



Ely Valley Riparian Corridor Survey



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1. Executive Summary

Jon Hudson Ecological Consultancy was commissioned by South East Wales Rivers Trust to undertake a river corridor survey of the River Ely SSSI from Miskin to St. Fagans (See Map 1). The purpose of the survey was to:

- Identify the locations of Monkshood *Aconitum napellus* populations, assess the habitat requirements for *Aconitum* and make recommendations for habitat improvements, at *specific* locations, which could increase its range and resilience within the area surveyed.
- Identify areas of INNS within the survey area.
- Identify the locations of, or opportunities for, enhancement of habitat for Otter, Water Vole, Green Sandpiper, Sand Martin, Kingfisher and other species of ecological importance.
- Provide advice on species and habitat management and enhancement opportunities.
- Carry out a National Vegetation Classification (NVC) Phase 2 survey.

Monkshood *Aconitum napellus* has traditionally been treated as an endemic (subsp. *napellus*) with a native range restricted to southwestern Britain (Preston et al., 2002). However, doubts over the validity of this taxon, combined with its late year of discovery in the wild, frequent cultivation and disjuncture with its native European range are more indicative of an ornamental introduction now widely naturalized in semi-natural habitats. (*Aconitum napellus* agg. in BSBI Online Plant Atlas 2020. <https://plantatlas2020.org/atlas/2cd4p9h.wws> [Accessed 04/10/2023]).

Despite revisiting and searching historic Monkshood locations (and searching any other areas of likely looking habitat) no Monkshood was seen. Most historic sites for the species now appear unsuitable. It should be noted that the survey was carried out in July when Monkshood begins to die back, and it is therefore possible that some populations may have been missed during the survey.

Evidence of Otters, Green Sandpiper, Sand Martin, and Kingfisher was found and much of the site is likely to provide suitable habitat for these species.

Invasive Non-Native Species INNS (Japanese Knotweed and Himalayan Balsam) are abundant throughout most of the survey area.

Numerous habitat and species management and enhancement opportunities were noted during the survey.

Some of the NVC communities identified during the survey correspond to UK Priority Habitats and Section 7 habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

2. Introduction and Background

Jon Hudson Ecological Consultancy was commissioned by South East Wales Rivers Trust (SEWRT) to carry out a Survey on the land for which access permission had been granted, within the Survey Area shown edged in green in Map 1. The survey extended from just South of Miskin (ST05947923) to just Southeast of St. Fagans (ST11697696) and covered approximately 12km of river including most of the Ely Valley SSSI, apart from some areas where access permission had not been granted. The survey was generally focused on the river corridor within the SSSI, but the NVC survey extended beyond the SSSI boundary to take in the whole of each land parcel adjoining the river. The survey consisted of five survey elements:

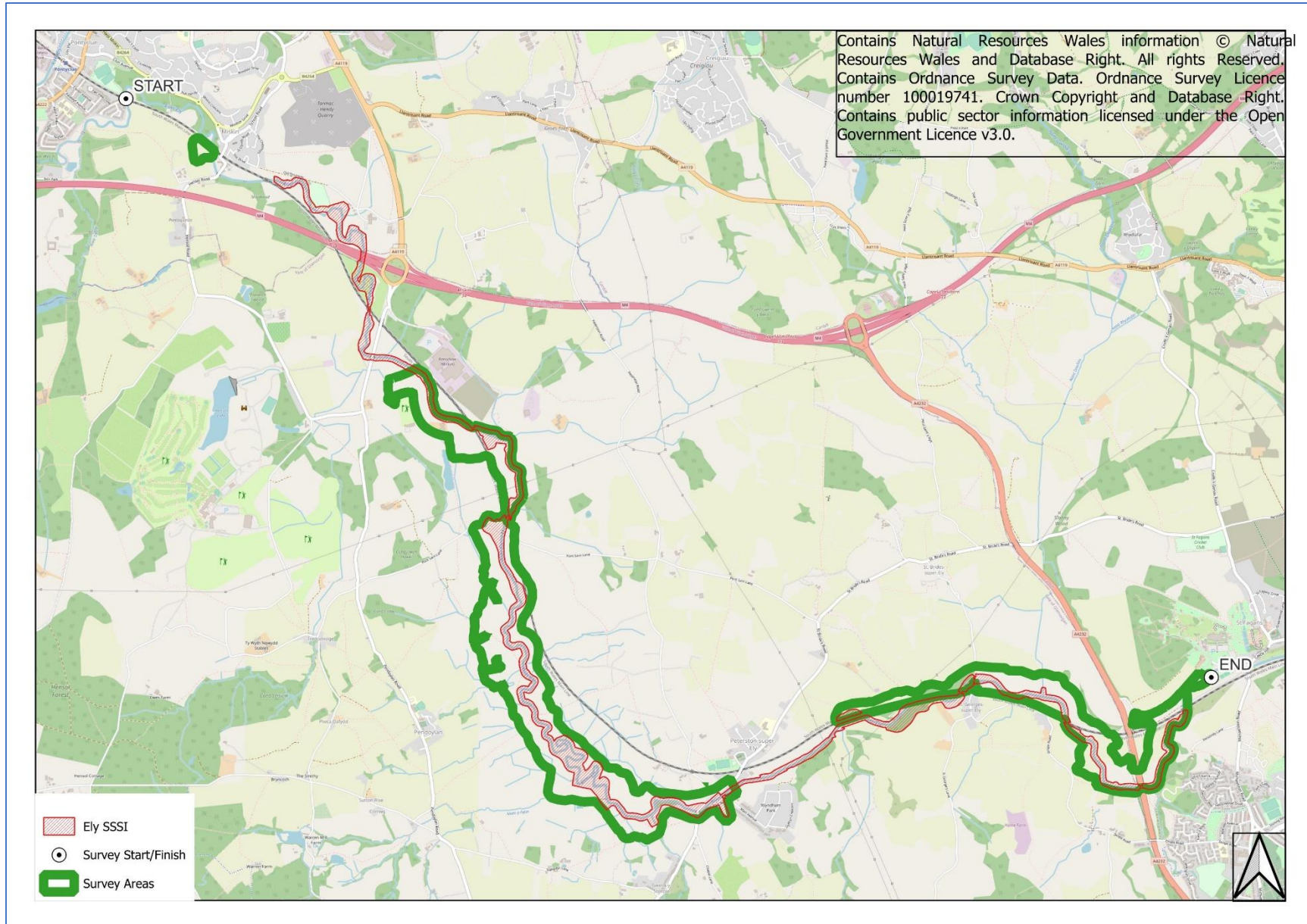
1. Identify the locations of Monkshood *Aconitum napellus* populations, assess the habitat requirements and make recommendations for habitat improvements, at specific locations.
2. Identify areas of INNS within the survey area.
3. Identify opportunities for enhancement of habitat for “Key Species” (Monkshood, Otter, Water Vole, Green Sandpiper, Sand Martin) and other species of ecological importance.
4. Provide general advice on species and habitat management and enhancement opportunities.
5. Carry out a National Vegetation Classification (NVC) survey using the standard NVC survey procedure as described by Rodwell (1991, 1991a, 1992 & 2006).

Access was mostly on the right-hand bank (when riverbanks are being described in this report it may refer to 'left bank' or 'right bank'. This is based on the convention that the observer is facing downstream. Some areas were not surveyed due to access permissions not being in place. Access was only possible to the right-hand bank over most of the length of the survey area (apart from between St. George’s and St. Fagans where access was to the left-hand bank only).

Generally, provided the other bank was visible, the other survey elements (identifying areas of INNS, identifying locations of, or opportunities for, habitat enhancements and identifying species and habitat management and enhancement opportunities) could be undertaken reasonably effectively. It is unlikely, however, that it would have been possible to spot any Monkshood populations from across the river.

Only on the accessible bank was it possible to carry out an NVC survey and accurately assign vegetation to NVC communities. Where access was not available, the vegetation was viewed through binoculars and, where possible, assigned to the most likely NVC community, based on those species and vegetation characteristics most visible. It should therefore be noted that those community placements made from a distance are a “best guess” and should be treated with caution.

Map 1 Survey Area



3. Methodology

3.1. Data search

SEWRT provided PDF maps of the locations of some INNS (Japanese Knotweed) and of historic Monkshood locations and Sand Martin colonies.

3.2. Survey protocols

The survey was undertaken by Jon Hudson MCIEEM over 2 days from 15/08/2023. The survey extended from just South of Miskin (ST05947923) to just Southeast of St. Fagans (ST11697696) and therefore covered most of the SSSI and some parts of the river upstream and downstream of the SSSI, apart from a few areas where access permission had not been granted.

The survey was broken down into five elements. Elements 1-3 were focused closely along the riverbanks, within the boundaries of the Ely Valley SSSI. Elements 4 & 5 had a wider focus and considered the whole of each land parcel adjacent to the river. Most survey elements were undertaken simultaneously during walkovers of sections of the river.

1. Identify the locations of Monkshood.

The species and its habitats are well known to the surveyor and the locations of historic populations were provided by SEWRT. All such areas were thoroughly searched.

2. Identify areas of INNS within the survey area.

The two main INNS species (Japanese Knotweed and Himalayan Balsam) are well-known, obvious easily seen species. Other INNS such as *Cotoneaster* spp., and *Crococsmia (Montbretia)* were also looked for.

3. Identify opportunities for enhancement of habitat for “Key Species” (Otter, Water Vole, Green Sandpiper, Sand Martin) and other species of ecological importance.

Any Issues affecting the key survey species, or their habitats were noted, and possible enhancements were identified whilst undertaking the survey.

Field signs of the target species and other protected/priority species were looked for and the habitats were assessed for the likely potential presence of protected species. Measures taken included the identification of field signs of otters *Lutra lutra*, and water vole (*Arvicola amphibius*) using the methods in Liles(2003), Sergeant & Morris (2003), Chanin (2003), CIEEM (2013a), Dean (2021). Details of the methods used are set out below.

Otter: Detailed searches were made for signs of otters – spraints, footprints, paths, couches, food remains (fish and amphibian carcasses) as well as for resting and breeding sites – habitats suitable for breeding (based on Liles, 2003).

Water Vole: Feeding and dunging signs and runs/holes were searched for (Dean 2021).

Birds: Bird species Green Sandpiper, Sand Martin and Kingfisher and other Birds of Conservation Concern (BOCC) seen and/or heard during the survey were recorded.

4. Provide general advice on species and habitat management and enhancement opportunities.

Whilst undertaking the survey, general habitat management and enhancement opportunities were identified.

5. Phase 2 NVC Survey.

The NVC survey followed standard NVC survey procedures as described by Rodwell (1991, 1992, 1995 & 2000). As per the guidance in the NVC handbook (Rodwell, 2006), there are “*acceptable economies in NVC survey*”. It is possible to save time and survey effort within the general framework of NVC survey methodology by using one or all of these economies.

The first economy is whether to collect any NVC samples (quadrats) at all. The NVC Handbook states that “*if vegetation types can be reliably identified without quadrats, then there may be little justification for such recording. Where the purpose of NVC survey is to identify vegetation communities only, experienced surveyors can make such identifications without recording any quadrat data at all*”. The second economy states that, if samples are essential, then it may be sufficient to record qualitative (presence/absence) data for each sample, rather than Domin cover/abundance records. The third economy is to omit recording species that are difficult to identify, e.g., some bryophytes and lichens - often cryptogams are not essential for identifying vegetation types.

The surveyor has 20 years of experience working with the NVC and undertaking Phase 2 surveys. As the purpose of the present survey is simply to identify and classify the vegetation communities present within the survey area, it was agreed with the client that, in this case, it would be acceptable to apply all three economies and that quadrat data collection needs only be used if required, where community identification was problematic. The survey was therefore carried out in the following manner: In the field, homogenous stands of vegetation were identified and delimited. NVC keys, floristic tables and descriptive texts (Rodwell, 1991, 1992, 1995 & 2000) were utilised to assign these homogenous stands of vegetation to the relevant NVC vegetation communities in the field which were then mapped onto aerial photographs.

In a limited number of cases, further validation was achieved by the collection of species lists and cover values from areas of homogeneous vegetation where this vegetation could not readily be assigned to one NVC community or sub-community. These species lists were analysed against the NVC keys, floristic tables and descriptive texts to ensure that the surveyors had not overlooked any possible community types and to assist with analysis.

In the majority of cases, stands of vegetation were assigned to sub-community level. However, in some instances due to the nature of the vegetation (or its accessibility), it was only possible or necessary to assign to community level (for example it was clear that all ancient semi-natural woodland types present (not plantations) would be Welsh habitats of principal importance / BAP priority habitats regardless of NVC sub-community type). In general, assignation to sub-community level was not attempted for MG6 (Semi-improved grassland) (which was generally species-poor) and MG7 (Improved grassland) (neither of which would fit any Welsh habitats of principal importance / BAP priority habitat type). Scrub communities were not mapped to sub-community level as these were often difficult to sample and generally species-poor stands of Bramble or bracken. Vegetation

communities that were not a close match to any published NVC community were found to be present in the survey area. Where vegetation communities could not be comfortably placed within the NVC framework, they are described and, where possible, assigned to the nearest fit or to the community they appear to be derived from in the cases where they appear to be modified variants of established communities. These communities are often species-poor and/or dominated by just a few species and lack certain key indicator species that would permit referral to an established NVC community.

It was only possible to carry out an NVC survey and assign vegetation to NVC communities on the side of the river where access permissions were in place. Where access was available, the vegetation was generally mapped across the whole of the land parcel adjoining the river rather than just within the SSSI boundary. Where the opposite bank was visible, the vegetation was viewed through binoculars and, where possible, assigned to the most likely NVC community based on those species and vegetation characteristics most visible. The vegetation communities viewed from across the river were not generally mapped as their extent and distribution could not be assessed with any degree of accuracy. Instead, the vegetation was marked with a target note to indicate the dominant vegetation types that were visible.

Where access permissions were not in place on either bank it was possible to view some of the vegetation from public Rights of Way (PROW's) or roads. Again, in such cases, the vegetation was viewed through binoculars and, where possible, assigned to the most likely NVC community, based on those species and vegetation characteristics most visible. It should therefore be noted that those community placements made from a distance are a "best guess" and should be treated with caution.

3.3. Mapping protocol

Survey elements 1-4 were mapped as "Target Notes" and the NVC communities (element 5) were mapped as polygons and target notes in the field onto Qfield, a digital data capture app linked to QGIS. Further "tidying" of data and survey maps was carried out in the office using QGIS software.

Digitization of NVC vegetation polygons and survey target notes was carried out using QGIS software. The polygons were digitized using overlaid aerial imagery to help delineate stands of different vegetation types. All the Target Notes and vegetation polygons are colour-coded to create the finished maps provided in this report. Each map is provided with a legend to assist interpretation.

4. Results

4.1. Monkshood locations

Monkshood has traditionally been treated as an endemic (subsp. *napellus*) with a native range restricted to southwestern Britain (Preston et al., 2002).

The Countryside Council for Wales CCW (and NRW) SSSI documents treat the Monkshood population in the Ely Valley SSSI as native.

(see https://naturalresources.wales/media/656713/SSSI_0991_SMS_EN001bafc.pdf and https://naturalresources.wales/media/656688/SSSI_0991_Citation_EN001bead.pdf). However, doubts over the validity of this taxon, combined with its late year of discovery in the wild, frequent cultivation and disjuncture with its native European range are more indicative of an ornamental introduction now widely naturalized in semi-natural habitats. (*Aconitum napellus* agg. in BSBI Online Plant Atlas 2020. <https://plantatlas2020.org/atlas/2cd4p9h.www> [Accessed 04/10/2023]). Monkshood is now considered to be a “neophyte” across its entire range in the UK. Neophytes are plants grown for ornament in gardens and include species first introduced to the UK after c.1550.

Despite revisiting and searching historic Monkshood locations (and searching any other areas of likely looking habitat) no Monkshood was seen during the survey. Monkshood is thought to require neutral to alkaline soils that are damp. It can persist in full sun but appears to require partial shade. It does not appear to be able to survive in dense shade or in the presence of strongly competitive species. These requirements are met in some places within the survey area but often the historic locations have either become rather heavily shaded or infested with highly competitive species such as Bramble, Bindweed, Nettle, Japanese Knotweed and Himalayan Balsam. Therefore, most historic sites for the species now appear unsuitable. (See Map 2 and Table 1). It should be noted that the survey was carried out when Monkshood begins to die back, and it is therefore possible that some plants may have been missed during the survey.

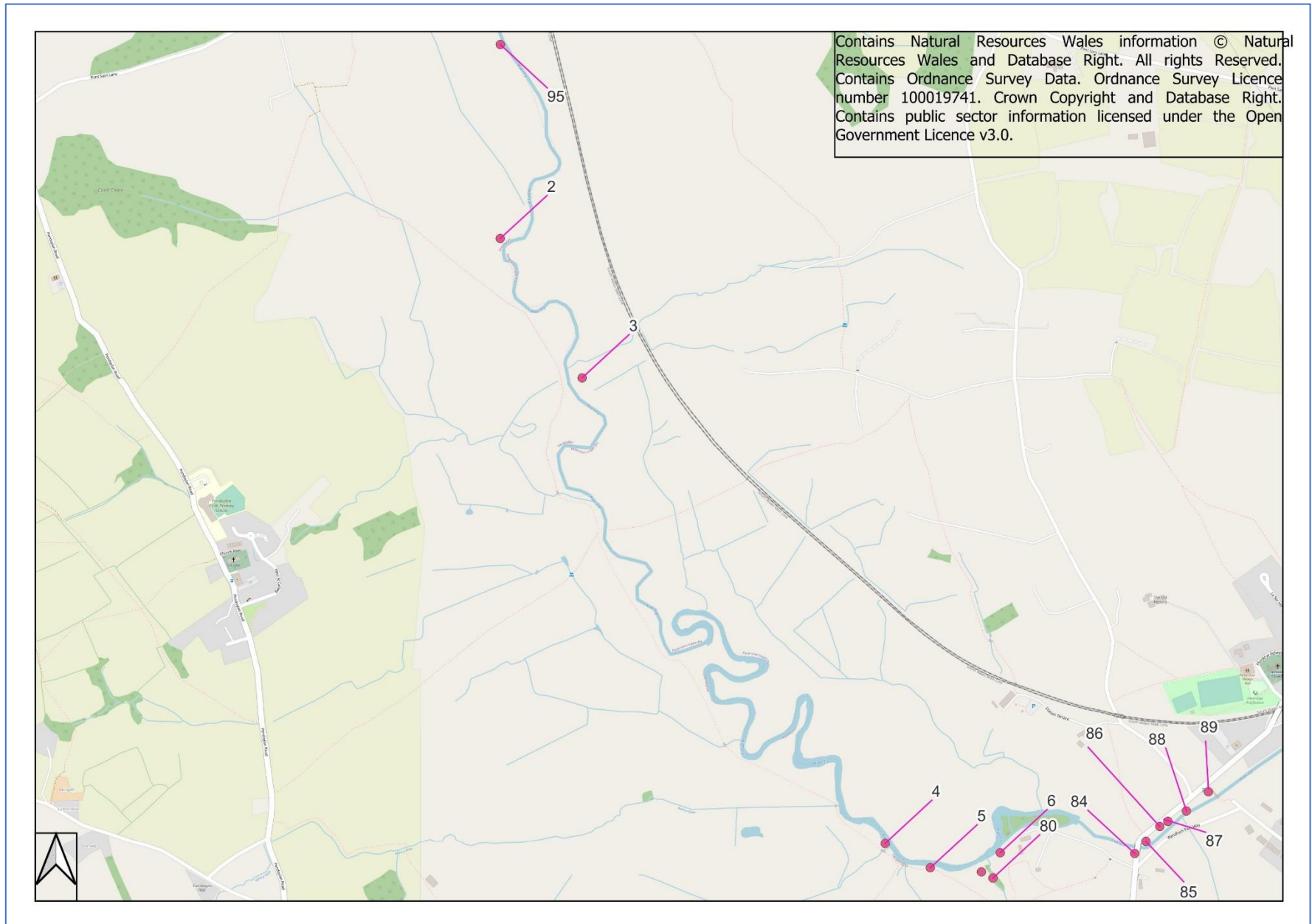
The species is known to be present in at least 2 locations. Andy Schofield (pers com) noted that in the second week of June 2023, he was, however, unable to find a known plant at ST0710876331 and that at another known location (TN4 at ST0740476020) “had real difficulty finding the plant” and that all the lower leaves had died back. Following the lack of success during the survey, Julian Woodman, Specialist advisor (vascular plants) at Natural Resources Wales (NRW) was contacted for further information regarding this species. Apparently, the species has been recorded from eight locations since 2020 but these records are for 1km squares, and it is therefore not possible to relocate the populations they refer to with any certainty.

Table 1 below gives the known historic locations for this species as provided by SEWRT prior to the survey and the observations made at each location.

Table 1 Monkshood records/locations

TN No.	Comments	Date	10figGR
2	Historic monkshood locations beside the river and in the ditch running northwest to Bryn Farm. Habitat is now largely unsuitable, mostly infested with Himalayan balsam, particularly the small ditch. Area searched, not found during the survey	15/08/2023	ST0658377376
3	Historic monkshood location. Not refound during the survey	15/08/2023	ST0675777068
4	Historic monkshood location. Not refound during the survey	15/08/2023	ST0740376038
5	Historic monkshood location. Not refound during the survey	15/08/2023	ST0750175983
6	Historic monkshood location. Not refound during the survey	15/08/2023	ST0765576013
79	Historic monkshood record. Area now overrun with Rubus and Himalayan balsam on field edge but woodland area beside river appears suitable with <i>Quercus</i> , <i>Ilex</i> , <i>Salix</i> , <i>Mercurialis</i> , <i>Aegopodium</i> . Area searched, not found during the survey	15/08/2023	ST0761375972
80	Historic monkshood location. Not refound during the survey	15/08/2023	ST0763875958
84	Old monkshood record, area heavily shaded with <i>Prunus spinosa</i> and <i>Acer Pseudoplatanus</i> . Area searched; Not refound during the survey	15/08/2023	ST0795076006
85	Historic Monkshood location. Dense <i>Rubus</i> and knotweed, Area searched, not found during the survey	15/08/2023	ST0797576032
86	Historic Monkshood location. Dense <i>Rubus</i> and <i>Calystegia</i> , Area searched, not found during the survey	15/08/2023	ST0800676064
87	Historic Monkshood location. Dense <i>Urtica</i> , <i>Eupatorium</i> , <i>Calystegia</i> , <i>Rubus</i> and knotweed. Area searched, not found during the survey	15/08/2023	ST0802476075
88	Historic Monkshood location. Dense waist-high <i>Rubus</i> , <i>Urtica</i> , <i>Calystegia</i> . Area searched, not found during the survey	15/08/2023	ST0806576097
89	Historic Monkshood location just up from footbridge, now lost under dense <i>Salix</i> growth. Area searched, not refound during the survey	15/08/2023	ST0811476138
95	Historic monkshood location. The area has recently been cleared of much scrub and the large stand of Japanese knotweed has been sprayed. Area searched, not refound during the survey	16/08/2023	ST0659177800

Map 2 Monkshood locations



4.1.1. Other Rare plants

The neophyte status of Monkshood reduces its conservation importance. Alternate-leaved Golden-saxifrage *Chrysosplenium alternifolium* and Meadow Saxifrage *Saxifraga granulata* (both Least Concern on the Wales Vascular plant Red List (2008) are perhaps now a higher priority from an SSSI perspective. Unfortunately, the locations of both of these species were in areas where access permissions were not in place and therefore, neither was seen during the survey. *Meadow Saxifrage* can be found in moist but well-drained, base-rich and neutral grassland (unimproved pastures and hay meadows). More rarely, it occurs on shaded riverbanks and in damp woodland. Alternate-leaved Golden-saxifrage is typically found on waterlogged soils in flushes and springs in woodlands and in wet woodland by stream sides. NRW should be contacted for further information and advice regarding these species.

4.2. INNS within the survey area.

INNS are present throughout much of the survey area. The main INNS are Japanese knotweed and Himalayan balsam. Tables 2 & 3 below list the main stands of each species. (See Maps 3, 4 & 5). It should, however, be noted that in between these larger stands there is often a scattering of Himalayan balsam and some Japanese Knotweed. Butterfly Bush *Buddleia davidii* was seen at a single location (TN90) and Montbretia *Crocsmia × crocosmiiflora* was seen at TN32. No other INNS were noted.

Table 2 Locations of INNS recorded during the survey.

TN No.	Comments	Date	10figGR
9	Himalayan balsam	15/08/2023	ST0670678342
12	Japanese knotweed	15/08/2023	ST0670378438
14	Japanese knotweed	15/08/2023	ST0666078555
19	Himalayan balsam	15/08/2023	ST0654478728
20	Japanese knotweed	15/08/2023	ST0647078758
24	Himalayan balsam	15/08/2023	ST0612578870
26	Japanese knotweed	15/08/2023	ST0609678950
28	Japanese knotweed	15/08/2023	ST0609179117
29	Japanese knotweed	15/08/2023	ST0605279138
30	Himalayan balsam	15/08/2023	ST0603979205
32	Crocsmia (Montbretia)	15/08/2023	ST0593079246
33	Japanese knotweed	15/08/2023	ST0619578854
34	Himalayan balsam	15/08/2023	ST0622478852
35	Japanese knotweed on both banks	15/08/2023	ST0629078854
46	Himalayan balsam	15/08/2023	ST1085876327
47	Japanese knotweed	15/08/2023	ST1084576333
52	Himalayan balsam	15/08/2023	ST1125776617
53	Himalayan balsam	15/08/2023	ST1153076850
55	Japanese knotweed	15/08/2023	ST1168376913
56	Japanese knotweed	15/08/2023	ST0809776081
58	Himalayan balsam	15/08/2023	ST0750976004
59	Japanese knotweed	15/08/2023	ST0749776001
60	Himalayan balsam	15/08/2023	ST0750775972

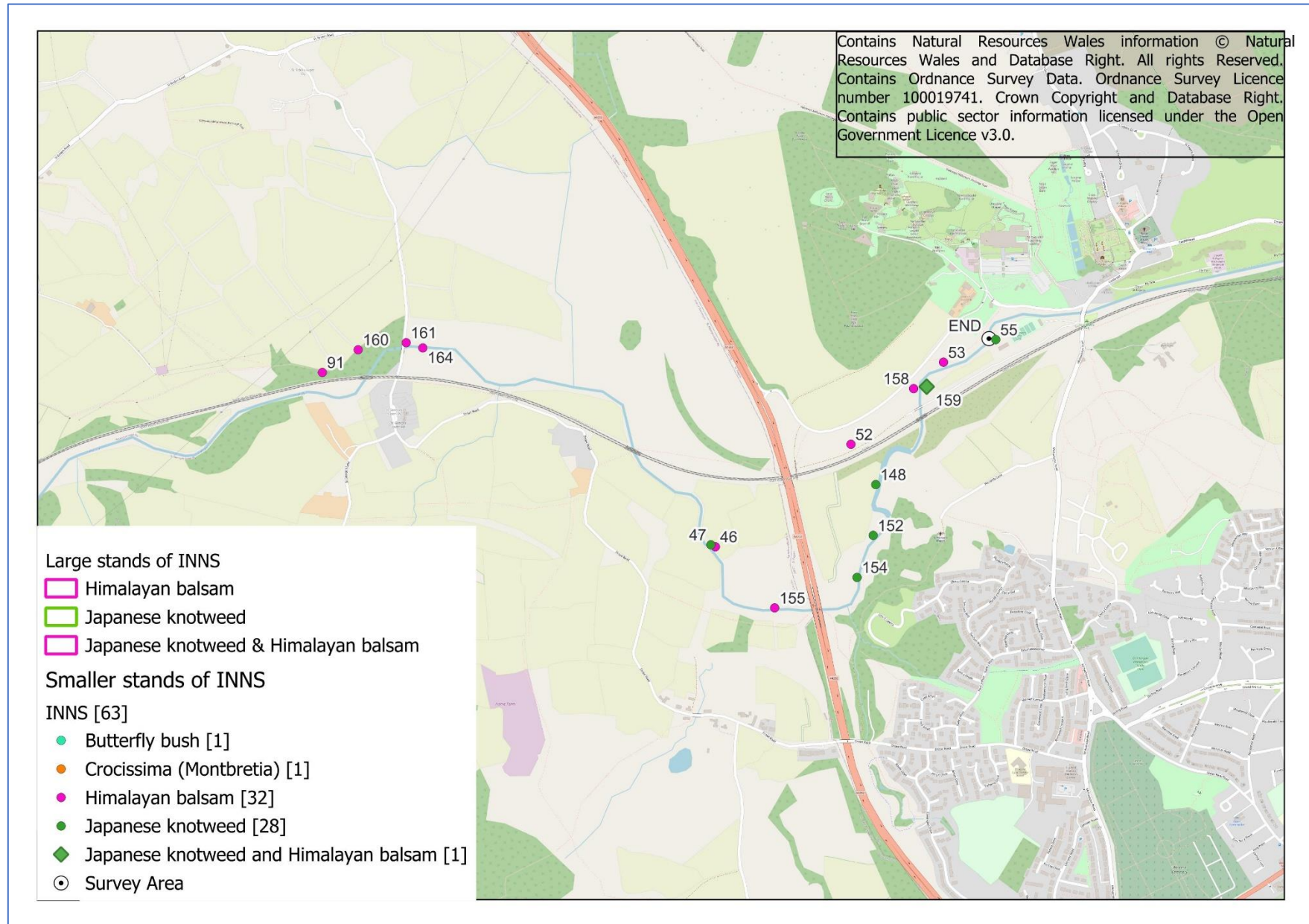
TN No.	Comments	Date	10figGR
62	Himalayan balsam	15/08/2023	ST0738276065
68	Japanese knotweed	15/08/2023	ST0722876205
70	Himalayan balsam	15/08/2023	ST0720876265
71	Narrow neck of land, infested with Himalayan balsam	15/08/2023	ST0722376311
72	Japanese knotweed	15/08/2023	ST0718976275
73	Himalayan balsam	15/08/2023	ST0717176265
74	Dense fringe of Rubus and Himalayan balsam	15/08/2023	ST0689676217
75	Himalayan balsam lined ditch	15/08/2023	ST0703476258
77	Japanese knotweed	15/08/2023	ST0729976124
81	Himalayan balsam	15/08/2023	ST0766475899
82	Himalayan balsam	15/08/2023	ST0774975964
90	Butterfly bush	15/08/2023	ST0814276087
91	Himalayan balsam	16/08/2023	ST0972576852
92	Japanese knotweed	16/08/2023	ST0659878036
93	Japanese knotweed	16/08/2023	ST0653578044
97	Himalayan balsam	16/08/2023	ST0664277699
99	Himalayan balsam	16/08/2023	ST0672377654
109	Himalayan balsam	16/08/2023	ST0663777397
110	Himalayan balsam	16/08/2023	ST0660277285
113	Japanese knotweed	16/08/2023	ST0673777013
115	Himalayan balsam	16/08/2023	ST0676676926
116	Himalayan balsam	16/08/2023	ST0671076828
119	Japanese knotweed	16/08/2023	ST0675776804
123	Japanese knotweed (otter footprints nearby)	16/08/2023	ST0679476730
129	Japanese knotweed	16/08/2023	ST0690376533
130	Japanese knotweed	16/08/2023	ST0699476486
131	Himalayan balsam	16/08/2023	ST0704476509
134	Himalayan balsam	16/08/2023	ST0705576430
136	Japanese knotweed	16/08/2023	ST0701776394
146	Japanese knotweed	16/08/2023	ST0456680800
147	Japanese knotweed	16/08/2023	ST0458080840
148	Japanese knotweed	16/08/2023	ST1132776499
152	Japanese knotweed	16/08/2023	ST1131776352
154	Japanese knotweed	16/08/2023	ST1126876231
155	Himalayan balsam	16/08/2023	ST1102776147
158	Himalayan balsam	16/08/2023	ST1144276775
159	Japanese knotweed and Himalayan balsam	16/08/2023	ST1148076780
160	Himalayan balsam	16/08/2023	ST0983076916
161	Himalayan balsam	16/08/2023	ST0997076934
164	Himalayan balsam	16/08/2023	ST1001876918

Some very large stands of INNS were mapped as polygons rather than points. These are shown in Table 3 below. See also Maps 3, 4 & 5.

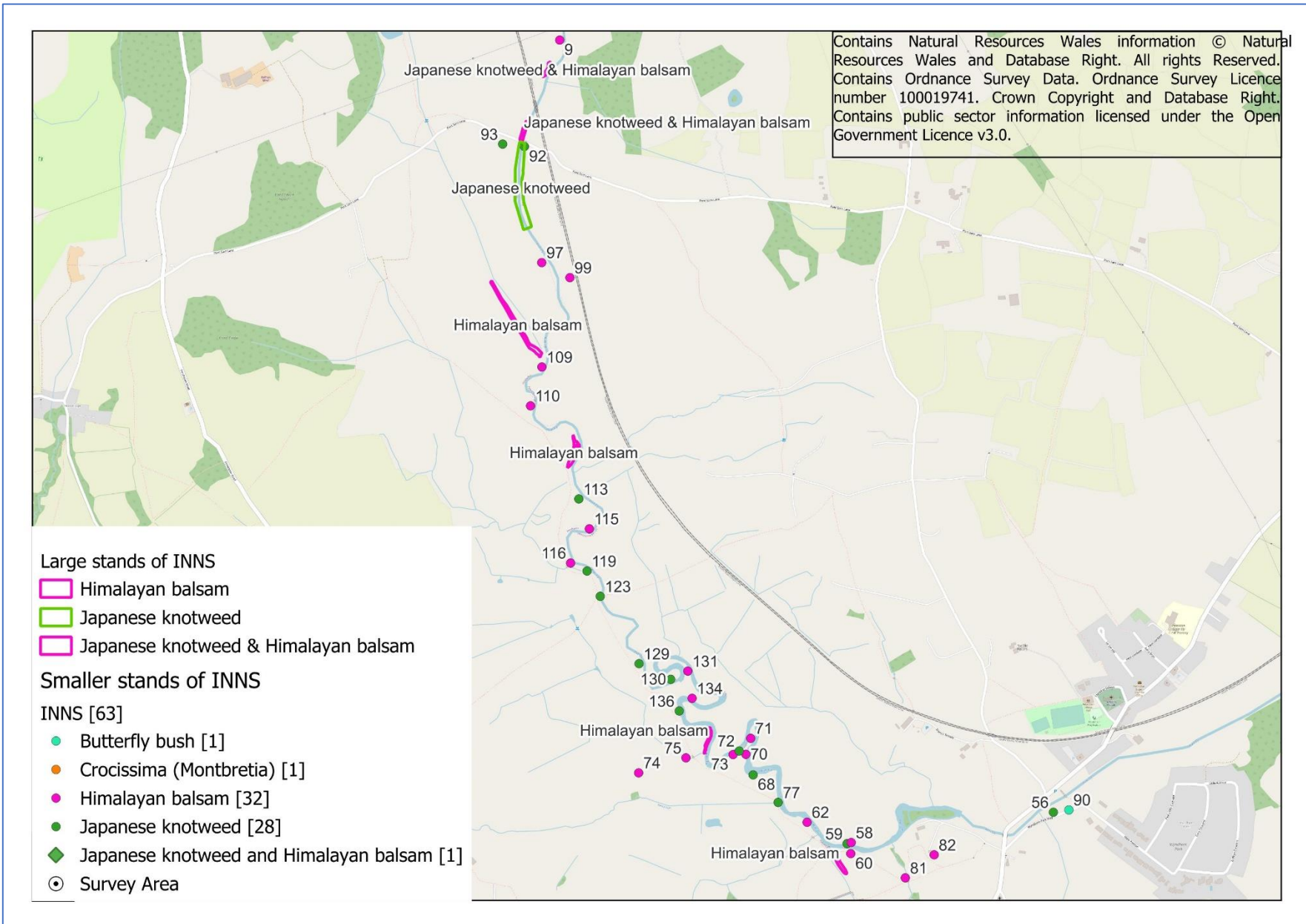
Table 3 Locations of larger stands of INNS

Stand no	Comments	10figGR
1	Himalayan balsam	ST0747375949
2	Japanese knotweed & Himalayan balsam	ST0659778080
3	Japanese knotweed & Himalayan balsam	ST0666878256
4	Himalayan balsam	ST0601179191
5	Japanese knotweed	ST0658677916
6	Himalayan balsam	ST0656977520
7	Himalayan balsam	ST0672577147
8	Himalayan balsam	ST0710076310

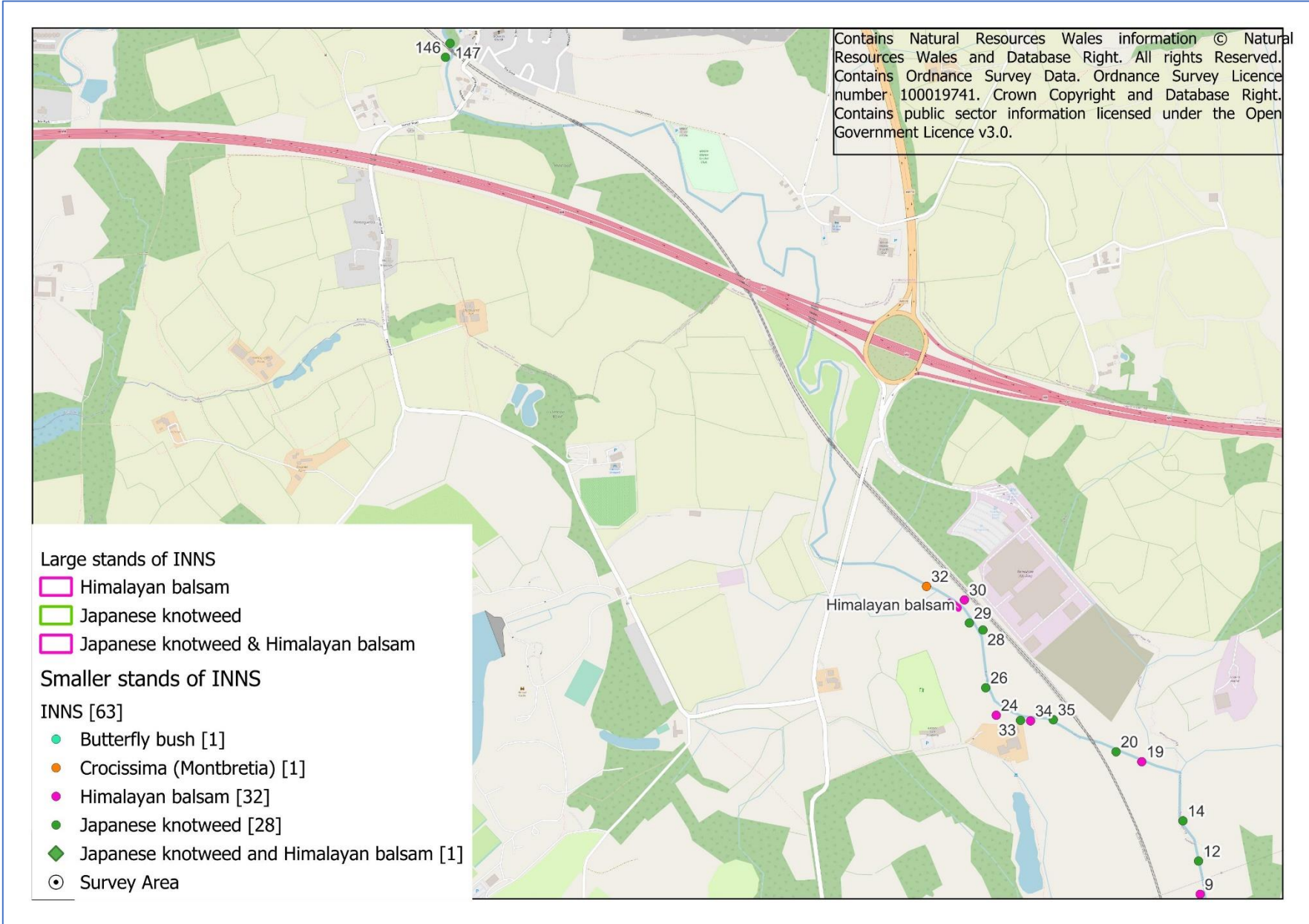
Map 3 INNS locations (south)



Map 4 INNS locations (mid)



Map 5 INNS locations (north)



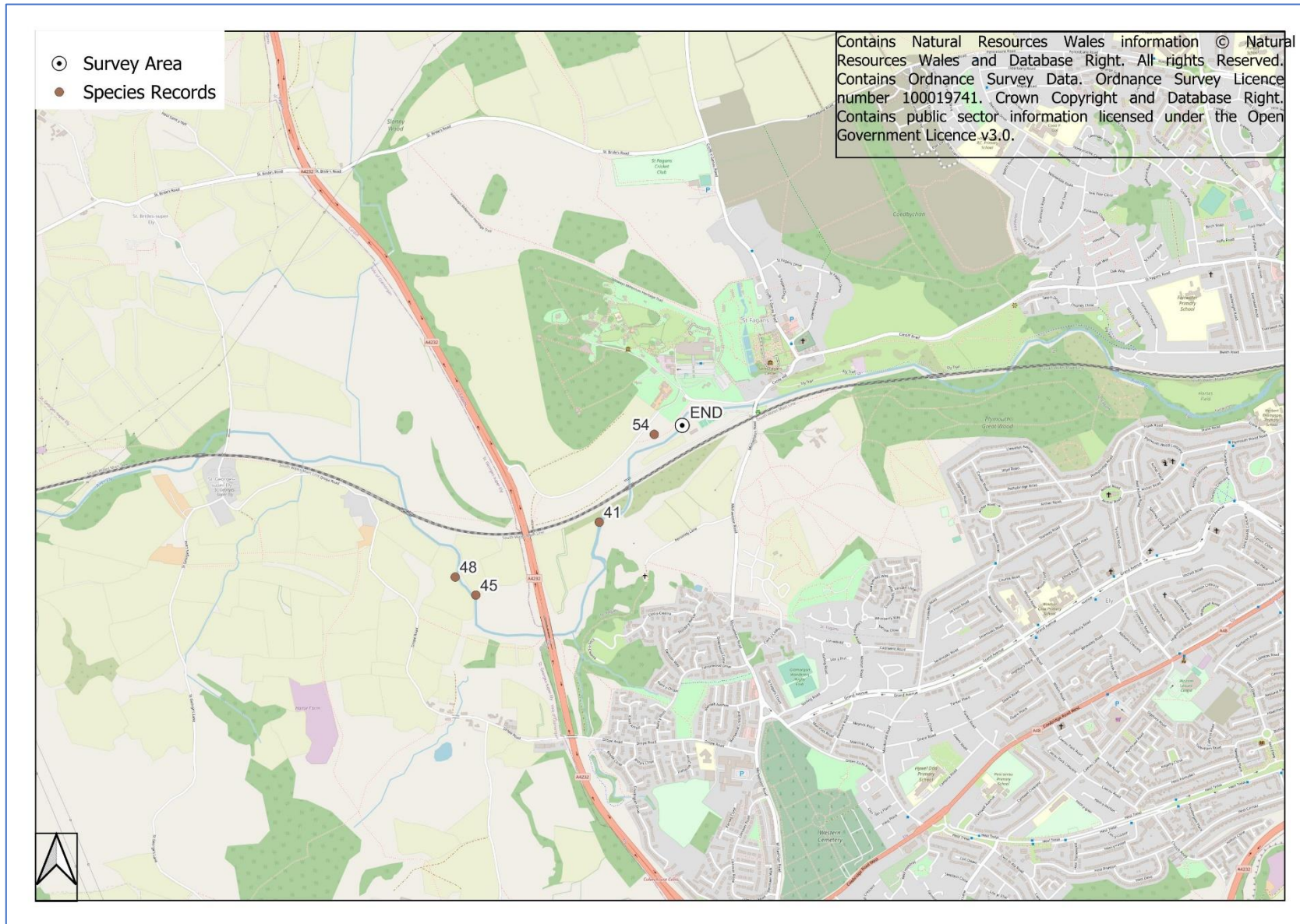
4.3. Opportunities for enhancement of habitat for “Key Species”

No rare or scarce plants were seen during the survey although a young Black poplar *Populus Nigra* was seen across the river, and this should be checked to see if it is the native *ssp. betulifolia*. Several birds of Conservation concern were seen or heard during the survey including a single Green Sandpiper (BoCC amber listed) that was seen on each survey day (it is not clear if this was the same bird). Song Thrush, Wren, Dipper, Dunnock, Willow Warbler, Mallard, Grey Wagtail and Stock Dove (all BoCC amber listed) were also seen along with a Spotted Flycatcher (BoCC red listed). Otters were not seen but there were limited field signs (a possible path and footprints, particularly below Pont Sarn Lane bridge and around the large meanders). No spraints, definite slides or day beds were seen despite much searching. No feeding signs of Water Voles were seen but some of the silty river edges North of the large meanders were crossed with many small footprints, at least some of which appeared to be Water Vole prints. A single colony of Sand Martins was seen at TN48. In other areas where Sand Martin Colonies were historically recorded none were seen, suggesting the species has declined here. A kingfisher was seen at TN140, near suitable (silt river cliff) breeding habitat. General species records are provided in Table 4 (See Maps 6 & 7) and any related issues, actions & advice for species enhancements are given in Table 5. (See Maps 8, 9 & 10).

Table 4 Species records

TN No.	Comments	Date	10figGR
8	Green Sandpiper in marshy grassland	15/08/2023	ST0665978373
21	Dipper nest under the old bridge	15/08/2023	ST0645978767
31	Possible otter path	15/08/2023	ST0595879213
38	Limestone boulders, <i>Collema</i> spp. plus other aquatic lichens	15/08/2023	ST0637878792
40	Stock dove	15/08/2023	ST0671878362
41	Soapwort <i>Saponaria officinalis</i>	15/08/2023	ST1134676559
45	Norway maple	15/08/2023	ST1087876294
48	Sand Martin colony has approximately 30 holes	15/08/2023	ST1080276363
54	Juvenile Conehead cricket <i>Conocephalus</i> spp.	15/08/2023	ST1155876884
78	Possible Black poplar <i>Populus nigra</i> , viewed from across the river, should be checked for <i>ssp. betulifolia</i> . Young tree that has not developed branch or bark characters sufficiently to identify from a distance	16/08/2023	ST0740676061
100	Green Sandpiper in marshy grassland	16/08/2023	ST0669677557
103	Stock Dove	16/08/2023	ST0670277522
104	Otter footprints	15/08/2023	ST0668277511
108	Juvenile buzzard	15/08/2023	ST0666477454
123	Otter footprints (Japanese knotweed nearby)	16/08/2023	ST0679476730
128	Yellow toadflax <i>Linaria vulgaris</i>	15/08/2023	ST0686276609
137	Tansy <i>Tanacetum vulgare</i>	16/08/2023	ST0705976350
138	Hornet nest	16/08/2023	ST0709976350
139	Spotted flycatcher	16/08/2023	ST0683276675
140	Kingfisher, near suitable nesting habitat	15/08/2023	ST0681576709
167	Trifid bur-marigold <i>Bidens tripartita</i>	15/08/2023	ST0641078710

Map 6 General species records (south)



Map 7 General species records (north)

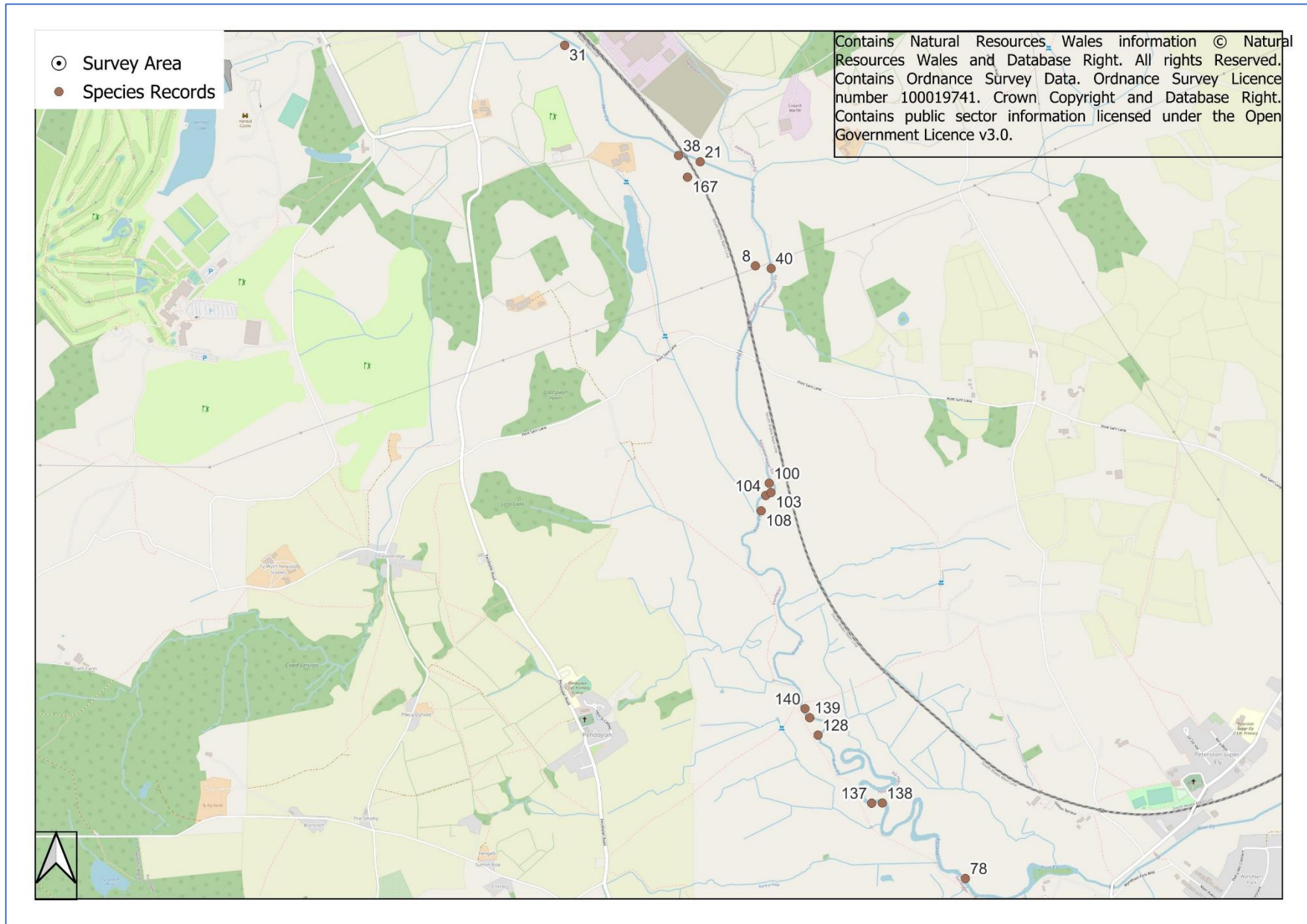
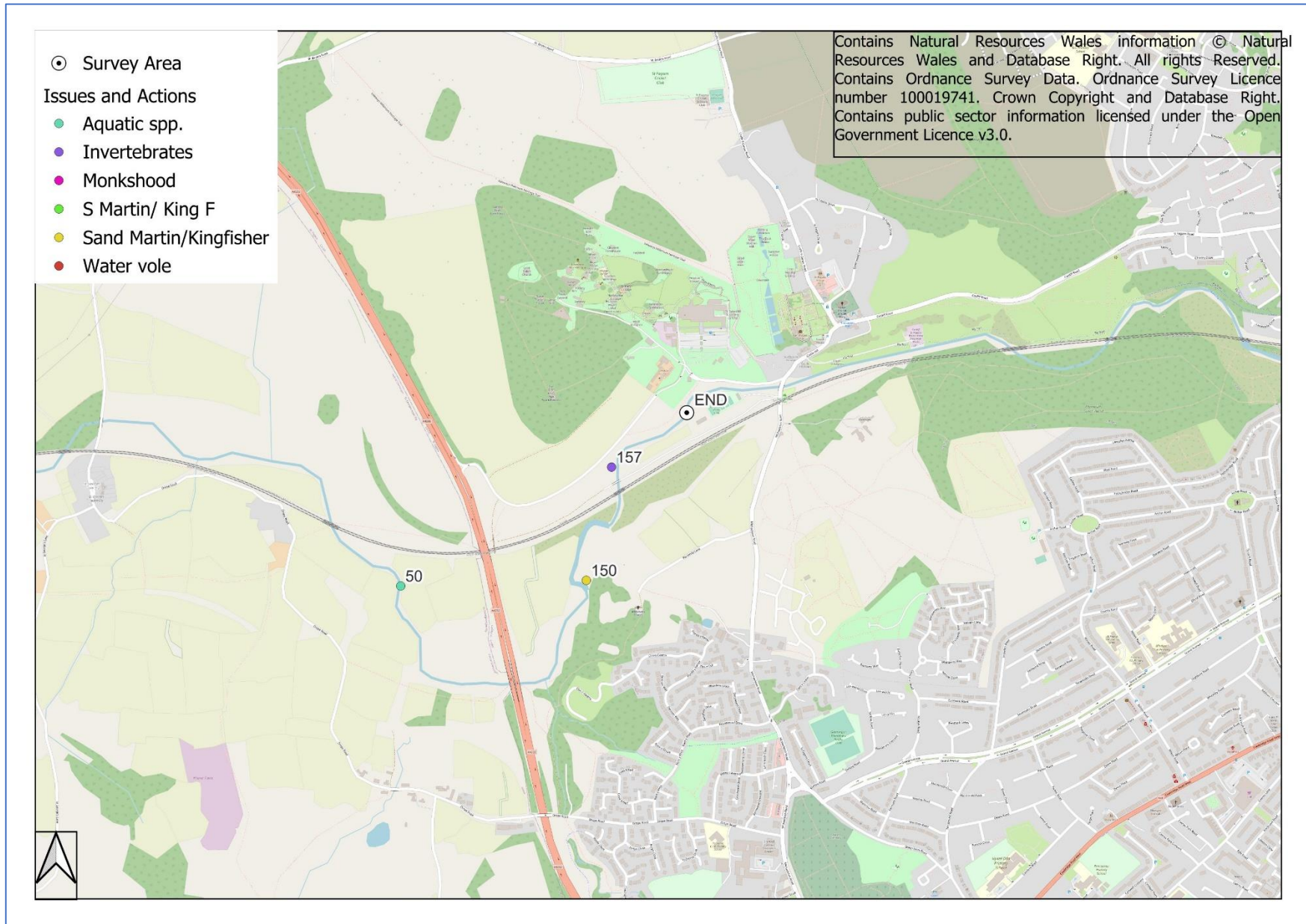


Table 5 Issues, actions & advice for species enhancements

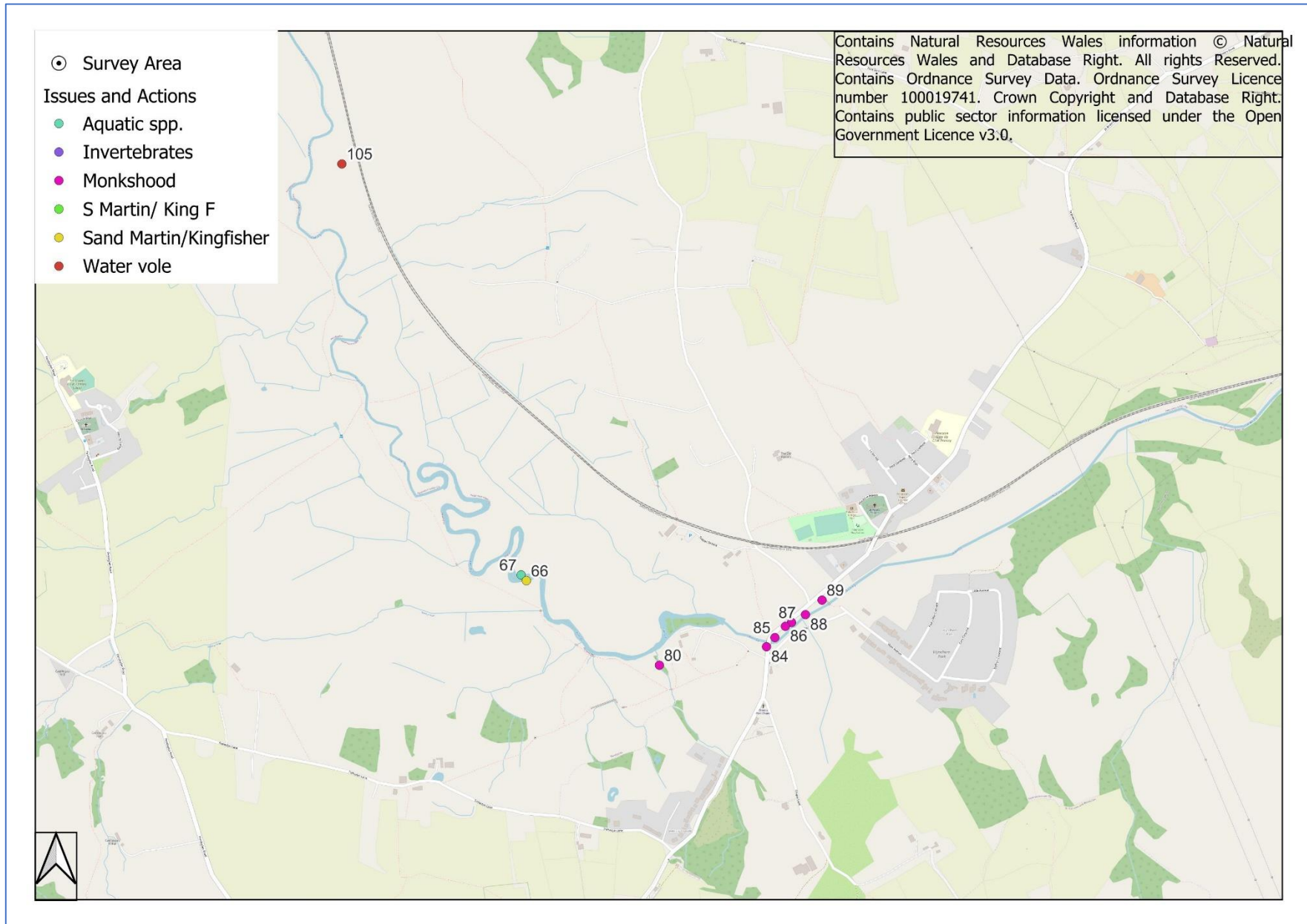
TN No.	Issue/Action	Date	Species that would benefit	10figGR
7	Silt cliff, keep scrub free	15/08/2023	Sand Martin/Kingfisher	ST0664978227
10	Silt cliff, keep free of scrub	15/08/2023	Sand Martin/Kingfisher	ST0670678376
11	Silt Cliff, keep free of scrub	15/08/2023	Sand Martin/Kingfisher	ST0608679028
13	Silt Cliff, keep free of scrub	15/08/2023	Sand Martin/Kingfisher	ST0665878514
16	Maintain Stock Access to silty area to keep open silt areas of invertebrates	15/08/2023	Invertebrates	ST0663478644
18	Silt cliff, keep free of scrub	15/08/2023	Sand Martin/Kingfisher	ST0659278695
23	Consider stock exclusion in heavily grazed/poached <i>Alnus</i> , <i>Corylus</i> , <i>Salix</i> woodland.	15/08/2023	Monkshood/ Otter	ST0647678715
36	Barbed wire fence fallen down, stock accessing river. Repair fence	15/08/2023	Aquatic spp./ Otter	ST0627678844
37	Erosional area. Consider Willow planting to stabilise the banks	15/08/2023	Aquatic spp.	ST0631278846
49	Erosion or riverbank close to another area where cattle access river , reduce to one area	15/08/2023	Aquatic spp.	ST1082676388
50	Fencing required	15/08/2023	Aquatic spp.	ST1082376428
51	Two areas of riverbank erosion close to another area where cattle access river, reduce to one area	15/08/2023	Aquatic spp.	ST1073176535
66	Silt cliffs becoming covered with scrub. Clear scrub to improve for Sand Martin and Kingfisher	15/08/2023	Sand Martin/Kingfisher	ST0725676210
67	Erosional damage from cattle	15/08/2023	Aquatic spp.	ST0724176227
69	Retain Large Woody Debris good for fish, kingfishers etc.	15/08/2023	Aquatic spp./ Otter/Invertebrates/Kingfisher	ST0720776244
80	Historic Monkshood location. Densely shaded woodland strip, now dense <i>Rubus</i> etc, manage the vegetation under the trees.	15/08/2023	Monkshood	ST0763875958
84	Old monkshood record, area heavily shaded with <i>Prunus spinosa</i> and <i>Acer Pseudoplatanus</i> . Light thinning of a few glades required.	15/08/2023	Monkshood	ST0795076006
85	Historic Monkshood location. Dense <i>Rubus</i> and knotweed, manage the vegetation under the trees.	15/08/2023	Monkshood	ST0797576032
86	Historic Monkshood location. Dense <i>Rubus</i> and <i>Calystegia</i> ,	15/08/2023	Monkshood	ST0800676064

TN No.	Issue/Action	Date	Species that would benefit	10figGR
	manage the vegetation under the trees.			
87	Historic Monkshood location. Dense <i>Urtica</i> , <i>eupatorium</i> , <i>Calystegia</i> , <i>Rubus</i> with knotweed, manage the vegetation under the trees.	15/08/2023	Monkshood	ST0802476075
88	Historic Monkshood location. Dense waist-high <i>Rubus</i> , <i>Urtica</i> , <i>Calystegia</i> in old monkshood location, manage the vegetation under the trees.	15/08/2023	Monkshood	ST0806576097
89	Historic Monkshood location just up from footbridge, now lost under deep <i>Salix alba/fragilis</i> growth. Clear some areas.	15/08/2023	Monkshood	ST0811476138
94	Japanese Knotweed and scrub recently cleared, give advice on re-creating Monkshood or otter habitat	16/08/2023	Monkshood/Otter	ST0657377912
96	Grassy buffer strip required between cultivated field and river	16/08/2023	Aquatic spp./ Otter	ST0656877856
111	Silt cliffs keep clear of scrub	16/08/2023	Sand Martin/Kingfisher	ST0676077164
117	Silt cliffs keep clear of scrub	16/08/2023	Sand Martin/Kingfisher	ST0667776895
150	Silt cliff, Keep free of scrub	16/08/2023	Sand Martin/Kingfisher	ST1136376435
157	Erosional area best kept open for invertebrates such as burrowing bees/wasps	16/08/2023	Invertebrates	ST1144276762

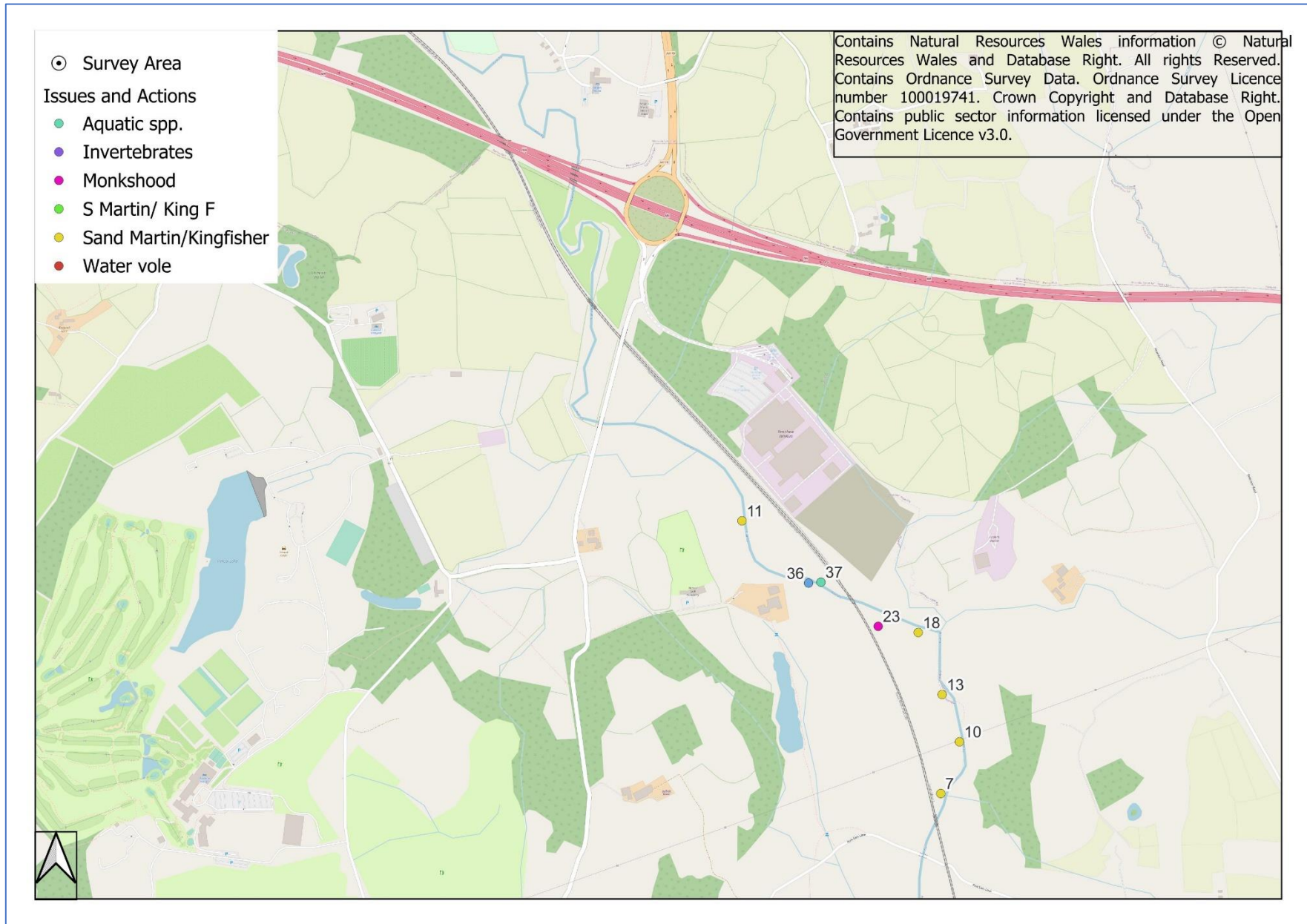
Map 8 Issues & Actions (south)



Map 9 Issues & Actions (mid)



Map 10 Issues & Actions (north)



4.4. General management advice & enhancement opportunities

In addition to the detailed management and enhancement advice set out in Section 4, this section outlines some more general principles and approaches as well as identifying possible larger-scale enhancements.

Fencing large areas of the riverbanks should be avoided as this would make control of INNS more difficult and lead to the loss of the open sand cliffs to bramble and scrub. Instead, it would be better to carefully target fencing to control livestock only where grazing and trampling are causing serious erosion or where overgrazing is damaging areas of woodland that could support Monkshood or damage potential otter resting places.

The area around Peterston and Pendoylan Moors contains some large areas of marshy grassland (of varying quality). These marshy grassland areas extend for up to 500m on either side of the river and run for over 2km from near Pont Sarn Lane bridge in the North to National Trust Lanlay at Peterston Super-Ely in the South. This area has the potential in which to consider a large-scale catchment management project which addresses issues such as agricultural pollution, flood control and connectivity barriers. Works here could involve floodplain reconnection and the restoration of wetlands in old river meanders to provide flood water retention. There is also scope in this area to improve the marshy grasslands and create a variety of wetland habitats at a landscape scale.

On a smaller scale, restoration of individual old river meanders to create several small wetlands would also be beneficial for species such as Green Sandpiper, Water Vole and Otter.

It will be necessary to consider any possible effects on otters (e.g., disturbance, loss of holts and resting places etc.) and other species when restoring Monkshood locations or when undertaking other works.

4.4.1. The large meanders

The OS Six-inch England and Wales Map, surveyed from 1874 to 1878 and published in 1885 shows the large meanders around Peterston and Pendoylan Moors. This is compared to modern-day aerial imagery in Figures 1 and 2 below. Allowing for mapping inaccuracies, there is no significant evidence of change to the meanders. This suggests they are relatively stable and that interventions to stabilize them are therefore unnecessary. However, large quantities of Himalayan balsam are present in places on the meanders and, if this is eradicated leaving lots of bare ground, some stabilization with willow may be useful if there is a desire to constrain the river in its present course rather than allowing it to naturally change its course.



Figure 1 O.S. map, 1874

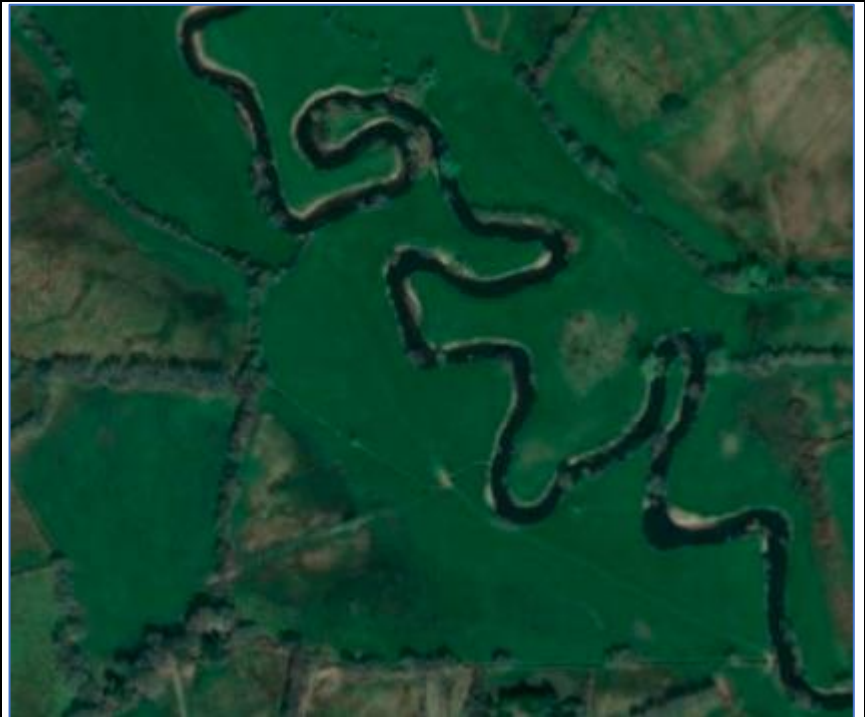


Figure 2 Aerial imagery, 2020

The same map also shows the parish boundary following the old course of the river a little to the north of the meanders. Fields a, b and c in Figure 3, despite being right-hand bank are all in Perterston-Super Ely parish. All the other right-hand bank fields are in Pendoylan parish. This clearly shows that the course of the river in this area was changed at some point prior to the late 1800s. These changes seem unlikely to be natural, given the apparent stability of the rest of the river. There are, however, no obvious reasons why the channel would have been deliberately moved.



Figure 3 Pre 1874 changes to the course of the Ely

4.5. Phase 2 NVC survey

NVC mapping covered only those land parcels through which the river runs (i.e. those that link directly to the river). It was only possible to carry out an NVC survey and assign vegetation to NVC communities on the side of the river where access permissions were in place. Where the opposite bank was visible, the vegetation communities were marked with a target note to indicate the dominant vegetation types that were visible. Where access permissions were not in place on either bank it was sometimes possible to view some of the vegetation from public Rights of Way (PROW's) or roads. Again, the vegetation communities were marked with a target note to indicate the dominant vegetation types that were visible.

It should therefore be noted that those community placements made from a distance are a “best guess” and should be treated with caution.

A total of 16 NVC communities and a further 4 vegetation types that did not fit well with any NVC community were identified and mapped during the survey. These are detailed in Table 6 below. NVC maps (Maps 11, 12 & 13) are provided below.

Table 6 NVC Communities present

NVC Community	Sub-community	Extent (ha)
Mire Communities		
M23 <i>Juncus effusus/acutiflorus-Galium palustre</i> rush-pasture	M23a <i>Juncus acutiflorus</i> sub-community	0.09
	M23b <i>Juncus effusus</i> sub-community	1.12
M25 <i>Molinia caerulea-Potentilla erecta</i> mire	M25c <i>Molinia caerulea-Potentilla erecta</i> mire, <i>Angelica sylvestris</i> sub-community	0.92
M27 <i>Filipendula ulmaria-Angelica sylvestris</i> mire	M27a <i>Filipendula ulmaria-Angelica sylvestris</i> mire, <i>Valeriana officinalis-Rumex acetosa</i> sub-community	0.20
Grassland Communities		
MG1 <i>Arrhenatherum elatius</i> grassland	MG1a <i>Arrhenatherum elatius</i> grassland, <i>Festuca rubra</i> sub-community	0.19
MG6 <i>Lolium perenne-Cynosurus cristatus</i> grassland	All sub-communities	21.1
MG7 <i>Lolium perenne</i> leys and related grasslands	Not mapped to sub-community level	35.3

NVC Community	Sub-community	Extent (ha)
MG10 <i>Holcus lanatus</i> - <i>Juncus effusus</i> rush-pasture	Mg10a typical sub-community	7.11
MG5 <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland	MG5c <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland, <i>Danthonia decumbens</i> sub-community	0.57
	MG5a <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland, <i>Lathyrus pratensis</i> sub-community	2.23
Woodland and Scrub Communities		
W1 <i>Salix cinerea</i> - <i>Galium palustre</i> woodland	No sub-communities	0.39
W6 <i>Alnus glutinosa</i> - <i>Urtica dioica</i> woodland	W6a <i>Alnus glutinosa</i> - <i>Urtica dioica</i> woodland, typical sub-community	1.05
	Not mapped to sub-community level	1.00
W8 <i>Fraxinus excelsior</i> – <i>Acer campestre</i> – <i>Mercurialis perennis</i> woodland	Not mapped to sub-community level	4.59
W24 <i>Rubus fruticosus</i> - <i>Holcus lanatus</i> underscrub	Not mapped to sub-community level	0.70
W25 <i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> scrub	Not mapped to sub-community level	1.88
Other NVC Vegetation Communities		
OV24 <i>Urtica dioica</i> - <i>Galium aparine</i> community	Not mapped to sub-community level	0.19
OV30 <i>Bidens tripartita</i> - <i>Polygonum amphibium</i> community	No sub-communities	0.01
S22 <i>Glyceria fluitans</i> water-margin vegetation	Not mapped to sub-community level	0.08
Additional vegetation types that were not a good fit within the NVC framework		
Vegetation	Comments	Extent (ha)
Arable	Barley and Maize crops	18.47
Other grassland	Species poor grassland with no good fit to existing NVC community – low conservation importance	1.76

NVC Community	Sub-community	Extent (ha)
<i>Salix</i> spp. scrub	Mixtures of <i>Salix Cinerea, alba/fragilis</i> (or hybrid <i>Salix</i> spp) often over Bramble and Himalayan balsam along river sides. No good fit to existing NVC communities, some stands possibly referable to NVC W6b	2.30
Woodland	Often small patches of trees over heavily grazed/poached pasture. Mixtures of <i>Alnus, Fraxinus, Salix</i>	0.86

4.5.1. Mire communities

M23 *Juncus effusus/acutiflorus-Galium palustre* rush-pasture. Several stands of were encountered during the survey. All but one of the stands were species-poor and dominated by soft-rush and were clearly referable to **M23b** *Juncus effusus* sub-community. One stand was more species-rich and dominated by Jointed rush *Juncus acutiflorus* and referable to **M23a** *Juncus acutiflorus* sub-community.

M25 *Molinia caerulea-Potentilla erecta* mire. A single stand of was encountered during the survey. This was at National Trust Lanlay. The M25 here is reasonably species-rich with a good structure and is referable to the **M25c** *Molinia caerulea-Potentilla erecta* mire, *Angelica sylvestris* sub-community. The stand occupies most of a small field in association with a small stand of **M27** *Filipendula ulmaria-Angelica sylvestris* mire.

M27 *Filipendula ulmaria-Angelica sylvestris* mire. Two stans were encountered during the survey. The community is species-rich with plants such as *Angelica sylvestris, Lycopus europaeus, equisetum fluviatile, Epilobium hirsutum, Epilobium palustre, Hypericum tetrapterum. Sparganium erectum* and *Oenanthe crocata* are indicative of some enrichment.

All of these communities are likely to be used by species such as Green Sandpiper, Otter and Water Vole

4.5.2. Grassland communities

All of the neutral grasslands within the survey area were affected by varying degrees of agricultural activity. Indeed the vast majority were **MG7** *Lolium perenne* leys and related grasslands and **MG6** *Lolium perenne - Cynosurus cristatus* grassland (improved and semi-improved grasslands). A few stands of **MG5** *Cynosurus cristatus-Centaurea nigra* grassland (unimproved grassland) were also present. Stands of **MG10** were often present in the improved and semi-improved grasslands (MG6 and MG7) fields. A few small stands of **MG1** were encountered.

MG1 *Arrhenatherum elatius* grassland. A small stand of was encountered just south of Pont Sarn Lane bridge and another near the northernmost large meander. The community is species-poor and unmanaged. It may provide habitat for water Voles and a range of other species.

MG5 *Cynosurus cristatus-Centaurea nigra* grassland. Four stands were encountered during the survey. These stands occupied two fields at National Trust Lanlay near Peterston Super-Ely, a single field beside the railway line south of Miskin and part of a field on a steep slope near the A4232 where it crosses the railway line west of St. Fagans.

The **MG5** at Lanlay was rather damp. The western field had abundant *Lotus uliginosus*, *Succisa pratensis* and sedges. *Lotus corniculatus* and *Centaurea nigra* were frequent with *Potentilla erecta* and *Achillea millefolium* both abundant. The vegetation was referable to **MG5c** *Cynosurus cristatus-Centaurea nigra* grassland, *Danthonia decumbens* sub-community. The second, eastern field was generally similar in its floristics but was somewhat grassier and species-poor. This stand was referable to **MG5a** *Cynosurus cristatus-Centaurea nigra* grassland, *Lathyrus pratensis* sub-community.

The **MG5** near Miskin was varied in its floristics from place to place and was again damp. *Centaurea nigra* was locally abundant as was *Leontodon hispidus*. In the lower part of the field *Lathyrus pratensis* and *Filipendula ulmaria* were locally frequent. This stand was assigned to **MG5a** *Cynosurus cristatus-Centaurea nigra* grassland, *Lathyrus pratensis* sub-community although the presence of *Filipendula ulmaria* is indicative of an MG5a variant.

The small stand of **MG5** *Cynosurus cristatus-Centaurea nigra* grassland near the A4232 west of St. Fagans was species-poor and poorly marked. The presence of frequent *Potentilla erecta* and *Lotus corniculatus* however, make it referable to **MG5c** *Cynosurus cristatus-Centaurea nigra* grassland, *Danthonia decumbens* sub-community.

The NVC communities in these four fields correspond to UK Priority Habitats and Section 7 habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

MG6 *Lolium perenne - Cynosurus cristatus* grassland. Extensive areas were encountered during the survey. These grasslands are reasonably variable in their floristics, some being species-poor whilst others such as the stand near the railway crossing at St. Georges are more species-rich. Those that were accessible were generally best referred to **MG6a** *Lolium perenne-Cynosurus cristatus* grassland, typical sub-community. These fields are of some minor conservation value for their potential for reversion to unimproved neutral grassland (MG5).

MG7 *Lolium perenne* leys and related grasslands. Extensive areas were encountered during the survey, throughout the area. These grasslands were prevalent across much of the site and were not mapped to sub-community level due to their low ecological value. However, some stands were long-established and, whilst still grass-dominated, were no longer dominated by *Lolium perenne*. Several such stands had large areas of abundant *Cirsium arvense* which provided good feeding for finches on the thistle seed.

MG10a *Holcus lanatus-Juncus effusus* rush-pasture, typical sub-community. Extensive areas were encountered during the survey. This is a species-poor community often derived from more species-rich rush pasture communities through drainage and other agricultural improvements. The MG10a occurs mostly in fields that have been agriculturally improved in the past (MG6 & MG7). Stands occur either

as a mosaic of small patches within the improved grasslands or, sometimes as more extensive stands occupying the more poorly drained parts of fields. Occasionally, as at St. Fagans, they are associated with stands of M23 *Juncus effusus/acutiflorus-Galium palustre* rush-pasture. These communities are key habitats for Green Sandpiper and Water Vole.

A couple of stands of species-poor grassland which did not fit well with any existing NVC community were encountered during the survey. These were of low conservation importance.

4.5.3. Woodland and scrub communities

Woodland along the river edge is of limited extent and much of the tree cover here is in the form of scattered trees (predominantly *Alnus glutinosa*, *Salix spp.* and *Fraxinus excelsior*) and scrub over grazed grasslands which do not fit well to any NVC woodland community. Some larger stands of woodland (mostly not accessible) were viewed from across the river and (particularly between Peterston-Super-Ely and St. George's) from PROW's or roads. Where possible an attempt was made to assign these woodlands to an NVC community but often this was based upon only a distant view of the vegetation or, from limited observations of the vegetation beside the paths. Within these stands, there are likely to be many graduations from "oak" communities (e.g., W10, W11, W17) on the slopes through W8 and W9 at the foot of the slopes in more base-rich, flushed areas to "wet woodland" (e.g., W6) along the floodplain edges.

W1 *Salix cinerea-Galium palustre* woodland. Two stands of *Salix cinerea* dominated woodland were encountered during the survey. These were species-poor and had *Impatiens glandulifera* present.

W6 *Alnus glutinosa-Urtica dioica* woodland. Several small stands of heavily grazed *Alnus/Salix* dominated woodland over a grass ground flora (or heavily poached soil) were encountered during the survey. These small patches of woodland are used by livestock for shelter and appear closest to NVC community W6. A few larger ungrazed *Alnus* dominated stands with a more intact ground flora were more clearly referable to W6.

W8 *Fraxinus excelsior – Acer campestre – Mercurialis perennis* woodland communities were encountered during the survey. These woodlands were dominated by *Fraxinus excelsior*, *Acer pseudoplatanus*, *Corylus avellana*, *Acer campestre* and, in drier areas *Quercus spp.* Ground flora species included *Hedera helix*, *Mercurialis perennis*, *Geranium robertianum* and *Asplenium scolopendrium*.

W24 *Rubus fruticosus-Holcus lanatus* underscrub and **W25** *Pteridium aquilinum-Rubus fruticosus* underscrub communities were encountered during the survey. The scrub communities were not mapped to sub-community level. W24 was the most abundant and widespread community, followed by W25. Both of these scrub communities occur occasionally along the river edges and are often infested with Himalayan Balsam *Impatiens glandulifera*.

Several stands of *Salix* scrub that did not fit well with any NVC community type were also encountered

during the survey. These appeared to be derived from planted *Salix* species (*S. alba* or similar hybrids). These were often growing over stands of *Rubus* and *Impatiens glandulifera*, or sometimes, bare silt.

4.5.4. Other Vegetation Communities

A single small stand of vegetation best referred to the **OV24** *Urtica dioica-Galium aparine* community was encountered during the survey. This was atypical, being infested with Himalayan balsam.

A single small but mappable stand (and a few tiny areas) of **OV30** *Bidens tripartita-Polygonum amphibium* community were encountered during the survey.

A single small stand of **S22** *Glyceria fluitans* water-margin vegetation was encountered during the survey. *Conocephalus dorsalis* (Short-winged Conehead cricket) were abundant here.

Several fields along the river were cultivated for arable crops (Barley and Maize). No arable plant communities of note were seen in these fields.

4.8. Evaluation of NVC Communities

The habitats mapped during the present survey were evaluated for their conservation importance. The NVC communities mapped during the survey are related to their corresponding Welsh Priority Habitats in Table 7, below. The list of the “habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales” was drawn up under Section 7 of the Environment (Wales) Act 2016.

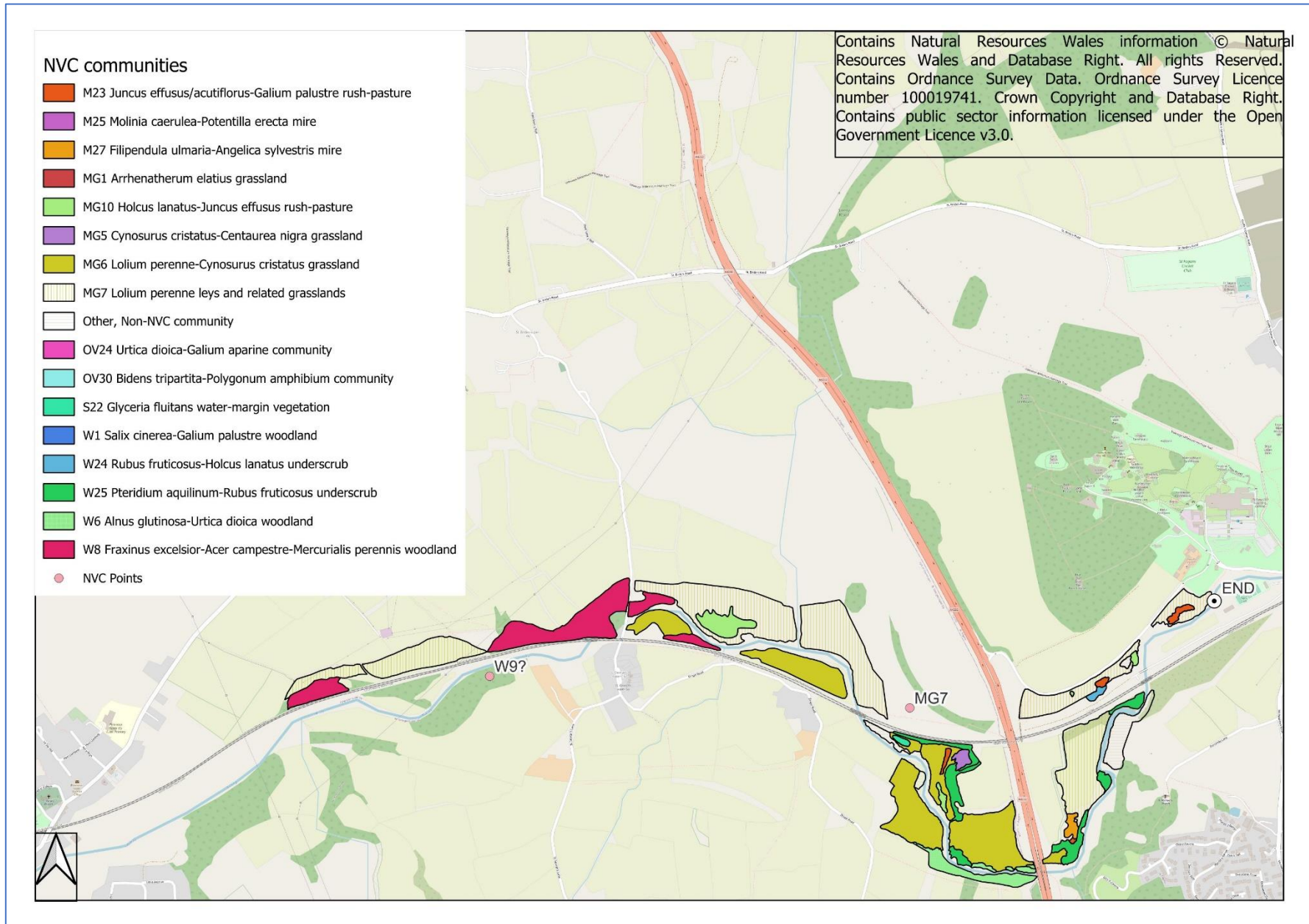
Table 7 Evaluation of the Conservation Importance of the NVC Communities

NVC Community	Sub-community	Section 7 Habitat.
Mire Communities		
M23 <i>Juncus effusus/acutiflorus-Galium palustre</i> rush-pasture	M23a <i>Juncus acutiflorus</i> sub-community	Purple moor grass and rush pasture.
	M23b <i>Juncus effusus</i> sub-community	Purple moor grass and rush pasture.

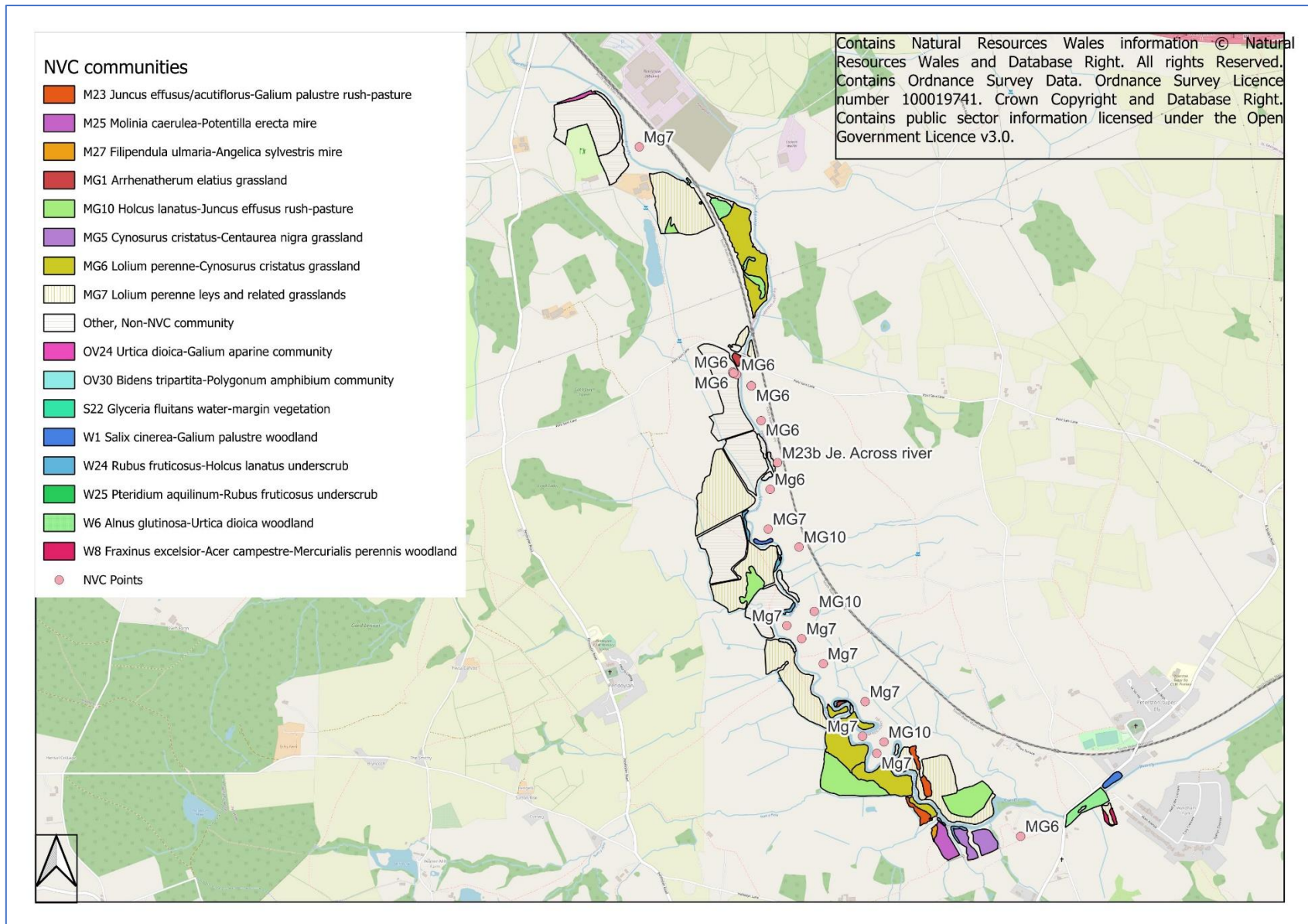
NVC Community	Sub-community	Section 7 Habitat.
M25 <i>Molinia caerulea</i> - <i>Potentilla erecta</i> mire	M25c <i>Molinia caerulea</i> - <i>Potentilla erecta</i> mire, <i>Angelica sylvestris</i> sub-community	Purple moor grass and rush pasture.
M27 <i>Filipendula ulmaria</i> - <i>Angelica sylvestris</i> mire	M27a <i>Filipendula ulmaria</i> - <i>Angelica sylvestris</i> mire, <i>Valeriana officinalis</i> - <i>Rumex acetosa</i> sub-community	Purple moor grass and rush pasture.
Grassland Communities		
MG1 <i>Arrhenatherum elatius</i> grassland	MG1a <i>Arrhenatherum elatius</i> grassland, <i>Festuca rubra</i> sub-community	None
MG6 <i>Lolium perenne</i> - <i>Cynosurus cristatus</i> grassland	MG6a <i>Lolium perenne</i> - <i>Cynosurus cristatus</i> grassland, typical sub-community	None
MG7 <i>Lolium perenne</i> leys and related grasslands	Not mapped to sub-community level	None
MG10 <i>Holcus lanatus</i> - <i>Juncus effusus</i> rush-pasture	Mg10a typical sub-community	None
MG5 <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland	MG5c <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland, <i>Danthonia decumbens</i> sub-community	Lowland meadows
	MG5a <i>Cynosurus cristatus</i> - <i>Centaurea nigra</i> grassland, <i>Lathyrus pratensis</i> sub-community	Lowland meadows
Woodland and Scrub Communities		
W1 <i>Salix cinerea</i> - <i>Galium palustre</i> woodland	No sub-communities	Wet woodland
W6 <i>Alnus glutinosa</i> - <i>Urtica dioica</i> woodland	W6a <i>Alnus glutinosa</i> - <i>Urtica dioica</i> woodland, typical sub-community	Wet woodland
	Not mapped to sub-community level	Wet woodland
W8 <i>Fraxinus excelsior</i> – <i>Acer campestre</i> – <i>Mercurialis perennis</i> woodland	Not mapped to sub-community level	Lowland mixed deciduous woodland
W24 <i>Rubus fruticosus</i> - <i>Holcus lanatus</i> underscrub	Not mapped to sub-community level	None

NVC Community	Sub-community	Section 7 Habitat.
W25 <i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> scrub	Not mapped to sub-community level	None
Other Vegetation Communities		
OV24 <i>Urtica dioica</i> - <i>Galium aparine</i> community	Not mapped to sub-community level	None
OV30 <i>Bidens tripartita</i> - <i>Polygonum amphibium</i> community	No sub-communities	None
S22 <i>Glyceria fluitans</i> water-margin vegetation	Not mapped to sub-community level	None
Additional vegetation types which cannot be clearly fitted within the NVC framework		
Arable	Barley and Maize crops	None
Other grassland	Species poor grassland with no good fit to existing NVC community – low conservation importance	None
<i>Salix</i> spp. scrub	Mixtures of <i>Salix Cinerea</i> , <i>alba/fragilis</i> (or hybrid <i>Salix</i> spp) often over Bramble and Himalayan balsam along river sides. No good fit to any existing NVC communities	None
Other woodland	Often small patches of trees over heavily grazed/poached pasture. Mixtures of <i>Alnus</i> , <i>Fraxinus</i> , <i>Salix</i>	None

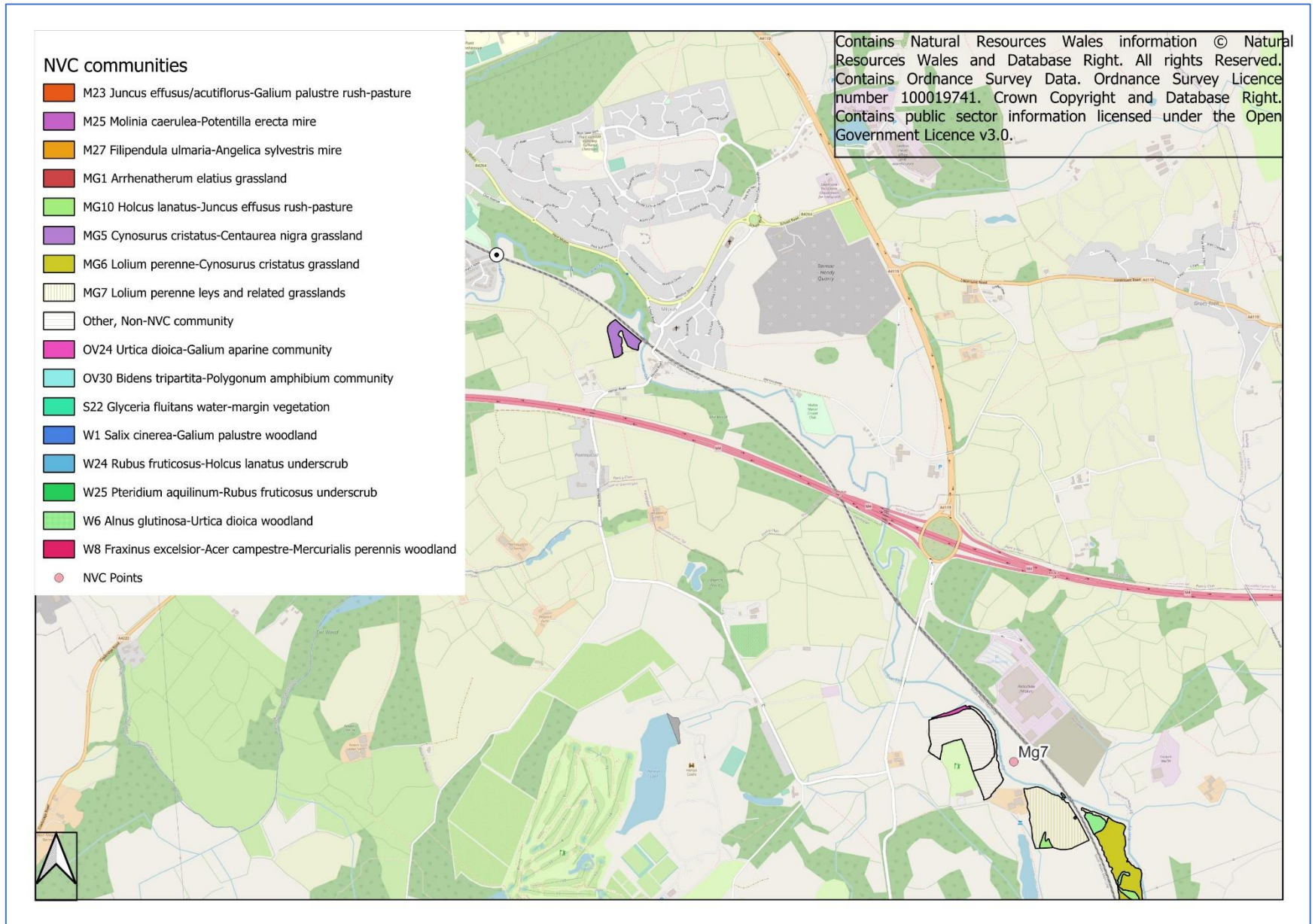
Map 11 NVC communities (south)



Map 12 NVC communities (mid)



Map 13 NVC communities (north)



5. References & Further Reading

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