasel (*Dipsacus fullonum*). Some areas of this habitat were dominated by purple moor grass. These grasslands were often heavily grazed by sheep, cattle and horses. Some of the marshy grassland within the site is species-poor and dominated by rank Purple Moor-grass, and this is particularly found in areas where sheep have been excluded. The following examples were all ungrazed at the time of the survey, and supported tall, tussocky purple moor-grass. In terms of the NVC they are probably best described as a very species-poor M25 *Molinia caerulea – Potentilla erecta* mire, although the amount of Tormentil and other associated species is much lower than the typical form of this community due to the dominance of the Purple Moor-grass. NB The presence of the sweet chestnut (*Castanea sativa),* pedunculate oak (*Quercus robur*) and Rowan in association with Quadrat 90 is due to the area being used for tree planting, which is presumably why sheep have been excluded.	M25 (species poor – where ungrazed), M23. M22, U4, MG10	In species rich areas (in the Washery) - the flower-rich sward includes a number of locally uncommon species, such as marsh lousewort and brookweed.

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		A high proportion of the extensively sheep-grazed marshy grassland in the south west of the site, and beside many of the damp ditch margins, is dominated by tall rushes, particularly sharp-flowered rush (*Juncus acutiflorus*) and Soft. Purple Moor-grass is present but not dominant. These damp grassland habitats sometimes support a moderate number of flowering herbs such as greater bird's-foot trefoil (L*otus pedunculatus),* lesser skullcap (*Scutellaria minor*), bog stitchwort (*Stellaria alsine*) and marsh thistle (*Cirsium palustre*), and occasional ferns. Within the NVC this grassland is best categorised with M23 *Juncus effusus/ acutiflorus – Galium palustre rush* pasture. Rush-dominated marshy grassland on the recently restored parts of the site tend to be heavily sheep-grazed and form a mosaic with species-poor semi-improved grassland. The vegetation has a very low proportion of flowering herbs and is generally not of nature conservation significance. However, it covers a relatively large area, so several quadrats were recorded from it to describe it and help to illustrate the variation within the range of marshy grassland types on the site. It is best classified as the NVC community MG10 *Holcus lanatus – Juncus effusus* rush pasture. It differs slightly from the published community as it has a lower proportion of creeping bent and creeping buttercup, but both species are present and the difference may just be due to the young age of the grassland, the intensity of the sheep grazing or some other local factor. The marshy grassland flora in and around the Washery has a very different character to the other marshy grassland within the study area. This is partly because it is grazed by horses rather than sheep, and also probably because the substratum is base-rich but acidic coal waste rather than natural soil. This marshy grassland has a very diverse sward, characterised by a high proportion of sedges and wetland herbs. Rushes are prominent, but they are represented by several different dominant species. The flower-rich sward includes a number of locally uncommon species, such as marsh lousewort (*Pedicularis palustris)* and brookweed (*Samolus valerandi).* In terms of the NVC this is probably best classified as M23 *Juncus effusus/ acutiflorus – Galium palustre* mire. The base enrichment of the Washery soils also		

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		adds elements of M22 *Juncus subnodulosus – Cirsium palustre* fen-meadow, although there was no sign of any blunt-flowered rush (*Juncus subnodulosus) during* the survey. Much of the vegetation appears to form transitions between the two communities, and also with swamp vegetation in wetter areas.		
Flush vegetation	Several small M23 flushes are present; mostly at the margins of the grazed upland areas. They support a diverse sward with locally uncommon plant species.	There are several areas of flush vegetation on gently sloping ground at the lower edges of the site, particularly at the south and west margins. In most cases the flushes are very small and the vegetation is not very different from other rush-dominated marshy grassland. The plant community probably conforms most closely to the NVC category M23 *Juncus effusus / acutiflorus – Galium palustre* mire. However, the flushes tend to be relatively diverse examples of this. An area of seepage from coal spoil at the Washery (Q114) appears to fit more closely with sand dune slack vegetation but this is probably just an anomaly of the unusual man-made nature of the habitat. Several locally uncommon species were found in association with flushes, including ivy-leaved bellflower (*Wahlenbergia hederacea*), whorled caraway and bog pimpernel (although no quadrats included the ivy-leaved bellflower).	M23	Several locally uncommon species were found in association with flushes, including ivy-leaved bellflower, whorled caraway and bog pimpernel (although no quadrats included the ivy-leaved bellflower).
Swamp	Several areas of swamp vegetation are present, and which are considered to qualify as priority habitat. Only one small area of S4 reedbed is present, but this is relatively small and species-poor.	Dense stands of tall emergent plants forming swamp vegetation tend to be very localised within the site, and they are mostly low diversity plant communities. greater tussock-sedge (*Carex paniculate*) forms one rather uniform stand beside a small stream, and this has been sampled in Quadrat 15, Figure 7.6. Tall sedge (*Carex appressa*), common reed and reed canary-grass (*Phalaris arundinacea*) are patchily dominant in parts of the wet grassland north of the Washery, and a stand of lesser pond-sedge (*Carex acutiformis*) has been sampled to represent this (Q105). Bulrush was also present as small stands in several ponds (this was not sampled because it generally exists in deeper water as single-species stands). There is also a small common reed reedbed near the centre of the site. NVC classification for these very low-diversity swamp communities in this case is straightforward; the greater tussock-sedge swamp is S3 *Carex paniculata* swamp, the lesser pond-sedge stand is S7 *Carex acutiformis* swamp, the bulrush stands are *S12 Typha latifolia* swamp, and the reedbed is S4 *Phragmites australis* swamp.	S3, S7, S12 and S4	-

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		Common Reed was generally present as a single-species stand in the reedbed, but a list of associated species was obtained from the whole reed bed as a target Note (TN7), Figure 7.6.		
Ponds	There is an extensive network of ponds within the site. They are of man-made origin but support a variety of vegetation types, including several locally rare plant species such as floating bur-reed (*Sparganium angustifolium*).	The Study Area supports a high density of ponds; many of these are relatively recent in origin, created for silt control, attenuating high flows and providing water for the mine operations. Some ponds are still very functional, with steep sides and little vegetation, but others are less intensively maintained and support a fringe of wetland plants. These typically include common spike-rush, soft rush, sharp-flowered rush, bulbous rush (*Juncus bulbosus*), lesser spearwort (*Rannunculus flammula*) and *Sphagnum* mosses. Some of the older ponds have a well-developed submerged plant community. The acidic, silty water from the coal spoil that feeds the ponds allows species typically associated with upland pools to grow, such as bog pondweed, cotton-grasses, star-sedge and the locally rare floating bur-reed. It is difficult to place the pond communities in terms of the NVC as any more than a rough approximation, particularly as each pond had a slightly different character, and elements of several different communities might be present in any pond. The fringing vegetation often has strong elements of M23 *Juncus effusus / acutiflorus – Galium palustre* mire, which is similar to much of the nearby marshy grassland. Ponds fringed by common spike rush could be considered to support a narrow band of S19 *Eleocharis palustris* swamp. The boggier margins of some ponds have some similarities with M29 *Hypericum elodes – Potamogeton polygonifolius* soakway vegetation (although there was no sign of marsh St. John's-wort (*Hypericum elodes*)), M6 *Carex echinata – Sphagnum denticulatum* mire, and the OV35 *Lythrum portula – Ranunculus flammula* community. The aquatic plants could feasibly be described as a species-poor version of the A24 *Juncus bulbosus* community.	Affinities with M23, S19, M29, M6 and OV35 and A24.	Floating bur-reed, lesser bulrush, and spiked water-milfoil (*Eleocharis palustris*).
Ditches	There are a range of ditch types within the site. Most are small with a limited wetland flora. Several larger ones support a more diverse flora.	There are numerous shallow ditches within the Study Area, but many of them appear to be almost dry most of the time and only support a species-poor rush-dominated flora. A few of the deeper, wetter ditches have a greater proportion of wetland plants, such as bulrush, water mint (*Mentha aquatica*) and common spike rush, and the flora resembles that of the pond margins. In most cases the ditches support variations of the NVC community M23 *Juncus effusus / acutiflorus – Galium*	Variation of M23, S12, S19, and Ov28	-

Vegetation type	Summary of vegetation community descriptions	Detailed habitat description	NVC category (most closely aligned)	Notable vascular plants
		palustre mire. Some ditches support a high proportion of bulrush or common spike-rush and are closer to S12 *Typha latifolia* swamp and S19 *Eleocharis palustris* swamp respectively. Some ditches which are subject to disturbance or regular management, such as around the Washery, support open vegetation communities resembling the OV28 *Agrostis stolonifera – Ranunculus repens* community. The ditches with greatest botanical conservation significance tend to be those that are permanently wet. Some these support a high proportion of mosses (e.g. Q42, described under *Sphagnum*-rich bog vegetation, Figure 6). Some have a very high proportion of sedges and flowering herbs (e.g. TN20, which has a diverse flora including common sedge, star sedge, remote sedge (*Carex remota*), common yellow sedge (*C. demissa*) and white sedge (Figure 7.6).		
Stream	The Afon Dulais is the only significant stream within the study area. It has a natural channel profile with a naturally meandering course and is bordered by diverse wetland vegetation and therefore meets the wildlife sites qualifying criteria.	The largest stream within the study area is the Afon Dulais which flows past the southern boundary. It flows just outside the Celtic Energy land ownership boundary so could only be examined from beside the adjacent fence (TN11). The stream is approximately 2-3m wide and flows in a meandering channel. The stream bed is stony and has localised ochre deposits. The channel is bordered by marshy grassland and flush vegetation, which is lightly grazed by sheep. Much of it appears to conform to the NVC category M23 Juncus effusus / acutiflorus – Galium palustre mire, but it locally grades into tall, dense stands of Meadowsweet which are classified as M27 Filipendula ulmaria – Angelica sylvestris mire.	M23 / M27	

7.26.63 The NVC survey did not compile a list of all NVC communities, and or map all locations of NVC communities within the Site, but rather provides further information of those habitats considered to be of nature conservation importance during the Extended Phase 1. As such the above list excludes a number of habitats present on site including improved grassland, continuous bracken and bare / recently disturbed or other man-made habitats.

Fungi

Desk study

7.26.64 There are two fungi records within the Site including Parrot wax-cap (*Gliophorus psittacinus)* and Persistant waxcap (*Hygrocybe acutoconica* var. acutoconica).

Field Study

7.26.65 Various wax cap mushrooms were identified on Site during the Extended Phase 1 habitat survey (TN45, TN46, TN47 & TN48, Figure 7.5). They were not identified to species level.

7.26.66 The fungi survey undertaken in 2019, identified 80 fungi species within the Study Area (and therefore not all these records were within the Site boundary). Areas 3 and 10, as shown in Figure 7.7 (and detailed within the fungi survey report, Appendix 7E, Volume 2), support the highest number and diversity of fungi, which occur on coal spoil. In addition areas 2, 6, 7, 8 and 12 have high numbers / diversity of fungi species. None of the fungi recorded during the survey are Section 7 species. However, several species, infrequently recorded in Wales including *H. substrangulata* (areas 1, 3 and 6), *H. phaecooccinea* (areas 3, 7 and 8) and *H. lacmus* (areas 2, 7 and 9). It is acknowledged in the report that fungi are generally under recorded and therefore it is difficult to determine whether these less frequently recorded species are rare or just under recorded. Furthermore, unsampled areas of the site were subject to a high level assessment, to identify their likely suitability to support fungi; and assessed as either having low or medium potential (shown in Figure 7.7).

Invertebrates

Desk study

7.26.67 Numerous records of notable invertebrates were returned by Aderyn within the search area. These included: broom moth (*Ceramica pisi*), dark barred twin-spot carpet moth (*Xanthorhoe ferrugata*), small phoenix (*Ecliptopera silaceata*), small heath (*Coenonympha pamphilus*), knot grass (*Acronicta rumicis*), dot moth (*Melanchra persicariae*), rosy minor moth (*Litoligia literosa*), rosy rustic moth (*Hydraecia micacea*), sallow moth (*Cirrhia icteritia*), ear moth

(*Amphipoea oculea*), oak hook-tip moth (*Drepana binaria*), oblique carpet moth (*Orthonama vittata*), autumnal rustic moth (*Eugnorisma glareosa),* hedge rustic moth (*Tholera cespitis*), grayling butterfly (*Hipparchia semele*), double dart moth (*Graphiphora augur*), blood-vein moth (*Timandra comae*), buff ermine moth (*Spilosoma lutea*), garden tiger moth (*Arctia caja*), shoulder striped wainscot moth (*Leucania comma*), small square moth (*Diarsia rubi*), white ermine moth (*Spilosoma lubricipeda*), centre barred sallow (*Atethmia centrago*), dusky brocade moth (*Mniotype adusta*), ghost moth (*Hepialus humuli*), small pearl-bordered fritillary butterfly (*Boloria selene),* small blue butterfly (*Cupido minimus*), wall, brindled beauty moth (*Lasiommata megera*), cinnabar moth (*Tyria jacobaeae*), narrow bordered bee hawk-moth (*Hemaris fuciformis*) and dingy skipper butterfly (*Erynnis tages*).

7.26.68 Previous invertebrate surveys undertaken for Celtic Energy's 2011 ES recorded 86 invertebrate species including one Red Data Book and one Nationally Scarce species; additionally, 92 moth species and 19 other invertebrates were recorded during the moth trap surveys, including one nationally scarce moth and 11 UK UKBAP and Section 7 species (previously Section 42 species published under the NERC Act 2006); 13 butterfly species were recorded, two of which are Section 7 species, under the Environment (Wales) Act 2016 (previously Section 42 species published under the NERC Act 2006). No adult or larval marsh fritillary were identified on Site.

Field Study

7.26.69 The invertebrate survey undertaken in 2019 (and detailed in Appendix 7F, Volume 2) identified 562 species within the Study Area (and therefore not all these records were within the Site boundary). Key species recorded include the scarce blue-tailed damselfly (*Ischnura pumilio*) (Near threatened), a water beetle (*Helochares punctatus*) (Near threatened), a number of rove beetles: *Hadrognathus longipalpis, Zyras collaris, Euaesthetus laeviusculus, Quedius plancus,* (Nationally scarce, Category A), a cryptophagid beetle (*Cryptophagus ruficornis*) (Nationally scarce), a pollen beetle (*Epuraea distincta*) (Na), a Ciid beetle (*Cis festivus*) (Nationally scarce, Category B), melandryid beetles: *Orchesia minor and O. micans* (Nationally scarce), a reed beetle (*Plateumaris rustica*) (Nationally Scarce, Category B), a flea beetle (*Mantura rustica*) (Nationally scarce), weevils: *Protapion filirostre Anthonomus brunnipennis, Gymnetron beccabungae, G. veronicae and Microplontus campestris, Pelenomus waltoni and Magdalis carbonaria* (Nationally scarce, Category B), six-belted clearwing moth (*Bembecia ichneumoniformis*), dingy skipper butterfly, grayling butterfly, small pearl-bordered fritillary (Section 7), small blue butterfly (Nationally scarce, Category B), double line moth (*Mythimna turca*) (Nationally scarce), banded general soldier-fly (*Stratiomys potamida*) (Nationally scarce), a hoverfly (*Microdon myrmicae*) (Nationally scarce), a theridiosomatid spider (*Theridiosoma*

gemmosum) (Nationally scarce), money spiders: *Walckenaeria kochi, Hypselistes jacksoni, Erigonella ignobilis* and *Agyneta olivacea* (Nationally scarce), triangle hammock spider (*Saaristoa firma*) (Nationally scarce).

Fish

7.26.70 Aderyn returned two records of notable fish species within the search area: Atlantic salmon (*Salmo salar*) at 600 m and European bullhead (*Cottus gobio*) at 2 km from the Site boundary.

7.26.71 Waterbodies such as man-made lagoon and bog pools, may support common fish species such as stickleback (*Gasterosteus aculeatus*). There are numerous streams and ditches within, and adjacent to, the Site.

7.26.72 These majority of these are narrow and shallow, and not well connected through the Site and as such are not considered to provide suitable habitat for any notable fish species including Atlantic salmon and bullhead. The Afon Dulais flows along the southern boundary of the Site, and partially within the boundary in the south eastern corner corner of the Site. It is likely that this the river supports migratory species such as Atlantic salmon and trout (*Salmo trutta*).

Amphibians

Desk study

7.26.73 Aderyn did not return any records of great crested newt from within the search area. Records of other notable amphibians including palmate newt (*Lissotriton helveticus*) at 1.7 km, common frog (*Rana temporaria*) at 700 m and common toad (*Bufo bufo*) at 200 m, from the Site boundary, were returned.

7.26.74 Previous invertebrate surveys undertaken for Celtic Energy's 2011 ES recorded no great crested newts. Good populations of palmate newt, common frog and common toad were recorded however.

Field Study

7.26.75 No records of great crested newts (GCN) were identified.

7.26.76 Numerous waterbodies are present within the Site, which may support GCN and other amphibians. The woodland and scrub on site may provide suitable terrestrial habitat for these species. Additionally, seven smooth / palmate newts (*Lissotriton* sp.) were recorded in a puddle during the amphibian survey (TN32, Figure 7.5).

7.26.77 No GCN were recorded during HSI and eDNA surveys undertaken in 2019 (detailed in Appendix 7G, Volume 2) and as such, they are not considered further in this ES. Common toad, common frog and

palmate and or smooth newt were recorded under refugia during reptile surveys.

Reptiles

Desk study

7.26.78 Aderyn returned records of reptiles within the search area including common lizard (*Zootoca vivipara*) at 700 m, grass snake (*Natrix helvetica*) at 1 km and slow worm (*Anguis fragilis*) at 2 km from the Site boundary.

7.26.79 Previous reptile surveys undertaken for Celtic Energy's 2011 ES recorded low numbers of common lizard and slow worm.

Field Study

7.26.80 The majority of the site provides suitable foraging habitat for common reptiles (adder (*Vipera berus*) common lizard, grass snake and slow worm)) in the form of scrub, tussocky grasslands. Linear features, including pathways, roads, railways and hedgerows may provide suitable habitat for basking reptiles.

7.26.81 Reptile presence / absence surveys undertaken in 2019 (and detailed within the reptile survey report in Appendix 7H, Volume 2), recorded peak counts of 17 common lizard and 2 slow worm. As acknowledged in the reptile survey limitations, seven survey visits was only enough to confirm presence / likely absence, and if 20 visits were completed in accordance with survey guidance for population assessments, it is possible that a higher number of reptiles would have been recorded. As such peak counts are considered to be a minimum number, and an 'excellent' population of common lizard and 'good' population of slow worm should be allowed for based on the presence of optimal habitat within the Site.

7.26.82 No other reptile species were recorded within the Site, though desk study records indicate the presence of grass snake in the wider area and suitable habitat for this species occurs within the Site.

Birds (Breeding and Wintering)

Desk study

7.26.83 Bird records within the area provided by Aderyn within the Site boundary included cuckoo (*Cuculus canorus*), house sparrow (*Passer domesticus*), kestrel (*Falco tinnunculus*), lesser black-backed gull (*Larus fuscus*), red kite (*Milvus milvus*) and starling (*Sturnus vulgaris*). Records outside of the Site boundary but within the 2 km search area included hawfinch (*Coccothraustes coccothraustes*), dunnock (*Prunella modularis*), merlin (*Falco columbarius*), mistle thrush (*Turdus viscivorus*), bullfinch (*Pyrrhula pyrrhula*), common

crossbill (*Loxia curvirostra*), skylark (*Alauda arvensis*), woodcock (*Scolopax rusticola*), grasshopper warbler (*Locustella naevia*), barn owl (*Tyto alba*), curlew (*Numenius arquata*), linnet (*Linaria cannabina*), mallard (*Anas platyrhynchos*), snipe (*Gallinago gallinago*), song thrush (*Turdus philomelos*), brambling (*Fringilla montifringilla*), fieldfare (*Turdus pilaris*), lapwing (*Vanellus vanellus*), redwing (*Turdus iliacus*), reed bunting (*Emberiza schoeniclus*), peregrine (*Falco peregrinus*), lesser redpoll (*Acanthis cabaret*), hen harrier (*Circus cyaneus*), jack snipe (*Lymnocryptes minimus*), water rail (*Rallus aquaticus*), hobby (*Falco subbuteo*), honey buzzard (*Pernis apivorus*), goshawk, tree pipit (*Anthus trivialis*), nightjar (*Caprimulgus europaeus*), osprey (*Pandion haliaetus*) and short-eared owl (*Asio flammeus*).

7.26.84 A wider search was undertaken for Barn owl, of up to 3 km from the Site boundary. Two records exist: one from within the Site itself), which comprised incidental sightings of a barn owl in the Washery, and a pellet within one of the buildings (at NGR SN84771067); and, another sighting of a barn owl foraging within fields to the south of Main Road (approximately 150 m south of the Washery) and reports of a artificial nest box being located on a nearby house.

7.26.85 Previous breeding bird surveys undertaken for Celtic Energy's 2011 ES recorded no nesting honey buzzards were recorded on or adjacent to the Site. Neither goshawk nor peregrine were recorded but three old buzzard (*Buteo buteo)* nests were found. Tawny owl (*Strix aluco)* were heard during bat surveys. Twenty-one species were recorded as breeding / possibly breeding within, and adjacent to, the Site. Six of these species were Section 7 species under the Environment (Wales) Act 2016 (at the time Section 42 species, published under the Natural Environment Act (NERC) 2006) and five species were red listed on the Birds of Conservation Concern 3 (BoCC). No crepuscular species were recorded.

7.26.86 Previous wintering bird surveys undertaken for Celtic Energy's 2011 ES recorded common crossbill, which are listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Five species listed as Section 7 species under the Environment (Wales) Act 2016 (at the time Section 42 species, published under the NERC 2006 were recorded, four of which were also red listed on BoCC 3.

Field Study

7.26.87 During the Extended Phase 1 survey, suitable habitat for nesting birds was identified: woodlands, hedgerows and scrub, in addition to the area of the open case mine. Marshy grassland was also assessed as being suitable for overwintering bird species. A peregrine was seen flying just south of the mine (TN28, Figure 7.5) during the Phase 1 survey. Skylark and cuckoo were also heard on Site (TN29, Figure 7.5), and a snipe (*Gallinago gallinago*) and lapwing were recorded on top of the spoil from the mine (TN30, Figure 7.5). During bat transect

surveys, nightjars were heard and seen in recently felled woodland just outside the southern boundary of the Site (TN31, Figure 7.5).

Breeding Birds

7.26.88 Breeding bird surveys undertaken in 2019 (and detailed in Appendix 7I, Volume 2). A total 62 species were logged, of which 52 species were considered to have bred within the site. Of these species, 14 are included on Section 7 (S7) of the Environment (Wales) Act 2016, being of principal important for the purpose of maintaining and enhancing biodiversity in relation to Wales.

7.26.89 S7 wader species recorded included a single pair of curlew Numenius arquata and two pairs of lapwing Vanellus vanellus. Open grassland habitats and associated scattered scrub supported many skylark Alauda arvensis, eight pairs of cuckoo Cuculus canorus, seven pairs of linnet Linaria cannabina and three pairs of tree pipit Anthus trivialis. Scrub and woodland edge habitats supported five pairs of dunnock Prunella modularis, six pairs of bullfinch (*Pyrrhula pyrrhula*), 23 pairs of song thrush (Turdus philomelos) and 14 pairs of lesser redpoll (*Acanthis cabaret*). Wetland fringe habitats supported 32 pairs of reed bunting (*Emberiza schoeniclus)* and a small colony of house sparrow Passer domesticus was present within the washery. A single pair of yellowhammer (*Emberiza cintrinella*) were recorded (though well west of the GCRE project area) along with three pairs of the Schedule 1 species common crossbill (*Loxia curvirostra*) in coniferous woodland north and south of the project area. One pair of starling (*Sturnus vulgaris*) were recorded to the soutry hear Seven Sisters.

7.26.90 No territories of goshawk or honey-buzzard were present within the Study Area or relevant buffers. A number of observations of red kite occurred during the survey period, although no evidence of breeding within the Study Area was noted.

7.26.91 During bat roost surveys including preliminary assessments of buildings and trees, evidence of barn owl was also searched for. No signs were recorded including within the Washery, where a nest had previously been recorded or elsewhere within the Site.

Wintering Birds

7.26.92 Across the winter of 2018/2019, wintering bird surveys recorded 34 species were recorded. Of these species, eight species were those included in response to Section 7 (S7) of the Environment (Wales) Act 2016, being of principal importance for the purpose of maintaining and enhancing biodiversity in Wales.

7.26.93 These included kestrel (*Falco tinnunculus)* (single bird), skylark with returning breeding birds notable from February, starling (small flocks, up to 42 birds on one visit), song thrush (up to seven birds), dunnock (maximum four birds), house sparrow (maximum 15 birds), linnet

(maximum four birds) and reed bunting (maximum five birds). Key No particularly large aggregations of birds or otherwise rare/notable features were recorded. See Appendix 7J, Volume 2 for full details

Otter

Desk study

7.26.94 Aderyn did not return any records of otter from within the search area.

7.26.95 Previous otter surveys undertaken for Celtic Energy's 2011 ES recorded no signs of otter.

Field Study

7.26.96 There are numerous watercourses on site, which may provide suitable commuting and foraging opportunities for otter. The woodlands and scrub on site may also provide suitable terrestrial habitat for this species.

7.26.97 During the field survey, an otter spraint and a mammal pathway were identified in a stream bed outside of the Site boundary, to the north-west of the site (TN27, Figure 7.5).

7.26.98 Riparian mammal surveys undertaken in 2019 (and detailed in Appendix 7K, Volume 2) identified a number of otter spraints along the Afon Dulais, partially within the Site boundary. No natal dens or couches were identified within the Site, although a potential couch was identified south-west of the Site, along the Afon Dulais. It is possible, due to the large territories of otter, that they may occur within the site whilst foraging or commuting, although due to the exposed nature of the site, current levels of disturbance, lack of well stocked fish ponds, this is considered likely to be infrequent.

Water Vole

Desk study

7.26.99 Aderyn did not return any records of water vole from within the search area.

7.26.100 Previous water vole surveys undertaken for Celtic Energy's 2011 ES recorded no signs of water vole.

Field Study

7.26.101 During the 2019 water vole survey (detailed in Appendix 7K, Volume 2), the majority of watercourses within the site were assessed as being unsuitable for water vole; due to their rocky beds / banks and fast flow rate, and ponds due to lack of emergent vegetation and disturbance. A few streams provided suitable habitat, although no signs of water vole

were found during the surveys. As such water vole are not considered within this ES chapter.

Bats (Roosting and Commuting / Foraging)

Desk study

7.26.102 Bats records within the area provided by Aderyn within the search area included roost and foraging records between 300 m and 2 km for the following species: common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), unidentified species, Daubenton's bat (*Myotis daubentonii*), noctule bat (*Nyctalus noctula*), brown long-eared bat (*Plecotus auratus*), Myotis bat, Nathusius' pipistrelle (*P. nathusii*), Natterer's bat (*Myotis nattereri*) and lesser horseshoe bat (*Rhinolophus hipposideros*).

7.26.103 Previous surveys undertaken for Celtic Energy's 2011 ES recorded a single pipistrelle roost in a tree (which was removed as part of the Site's mining activities). In addition, bat boxes installed in woodland (at NGR SN80427 10771, SN 8403 10775 and SN80288 10812) as part of mitigation in association with the 2011 EIA, supported single pipistrelle bats in two boxes in 2015, and three boxes in 2016.

7.26.104 Previous transect and static surveys undertaken for Celtic Energy's 2011 ES recorded seven bat species foraging and or commuting including: common pipistrelle, soprano pipistrelle, Nathusius pipistrelle, brown long-eared, noctule, serotine (*Eptisecus serotinus*) and Leisler's (*N. leislerii*). The most frequently recorded species were pipistrelles.

Field Study

Bat roosts (Tree, buildings and structures)

7.26.105 Various trees were identified during the field survey as having potential roosting features (TN16, TN17, TN18, TN19, TN20 & TN21, Figure 7.5). Additionally, three trees with bat boxes were recorded in woodland in the west of the Site (TN22, TN23 & TN24, Figure 7.5). A road bridge (TN25, Figure 7.5) and railway bridge (TN26, Figure 7.5) are present just outside of the Site boundary to the south-east of that Site that may also provide roosting opportunities for bats.

7.26.106 Bat roost surveys undertaken in 2019 (and detailed in Appendix 7L, Volume 2) recorded no roosts within any trees / buildings within the Study Area; however, 12 trees retained low-moderate roost potential following the tree climbing assessment (as shown in Figure 7.8). A potential *Pipistrellus sp.* and Natterers bat roost was identified within an old tunnel during the bat roost surveys, as well as during the 2019 transect surveys at NGR SN80138 09411.

Bat Foraging and Commuting

7.26.107 The Extended Phase 1 habitat survey identified suitable habitat for foraging / commuting bats: woodlands, hedgerows, and waterbodies.

7.26.108 During transect surveys soprano and common pipistrelle were by far the most abundantly logged species, with records from each transect, in addition noctule and Myotis species were recorded (bat activity report, Appendix 7P, Volume 2).

7.26.109 A minimum of eight bat species were recorded during static monitoring recorded (bat activity report, Appendix 7P, Volume 2), of these, common and soprano pipistrelle were by far the most commonly recorded, comprising 96.78% of all bat calls recorded (common pipistrelle - 49.36%, soprano pipistrelle - 45.97% and pipistrelle species (common or soprano) - 1.37%). *Myotis* sp. (3,824 calls representing 2.73% of all bat calls recorded) and Noctule (522 calls representing 0.37% of all bat calls recorded) were the next most commonly recorded species / species group. Of those species identified to species-level, serotine (two passes, static monitoring locations 1 and 8) and greater horseshoe bat (an Annex II species), (five passes, static monitoring locations 3, 7, 9 and 16) provided the fewest records (bat activity report, Appendix 7P, Volume 2)).

7.26.110 During static monitoring, bat activity levels increased through spring to peak in May and July (no data for June) before tailing off in the autumn, quite considerably in October. Such a pattern is typical, but the large drop in bat activity in October, when bats are still active, would suggest that the Site is a ‘summer’ (maternity period) feeding area predominantly.

7.26.111 Bat activity levels (and activity by rarer species: greater horseshoe and serotine) were highest at lower elevations and / or when near to optimal foraging habitat (e.g. woodland / water), and lowest at higher elevations and / or near to busier roads (as opposed to access tracks around the site).

7.26.112 During transect surveys, a likely bat roost was noted at the Orange transect (Grid Reference SN80138 09411) (as detailed above under ‘Bat roosts’) where common and soprano pipistrelle bats are considered likely to have emerged during the June and September surveys. This likely roost consists of an old stone tunnel approximately 20 m long, and open at both ends. A Natterer’s bat roost was also recorded here during inspections of buildings and structures, and is also detailed within the bat roost survey report (Appendix 7L, Volume 2).

Badger

Desk study

7.26.113 Aderyn provided a record of badger at 800 m from the Site boundary.

7.26.114 Previous badger surveys undertaken for Celtic Energy's 2011 ES recorded no signs of badger.

Field Study

7.26.115 The Site contains large areas of woodland and grasslands that offer suitable habitat for badger sett building, commuting and foraging.

7.26.116 During the Extended Phase 1 Habitat survey, two badger outlier setts were recorded in the east of the Site. Badger latrines were identified in the grassland to the west of the site and in the conifer plantation north of the site. A badger footprint was found in the mud to the north of the site and pathways and snuffle holes were also recorded. Additionally, during a bat transect survey, a badger was seen crossing the site.

7.26.117 During the fungi survey, badger activity was recorded across the Site in the form of an outlier sett, badger hair and foraging activity and footprints.

7.26.118 Badger surveys undertaken in 2019 within the Study Area (detailed in in the Confidential badger survey report in Appendix 7M, Volume 2), recorded setts within the Site boundary. This included a three hole and five-hole subsidiary sett (also recorded during the Extended Phase 1 Habitat Survey report – Confidential version). Neither sett entrances had any signs of recent use by badger, and recent digging activity was attributed to fox rather than badger; a latrine was recorded in close proximity however.

7.26.119 Most of the badger activity was in woodland to the north east of the existing opencast mine, along the cycle track, evidenced by the presence of latrines, foraging and likely badger runs. An outlier sett was recorded along the cycle track (over 700 m to the west of the main GCRE track) although no recent evidence of badger was recorded within the sett. Latrines were recorded along the track at this northern end of the site approximately 30 m from the identified outlier sett. A section of cut fence was also recorded which was assumed to facilitate passage of badger (north of the cycle track), and the potential presence of another outlier sett in the vicinity, although this was not found during the survey.

7.26.120 No evidence of badger activity was recorded within the active working area of the opencast mine or within the area of the Washery site.

7.26.121 The badger survey report and accompanying plans, in addition to the Extended Phase 1 Survey report are confidential due to badgers protected status for welfare reasons. As such, full versions of these

reports and plans are available on request to those who have a legitimate need to view the information.

Hazel Dormouse

Desk study

7.26.122 Aderyn did not return any records of hazel dormouse from within the search area.

7.26.123 Previous hazel dormouse surveys undertaken for Celtic Energy's 2011 ES recorded no dormice or signs of dormice.

Field Study

7.26.124 No records of hazel dormouse were returned from the desk study and no dormice were found during previous surveys.

7.26.125 However, there is suitable habitat for hazel dormice on Site in the form of broadleaved woodland, scrub and hedgerows. These habitats are relatively well connected to other suitable woodland and scrub habitats in the wider area.

7.26.126 Despite survey effort throughout the field season, no hazel dormice or nests were recorded during nest tube / box surveys undertaken in 2019 (detailed in Appendix 7N, Volume 2). As such hazel dormouse are not considered further in this ES.

Other Notable Mammal Species

Desk study

7.26.127 Other notable mammal records provided by Aderyn within the search area included brown hare (*Lepus europaeus*), west European hedgehog (*Erinaceus europaeus*) at 800 m, polecat (*Mustela putorius*) at 1.5 km and harvest mouse (*Micromys minutus*) at 2 km, from the Site boundary.

Field Study

7.26.128 Mustelid pathways, footprints and scats were recorded on site during the field survey (TN33, TN34, TN35 & TN36, Figure 7.5). A brown hare was seen during the field survey outside of the site boundary to the west of the site (TN52, Figure 7.5).

7.26.129 Arboreal mammal surveys undertaken during 2019 (and detailed in Appendix 7O, Volume 2) recorded polecat at one of the feeding stations (captured on video from trail camera deployed for this survey). Red squirrel and pine marten were found likely to be absent from the survey area. Numerous other native UK species were recorded during this suite of surveys, including red fox, rabbit, and mice.

Invasive Non-native Species

Desk Study

7.26.130 Aderyn did not return any records of non-native invasive species from within the search area.

Field Study

7.26.131 During the Extended Phase 1 habitat survey Japanese knotweed (*Fallopia japonica*), montbretia (*Crocosmia x crocosmiiflora*), wall cotoneaster (*Cotoneaster horizontalis*) and rhododendron (*Rhododendron ponticum*) were all identified on or near the Site (TN37, TN38, TN39, TN40, TN41, TN42 & TN43, Figure 7.5). A potential American mink (*Neovision vision*) scat was recorded in a ravine on Site (TN44, Figure 7.5). These species are all listed on Schedule 9 of the WCA.

7.26.132 During the NVC survey (Figure 7.6), the above species were recorded in addition to Entire-leaved cotoneaster (*Cotoneaster integrifolius*) and Hollyberry cotoneaster (*Cotoneaster bullatus).*