Sheffield & Rotherham Wildlife Trust

Reserve Management Plan

Agden Bog

2024 - 2030

wildsheffield.com

For nature, for everyone

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Contents

1 INTRODUCTION

1.1 Introduction to the Trust

Sheffield and Rotherham Wildlife Trust (SRWT) is part of a national association of 46 local Wildlife Trusts, which work with communities throughout the UK to protect wildlife in town and country. SRWT aims to promote conservation, advance education in environmental matters and improve the quality of life in Sheffield and Rotherham, through the protection of biodiversity, and the development and promotion of sustainable land management practices.

Our vision is to see a Living Landscape – an amazing, green landscape for the wildlife and people of Sheffield and Rotherham, a landscape which is understood, enjoyed and cared for by local people and local organisations. In order to fulfil this vision, we:

i) Work to create and manage a more resilient network of natural spaces, to support a greater diversity and abundance of wildlife and habitats across Sheffield and Rotherham;
ii) Help local people to visit, understand, enjoy, value and be inspired by nature;
iii) Support local people and organisations take action for nature and wildlife.

1.2 Purposes and formulation of the plan

This management brief has been formulated for the following reasons:

- To provide comprehensive and cohesive information about the nature reserve in one document, with reference to other documents where necessary;

- To outline the long-term vision for the reserve and the associated objectives which form the framework of management;

- To outline the rationale for management, giving a clear and comprehensive explanation of why features require management, the form that this management will take and how this will be monitored;

- To provide a key document from which projects are developed and associated funding sought;

- To provide consistency and continuity, so that when changes of staff take place, or changes in ownership or disposal of the land occurs, then management objectives, prescriptions and monitoring are continued.

The work programme is set out within this document. However, the nature of work programmes is such that they vary and are modified due to unanticipated changes or developments such as the availability of funding. Therefore the full annual work programmes are kept and updated electronically at the SRWT offices.

1.3 Structure of the brief

This management brief is divided into sections.

Section 1 gives an overview of the brief.

Section 2 provides a detailed description of the reserve.

Section 3 of the plan gives the Trust's **vision** for the reserve: the condition we are aiming to achieve by 2070. It then lists the reserve's **features**, the most valued elements of the site for which it is managed.

For each feature, a number of **attributes** and **factors** is then identified. **Attributes** are measurable qualities of a feature, against which its condition will be monitored in order to judge the effectiveness of management. **Factors** are anything that has the potential to influence or change a feature, or to affect the way in it is managed.

Once the attributes and factors affecting a feature have been identified, each feature is then **evaluated**. During evaluation, the current condition of the feature is compared to that contained in the vision and its performance against the attributes identified discussed. The impact of factors – which can be positive or negative – on the feature, or its management, are likewise evaluated. From this evaluation **management objectives** are then set.

Section 4 comprises the work programme where the management prescriptions for the features are listed.

Section 5 of the plan comprises the **Figures**: maps that accompany the text.

Section 6 of the plan is the **Work Programme**, where the work to be carried out over the course of the plan is listed.

2 SITE DESCRIPTION

2.1 General Information

Location and extent

Agden Bog nature reserve is situated to the north west of Sheffield city (grid reference SK 252 930; **Figure 1**). It is located in the Sheffield district of Bradfield, and covers an area of 2.34 hectares. This area is within the boundary of the Peak District National Park, and within the Sheffield Lakeland Partnership area within the South Yorkshire Nature Recovery network.

Just outside of the north-eastern boundary of Agden Bog nature reserve lies Agden Bog proper. This small area of minerotrophic bog lies on Sheffield City Council land tenanted to a local farmer. However the bog has been excluded from the surrounding land by fencing and has been managed as part of Agden Bog nature reserve since the 1960s.

Landscape value and context

Agden Bog nature reserve falls within Natural England's Natural Character Assessment Profile 37: Yorkshire Southern Pennine Fringe, as a transitional area lying between the upland Pennine block to the west and the lower-lying arable land to the east. Agden Bog is unusual in the landscape as it is a remaining area of bog and mire that hasn't been drained for agricultural purposes. It is also in close proximity to Rickketts Field and Corker Walls bog areas. Viewed from the footpath Agden Bog Nature Reserve is a gently sloping piece of tussocky ground surrounded by woodland. Only once you enter the site and study the vegetation closely are you aware of the variety of species of bog and emergent plants and mosses, invertebrates, reptiles and amphibians.

Site tenure and occupancy

The nature reserve is freehold and owned by Yorkshire Water. In June 2012 Yorkshire Wildlife Trust took on a 21 year lease for the site which began on 1st April 2010. In July 2017 Sheffield and Rotherham Wildlife Trust took over that lease for the remaining 13 years.

Designations and Policy Context

Agden Bog nature reserve is sited within the Peak District National Park, the reserve itself has no additional designations. National Park status means that the priority to be placed on landscape conservation should be greater than for most other areas of England.

Public Rights of Way and Access

The reserve is reached by following a track from Smallfields Lane along the northern edge of Agden Reservoir. This track is also a Public Right of Way (PRoW) footpath, which runs around the reservoir. It runs to the south of the nature reserve and

crosses land that is part of the reserve but not within the fenced area (**Figure 2**). There are no PRoWs or any public access inside the fenced area of Agden Bog.

Reserve Management

The reserve is managed by the Trust's Nature Recovery Manager (North-west), with support from a Community Wildlife Ranger and the Trust's Land Management Team. At the time of writing the manager for Agden Bog is Mrs Christina Doar.

A contact email address for the team is nature.reserves@wildsheffield.com

Health and Safety

Sheffield and Rotherham Wildlife Trust has many detailed policies including an Environmental Policy & Health and Safety Policy, which are amended and updated at regular intervals or when key legislation changes.

The reserve is patrolled by staff and volunteers from Sheffield and Rotherham Wildlife Trust and any issues on site are logged to be dealt with as soon as possible. Any known accidents or incidents are recorded on the relevant accident forms. A risk assessment for the site has been produced and is updated annually. Regular tree safety inspections and associated remedial work are carried out.

Adjacent land ownership

The areas to the South, East and West of Agden Bog are owned by Yorkshire Water, Agden Reservoir and a surrounding forestry planting is their land. The land to the north of Agden Bog which feeds the reserve with water is owned by Sheffield City Council and tenanted by a local farmer.

Site History and Past Management

The reserve was managed by YWT between 1968 and 2017. In 2012 they fenced the site and introduced low level conservation grazing. The aim of this was to decrease the amounts of purple moor grass on site. Historically before 1989 Butterwort (Pinguicula vulgaris) was regularly recorded on site and it was hoped that grazing might encourage its return and prevent succession to scrub around the bog edges.

Services and Vehicular Access Points

Two overhead powerlines cross the site (**Figure 3**). No underground services are registered at this reserve. Vehicular access is from the PRoW from Smallfield Lane.

2.2 Environmental Information

Topography, Hydrology, Geology and Pedology
Agden Bog Nature Reserve slopes gently southwards between 230 and 200 feet above sea level.

On the north-eastern boundary of the nature reserve a small bog (Agden Bog proper, known as “top bog” for the purposes of this management plan) has formed in a basin near the bottom of a shallow valley under a long ridge of Millstone Grit. The water from the bog basin then flows downhill through the reserve in a series of seepages and runnels into Agden Dyke which flows to Agden Reservoir (**Figure 4**). Other water outflows leave the hillside at this point too and contribute to the wet woodland and mire formation at the base of the reserve. 2 culverts divert water underneath the footpath out of the site and into Agden Dyke.

Agden Bog has vegetation which indicates base poor soil but it also has three areas which show vegetation consistent with base rich conditions. It must be assumed from this that there is some sort of alkaline rock layer from which water is seeping, possibly one too small an amount to be recorded on a geological map.

Biodiversity

Habitats
The Nature Reserve incorporates dry valley slopes on its western side and part of its eastern edge. These areas support woodland of silver birch (*Betula pendula*) with frequent sessile oak (*Quercus petraea*), and rowan (*Sorbus aucuparia*) over bracken (*Pteridium aquilinum*), bilberry (*Vaccinium myrtillus*) and bramble *(Rubus fruticosus*), with some more open areas dominated by bracken. The core of Agden Bog is a complex mosaic of wetland plant communities, including herb-rich fen-meadow, species-poor rush pasture, wet heath, Molinia mire, and most notably some patches and strips of base-rich fen vegetation associated predominantly with the stream and small seepage areas. (**Figure 4**). A small area of blanket bog- top bog - lies immediately outside of the reserve boundary. A map showing the vegetation types mapped using the National Vegetation Classification is given in Figure 5.

Woodland

Young woodland comprises 70% of the reserve area, with W16 upland oak woodland covering the higher slopes and plateau, and a small area of W4 Wet Woodland at the reserve's south-easternmost extent. There are some mature oaks on site and some species particularly associated with woodland, eg Common Cow Wheat (*Melampyrum pratense*) and Wood Avens (*Geum urbanum*), in the most mature areas adjacent to the track. The majority of the woodland on site is young birch woodland, under 30 years in age.

Species-rich fen meadow

A large section of gently sloping ground on the eastern side of the stream, in the centre of the site, is visually dominated by a mixture of sharp-flowered rush and purple moor-grass. It supports a wide variety of other plant species, including the grasses creeping bent (*Agrostis stolonifera*), red fescue (*Festuca rubra*), Yorkshire fog (*Holcus lanatus)*, and smooth meadow-grass (*Poa trivialis*), as well as a variety of sedges, rushes, bryophytes and vascular plants including a scattering of medium to tall flowering forbs, particularly sneezewort (*Achillea ptarmica*), lady's smock (*Cardamine pratensis*), marsh thistle (*Cirsium palustre*), marsh willowherb (*Epilobium palustre*), marsh pennywort (*Hydrocotyle vulgaris*), greater birds-foot trefoil (*Lotus pedunculatus*), water mint (*Mentha aquatica*), lesser spearwort (*Ranunculus flammula*) and devil's-bit scabious (*Succisa pratensis*).

The vegetation is most diverse close to the stream, and this section has mixed affinities to M22, M23 and M24. Considered together these patches appear to be a form of species-rich fen meadow vegetation that is probably influenced by the outflow of moderately base-rich groundwater issuing from the seepages, and are markedly more botanically diverse than adjacent areas of rush pasture, wet heath, and *Molinia* mire.

Base – rich fen M10

Three outflows of base rich groundwater issuing from seepages which has resulted in floristic communities that can best be described as base rich fen (in contrast with the acidic floristic communities of minerotrophic bog on the upper hillside). These patches are characterised by generally open and low-growing vegetation rich in small sedges, small rushes, and base-loving bryophytes ('brown mosses'). Species present include common yellow sedge (*Carex demissa*), star sedge (C*arex echinata*), glaucous sedge (*Carex flacca*), common sedge (*Carex nigra*), carnation sedge (*Carex panicea*), flea sedge (*Carex pulicaris*), jointed rush (*Juncus articulatus*) and bulbous rush (*Juncus bulbosus*).

Wet Heath

Wet Heath areas are drier and further away from the runnels and seeps. This habitat features more acidic plant species including purple moor grass and *Juncus* rushes.

Tussocks and hollows make up the terrain with impeded draining of telluric water (water that has been stored in the earth for a long time). The floristic community includes Western gorse (*Ulex gallii*) which is a priority species in the Sheffield area.

Molinia Mire

Towards the lower end of the site, on the almost flat valley floor, there are two stands of vegetation that are dominated by purple moor-grass, with locally abundant sharp-flowered rush (Juncus acutiflorus), and occasional cross-leaved heath (*Erica tetralix*) and sparse *Sphagnum* bog-mosses. While these areas have some affinity to the wet heath seen further upslope, they are less diverse, and appear to have greatest affinity to M25a mire, a closely related plant community.

Minerotrophic Bog

This habitat is found largely on "Top Bog" outside the reserve boundary. M21b Narthecium ossifragum – Sphagnum papillosum valley mire, Vaccinium oxycoccos – Sphagnum recurvum sub-community (Q8-Q12)

The northern part of the valley floor comprises a small narrow basin that has become infilled with peat up to 2 m depth (Eades, 1992), and supports minerotrophic bog vegetation (i.e. irrigated by rainfall and runoff from the valley slopes, rather than just being rain-fed). The bog vegetation here is dominated by a carpet of Sphagnum bog-mosses, mixed with abundant bog asphodel (*Narthecium ossifragum*), which produces a carpet of yellow flowers. Of the bog mosses, *Sphagnum fallax* is the most abundant, but there are frequent patches of *Sphagnum capillifolium, Sphagnum denticulatum*, *Sphagnum palustre, Sphagnum papillosum* and *Sphagnum subnitens*. Ericaceous species are scattered across the surface, including heather (*Calluna vulgaris*), crowberry (*Empetrum nigrum*), cross-leaved heath and cranberry (*Vaccinium oxycoccos*), and a range of grasses, sedges and rushes are frequent and locally abundant including both cotton-grasses (*Eriophorum angustifolium* & *Eriophorum vaginatum*). Other plants at low cover include common spotted orchid (*Dactylorhiza fuchsii*), heath spotted orchid (*Dactylorhiza maculata*) and round-leaved sundew (*Drosera rotundifolia*). This area lies just outside of the reserve boundaries but is functionally part of the reserve and is managed by the Trust.

Notable Species

Despite the site's small size Agden Bog supports a range of species notable in the Sheffield area (notable species are ranked one lower than Red Data Book species for rarity in JNCC (Joint Nature Conservation Committee) lists). The following invertebrate species are notable on site: Golden Ringed Dragonflies (*Cordulegaster boltonii*), Purple Hair Streak Butterfly (*Favonius quercus*).

Bog plants such as Bog pimpernel (*Anagallis tenella*), Flea sedge (*Carex pulicaris*), Round Leaved Sundew (*Drosera rotundifolia*) and bristle club rush (*Isolepsis setacea*) are all found on the reserve. Ancient woodland indicator species common cow wheat (*Melampyrum pratense*) forms a carpet at the entrance to the site. Western gorse (*Ulex gallii*) is found at both edges to the bog and is a species that is notable in the Sheffield Habitat Action Plans.

Butterwort (*Pinguicula vulgaris*) a Local Red Data Book species, was recorded on site in 1989 and 1994 but has not been recorded since 1994.

Fauna including Brown Hare (*Lepus europacus*), common toad (*Bufo bufo*) and common lizard (*Zootoca vivipara*) are recorded and observed regularly on site.

2.3 Infrastructure

The site was fenced in 2012 with post and wire stock fencing. Two large access gates and a cattle corral were also built at this time **(Figure 6).**

The north-eastern boundary of the reserve comprises a dry stone wall in a moderate state of repair. A wooden sign in the south-eastern corner of the site states the name of the reserve, and carries the SRWT logo (pre 2023 version).

2.4 Community, Recreation and Interpretation

Agden Bog nature reserve is located with Bradfield Parish Council which is a civil parish which sits within the wards of Stocksbridge and Stannington.

The track that runs along the south of Agden Bog is a PRoW that goes all around Agden Reservoir. This track has a relatively heavy footfall from walkers, dog walkers, joggers etc. However direct access to the reserve is not allowed and the gates are kept locked. The reserve is not suitable for general public access due to its small size and the fragility of the habitats present

Agden Bog is known locally by many ecologists and recorders as a place of biological interest. Biological recording of the reserve is encouraged and visits are generally by arrangement.

Agden Bog Nature Reserve has a page on the Sheffield and Rotherham Wildlife Trust website. This gives general information about the reserve https://www.wildsheffield.com/reserves/agden-bog

2.5 Funding.

At the time of writing Agden Bog is currently in a 10-year Higher Level Stewardship (HLS) agreement (joint with Hammonds Field) until March 2028. SRWT will continue to look for funding to undertake future work on site during the course of this management plan.

3 RESERVE VISION

Agden Bog is a hidden gem tucked away to the North West of Agden reservoir. This nature reserve has significant botanical interest, ranging from minerotrophic bog, base rich fen, species rich fen meadows, wet heath, rush pasture, oak/birch woodland and wet woodland. Our vision for Agden Bog in 2070 is that this botanical diversity is retained and that the young birch woodland on site matures into mixed oak/birch woodland.

4 FEATURES

The following key feature has been identified for Agden Bog.

4.1 0.5ha of bog/mire/fen habitat, including presence of key vascular plants and bryophytes

Attribute	Performance Indicator	Monitoring
Species richness	Within 0.5ha key area (bog/mire/fen/wet heath habitats): -At least 2 positive indicators (see Table 1) occurring frequently (occurring in at least -40-60% of 50x50m grids) across key area -At least 2 positive indicators (see Table 1) occurring occasionally (occurring in at least -20-40% of 50x50m grids) across key area -Presence of key species in core locations (see table 2 and map) -Presence of key bryophytes (see Table 3) -Mean Ellenberg F value of 8, from indicator species recorded	Bog monitoring
Condition	Less than 5% coverage of scrub and dense bracken in the bog area Less than 5% bare ground in the bog area	Bog monitoring

Table 1	Table 2	Relevant Grid Squares	Table 3
Achillea ptarmica	*Anagallis tenella*	C-19,30,48,49	*Aneur pinguis*
Anagallis tenella	*Carex pulicaris*	C-19,30	*Bryum pseudotriquetrum*
Angelica sylvestris	*Drosera rotundifolia*	C-19,30,33,34,35,36,48,49	*Campylium stellatum*
Ajuga reptans	*Isolepis setacea*		*Ctenidium molluscum*
Berula erecta	*Melampyrum pratense*	C-14,15,16,25,26,27,41,42,43	*Palustriella commutate*
Caltha palustris			*Pellia endiviifolia*
Carex flacca	*Narthecium ossifragum*	Not in grid squares,	*Scorpidium cossonnii*
Carex nigra	*Pinguicula vulgaris*	search area of woodland	*Sphagnum spp.*
Carex panacea	*Vaccinium oxycoccos*	highlighted on map.	
Carex pulicaris		C-33,34,35,36,48,49	
Cirsium dissectum			
Crepis paludosa		C-19,30,48,49	
Drosera rotundifolia		C-33,34,35,36,48,49	
Erica tetralix			
Eupatorium cannabinum			
Filipendula ulmaria			
Galium palustre			
Galium uliginosum			
Geum rivale			
Hydrocotyle vulgaris			
Isolepis setacea			
Juncus articulatus			
Leontodon hispidus			
Lotus pedunculatus			
Lychnis flos-cuculi			
Narthecium ossifragum			
Orchidaceae			

Pedicularis spp. *Pinguicula vulgaris* *Potentilla erecta* *Potentilla palustris* *Ranunculus flammula* *Sanguisorba officinalis* *Serratula tinctoria* *Succisa pratensis* *Thalictrum flavum* *Vaccinium oxycoccos* *Valeriana dioica* *Valeriana officinalis* *Viola palustris*			

Factors

Factors	Rationale	Management required Y/N	Technical indicator of control	Monitoring
Grazing regime	Manage the purple moor grass, bracken and Juncus to keep dominating the bog vegetation	Y	Graze reserve mid-July to end October using hardly cattle as per CS Agreement	Bog monitoring
Scrub and bracken encroachment	If allowed to encroach, scrub, bramble and bracken from the edge of the bog would help dry the bog and cause a loss of floral diversity.	Y	Less than 5% coverage of scrub and dense bracken in the bog area	Bog monitoring
Water flow and soil moisture	To maintain high water levels across the bog	Y	Water is retained in the bog where possible	Indirect via bog monitoring (species composition)
INNS	The introduction of invasive non-native plant species such as *Crassula helmsii* or *Impatiens glandulifera* to the bog would be extremely deleterious as these species are difficult to eradicate and may	Y	Trust biosecurity procedures to be followed.	SRWT Biosecurity Procedures and reporting

	spread and displace native bog plants resulting in a loss of diversity.			

Evaluation of current condition.
At the time of writing the bog communities at Agden are in good ecological condition and 0.5ha of species rich bog/mire/fen habitat, including presence of key vascular plants and bryophytes, is present on the reserve.

Despite the small size of the reserve, this bog represents an important area of habitat, due to the richness of its plant communities and the reduction in similar bog habitat both regionally and nationally.

The most serious threat to the bog is drying out - either by changes in climate, or by the encroachment of scrub and bracken, or through erosion and deepening of the channel in the peat that brings water through it. Work to retain water within the bog itself is therefore a priority for this site.

The area of young and wet woodland surrounding the bog are also of some ecological interest, which will increase in time as the habitat matures.

Given the sensitivity of the bog habitats to compaction and erosion, the need to graze and the small size of the reserve, it is unsuitable for recreation and will remain closed to the general public. Access will however be granted for biological recording and guided walks when cattle are not present.

As access to the reserve is generally not possible an interpretative panel will be erected at the entrance to the reserve to provide information on the site to passers by.

Regular botanical monitoring will be carried out across the bog area to ensure that any changes in botanical diversity are detected.

Management objective: 0.5ha of bog/mire/fen habitat, including presence of key vascular plants and bryophytes.

4.1 Promote water retention in the bog area

4.2 Promote botanical diversity across the reserve

4.3 Prevent damage to the bog habitat on site

5 FIGURES

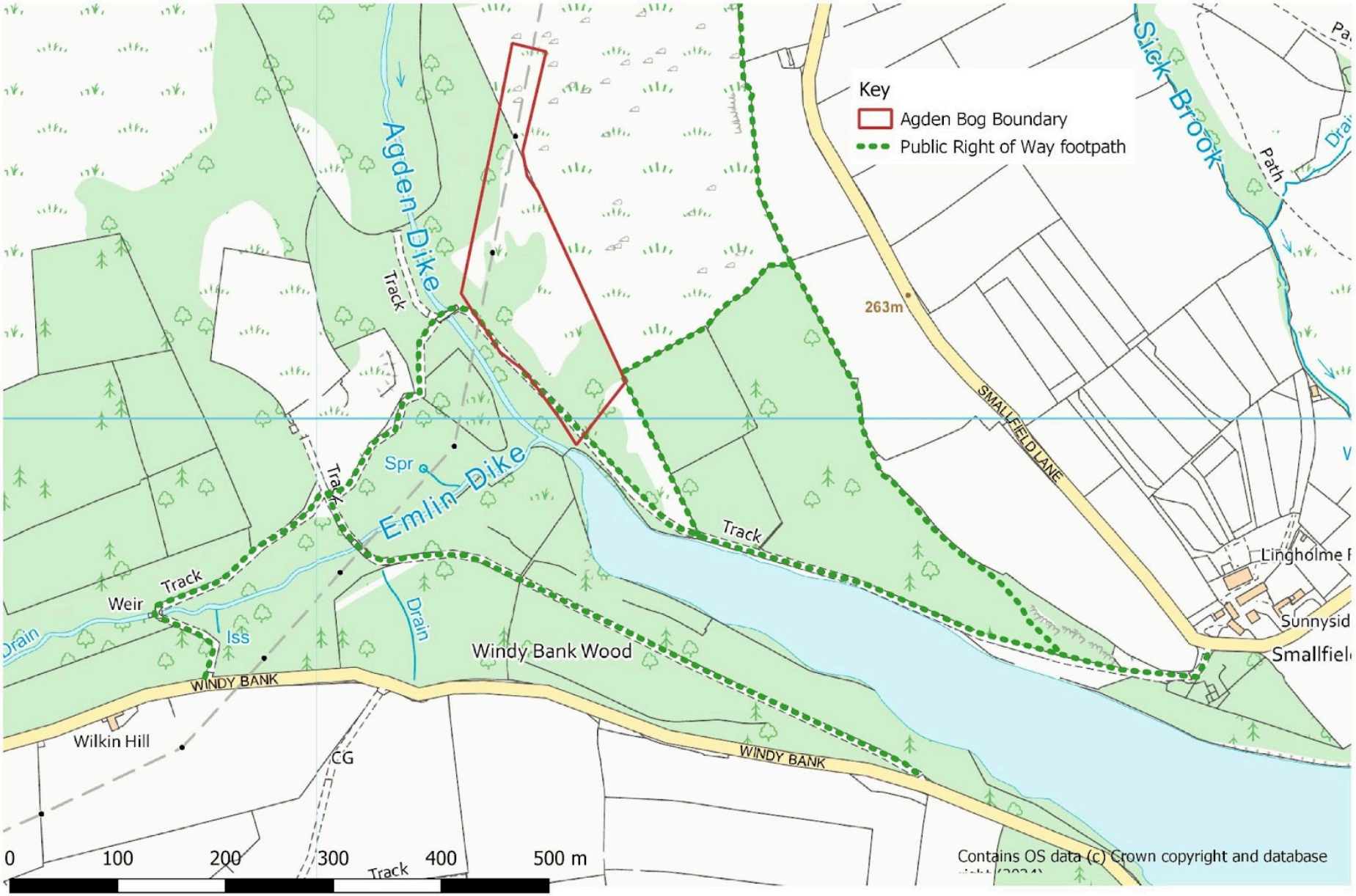
Sheffield & Rotherham Wildlife Trust

Agden Bog Nature Reserve

Figure 1: Location and boundaries

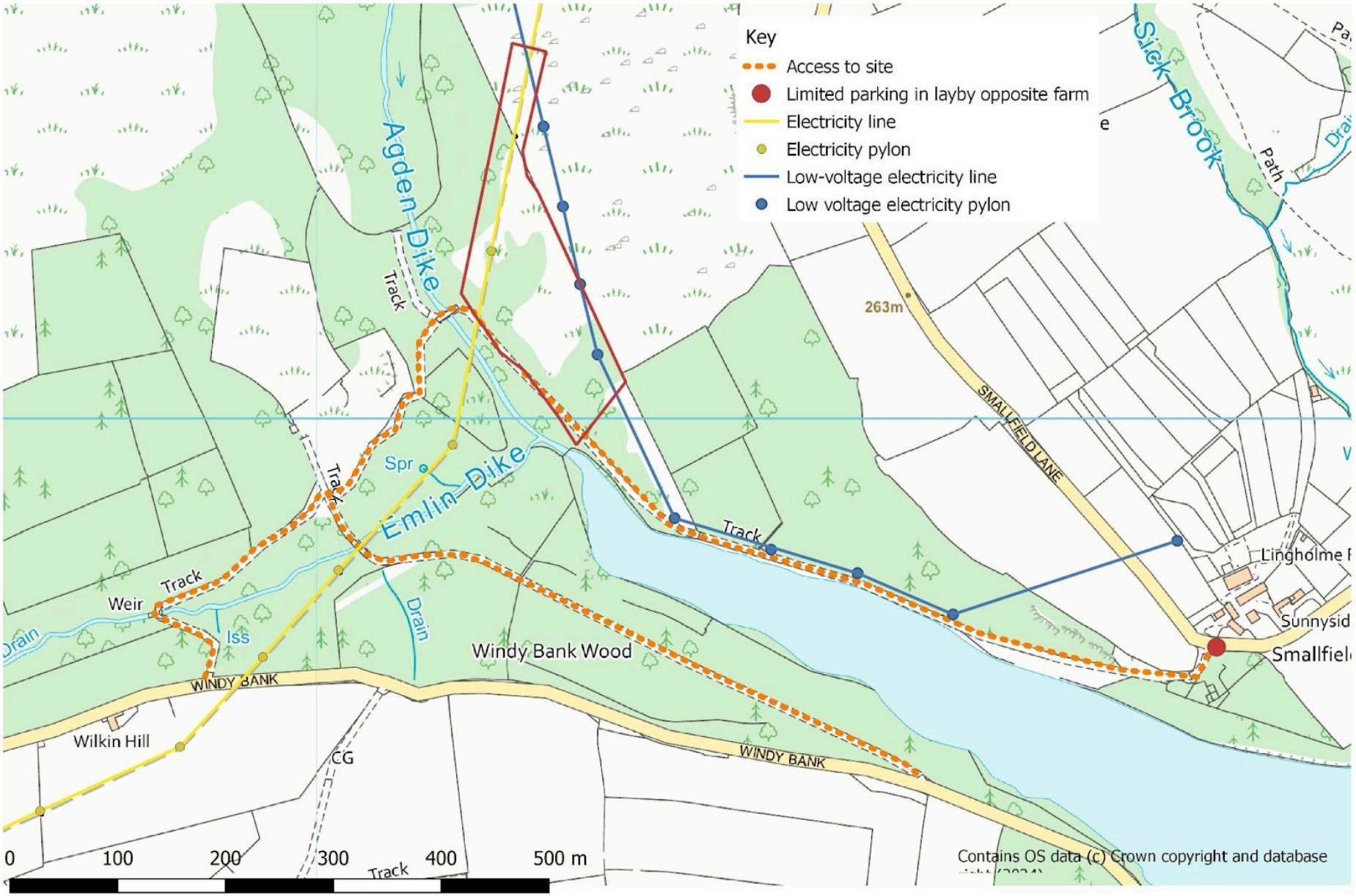
Agden Bog Nature Reserve

Figure 2: Public Rights of Way



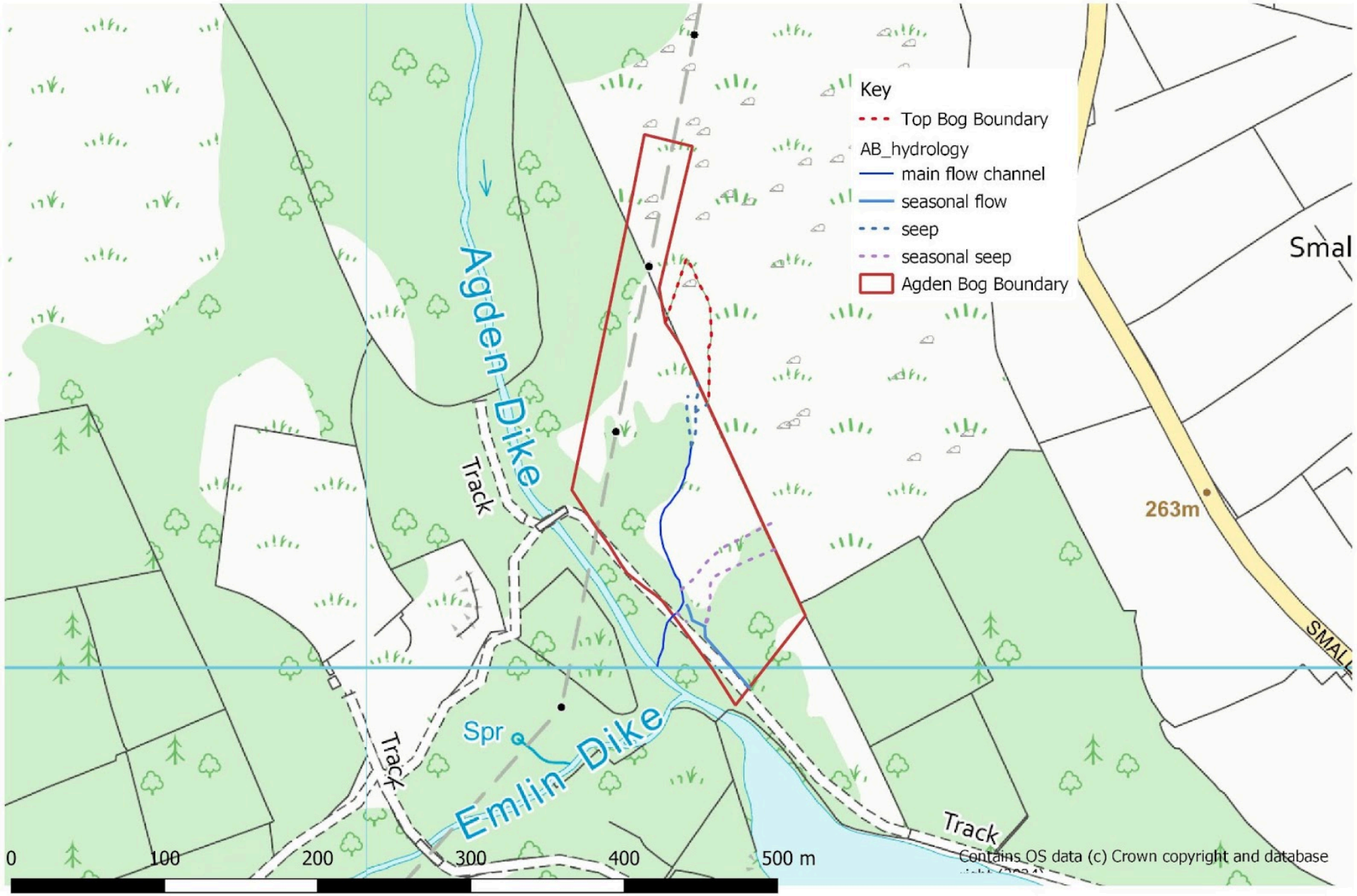
Agden Bog Nature Reserve

Figure 3: Services and vehicular access



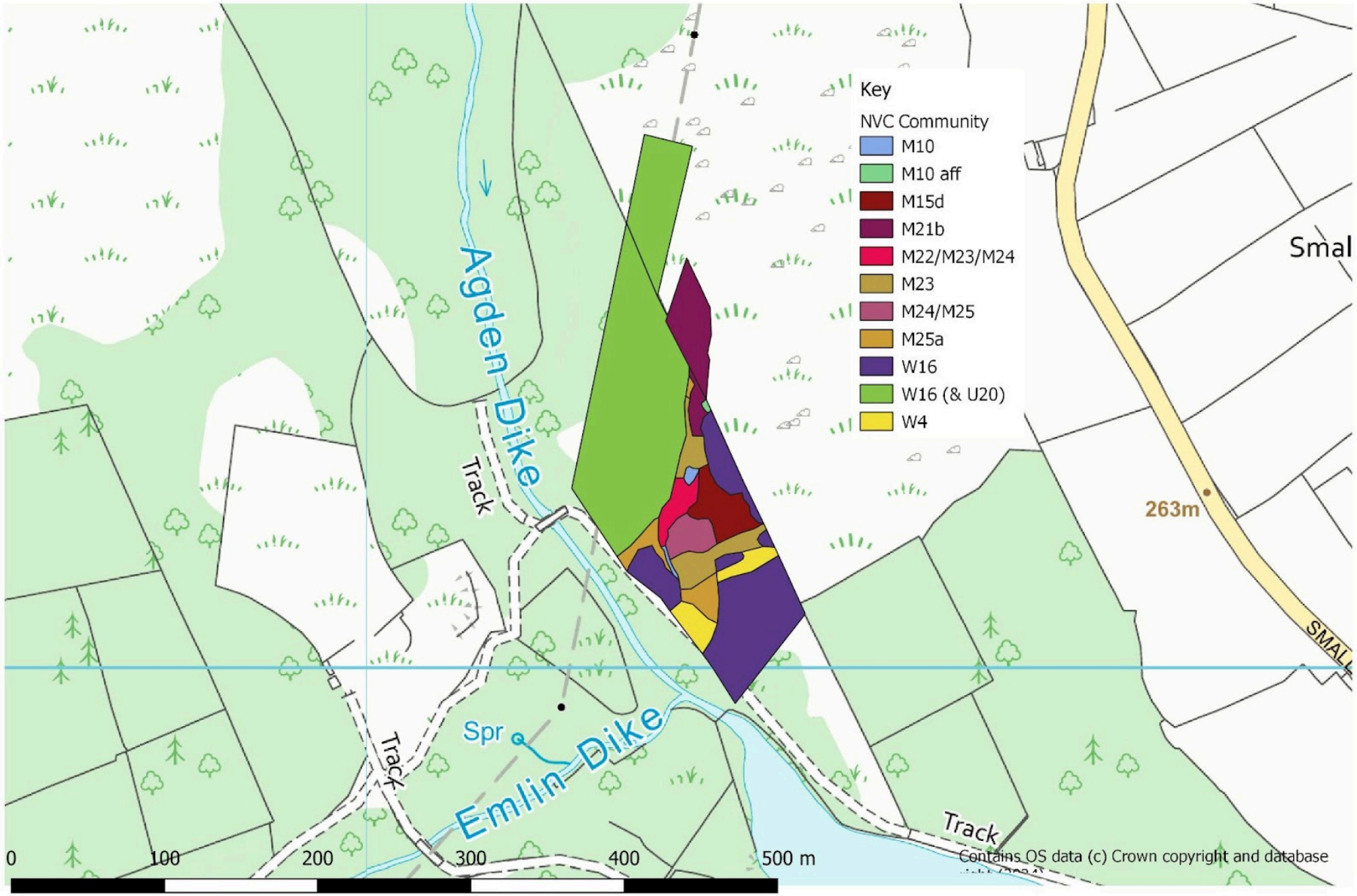
Agden Bog Nature Reserve

Figure 4: Hydrology



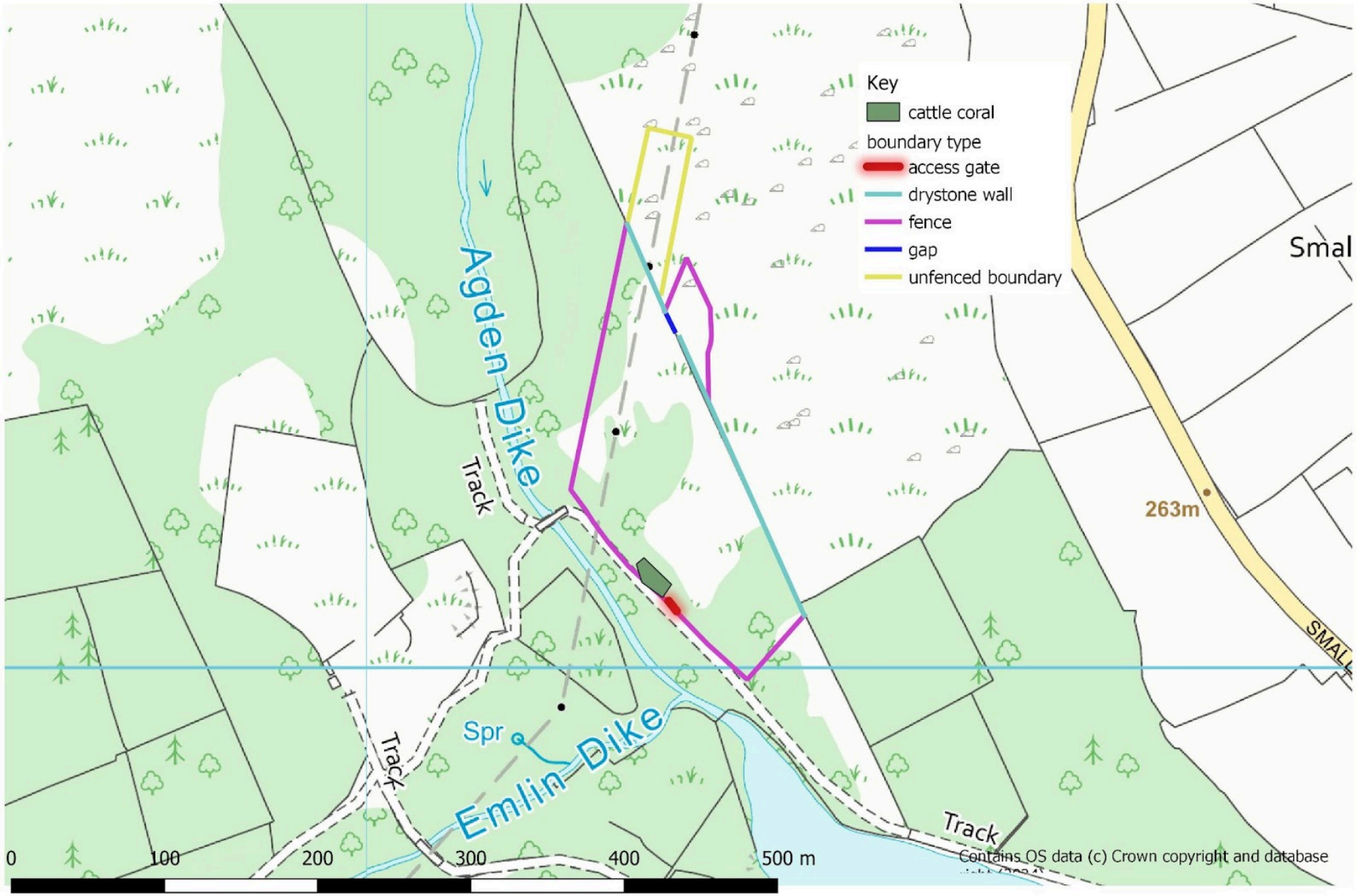
Agden Bog Nature Reserve

Figure 5: NVC Classification



Agden Bog Nature Reserve

Figure 6. Reserve Infrastructure



6 WORK PROGRAMME

Feature	Objective No.	Objective with prescriptions	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Bog/mire/fen habitat	**4.1**	**Promote water retention in the bog area**						
		Install 3 mini-dams in peat channel to retain water in the bog	X	X				X
		Create 2 small (3m x 3m) bog pools on the eastern side of the bog, in the tussocky grassland below the seasonal seeps				X		
		Remove encroaching scrub/trees on the bog area	X	X	X	X	X	X
		Remove encroaching bracken on the bog area	X	X	X	X	X	X
	4.2	**Promote botanical diversity across the reserve**						
		Lightly graze the reserve with cattle or	X	X	X	X	X	X

Feature	Objective No.	Objective with prescriptions	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
		ponies at a rate of 1LU/ha						
		Cut back vegetation along access track to allow cattle trailer to reach reserve	X	X	X	X	X	X
		Refresh/replace/repair grazing infrastructure (fencing, walls and corral)		X	X	X	X	X
		Allow wooded areas of the reserve to mature	X	X	X	X	X	X
	4.3	**Prevent damage to the bog habitat on site**						
		Exclude vehicles from the main body of the reserve (area within the fence line)	X	X	X	X	X	X
		Exclude the general public from the main body of the reserve (area within the fence line), except during SRWT events or monitoring, or (by prearrangement) to third parties for biological recording	X	X	X	X	X	X

Feature	Objective No.	Objective with prescriptions	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
		Place an interpretive panel at the entrance to the reserve, explaining its value for nature and reasons that it is closed to the public.				X		