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19 July 2022

Dear Claire,

GCRE Phase 1A: check for notable plant species

As requested, I visited Onllwyn Washery on 14 and 15 July 2022 to carry out an inspection of the GCRE Phase 1A area, to check for notable plant species.

The target species for the survey were:

- Any species listed in the table of 'Scarce and rare vascular plants recorded in Carmarthenshire, Glamorgan and Monmouthshire' in Wildlife Guidance Wales (Biodiversity Wales, 2008).
- Any species listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Survey method

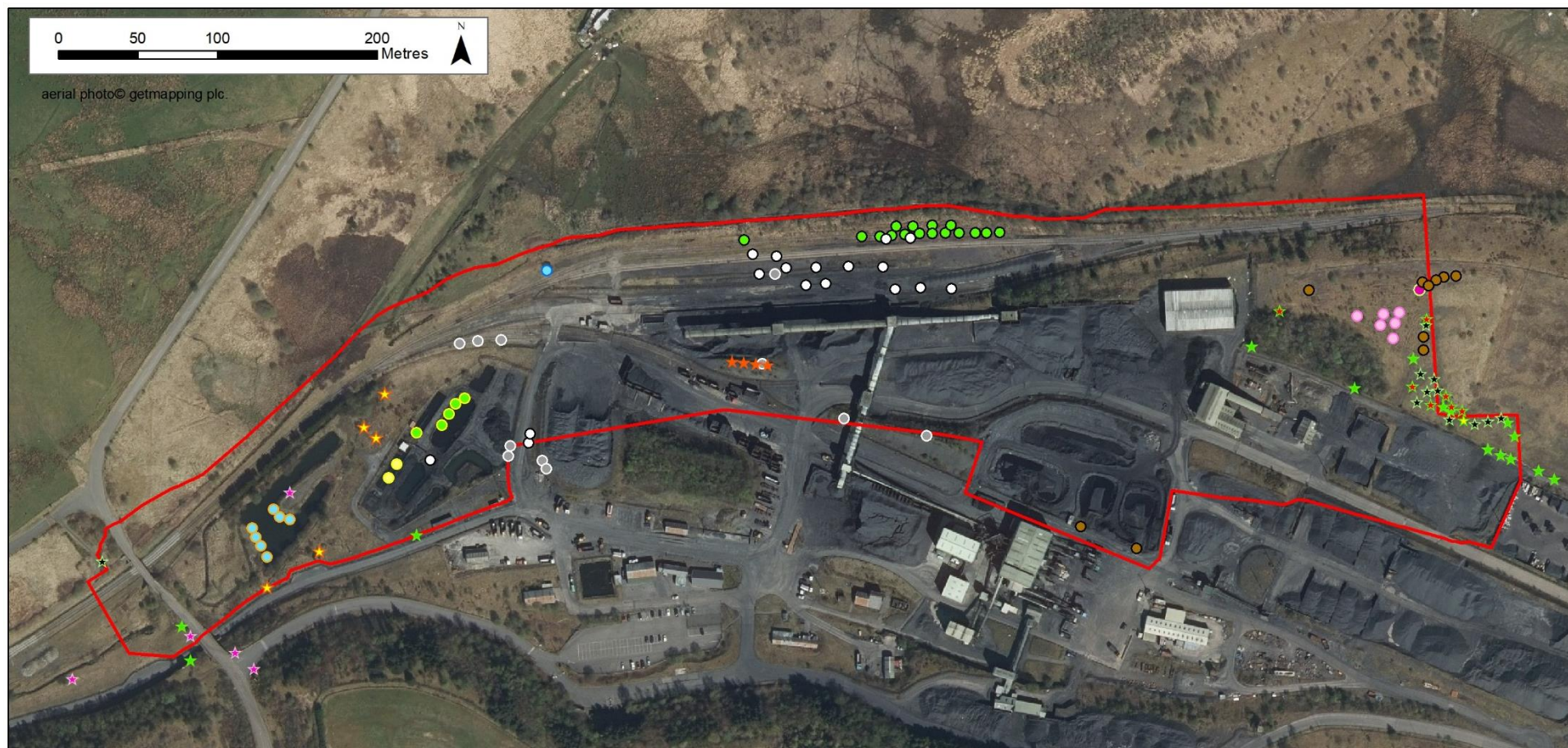
The investigation was carried out by a simple walk-over survey approach, walking a series of routes across the Phase 1A area, aiming to pass within approximately 10m of all of the vegetated parts of the site. The survey of the various water bodies was limited to observations from the margins, and hooking plant specimens with a long stick for identification.

Weather conditions were warm and sunny and the survey was undertaken at the optimal time of year for this type of study, although a few species were not yet in flower, and some early-flowering species had already finished and were dying back. In some cases plant specimens were collected for identification using specialist reference texts and/ or microscopy.

Locations of the notable or invasive species were recorded onto a plan and a brief note prepared for each one.

Survey findings

The survey plan is presented in Figure 1. Summary account for each target species are provided in Tables 1 and 2. Several photographs are provided in Appendix 1.



Notable plants

- | | |
|-------------------------------------|-----------------------------------|
| ● <i>Carex disticha</i> | ● <i>Ophrys apifera</i> |
| ● <i>Logfia minima</i> | ○ <i>Sagina nodosa</i> |
| ● <i>Mentha pulegium</i> | ● <i>Samolus valerandi</i> |
| ● <i>Myriophyllum alterniflorum</i> | ● <i>Sparganium angustifolium</i> |
| ● <i>Myriophyllum spicatum</i> | ● <i>Zannichellia palustris</i> |

Schedule 9 invasive plants

- | | |
|------------------------------------|----------------------------------|
| ★ <i>Cotoneaster bullatus</i> | ★ <i>Crocsmia crocosmiiflora</i> |
| ★ <i>Cotoneaster horizontalis</i> | ★ <i>Fallopia japonica</i> |
| ★ <i>Cotoneaster integrifolius</i> | ★ <i>Rosa rugosa</i> |
| ★ <i>Cotoneaster simonsii</i> | |

Figure 1. Location of notable and invasive species in Phase 1A area

Table 1. Summary of notable plant species in Phase 1A area

Species	Summary
<i>Carex disticha</i> (Brown Sedge)	Several large patches in damp grassland on eastern plateau. Two small, isolated plants present on the roadside banks of the eastern settlement ponds.
<i>Logfia minima</i> (Small Cudweed)	Several small patches in short open turf on old sidings and banks. Most had finished flowering and were dying back, so some others may have been overlooked.
<i>Mentha pulegium</i> (Pennyroyal)	One patch, approximately 2m diameter, in damp grassland on eastern plateau (with associates including Cottongrass and Brown Sedge).
<i>Myriophyllum alterniflorum</i> (Alternate Water-milfoil)	Present in one small pond north of the sidings.
<i>Myriophyllum spicatum</i> (Spiked Water Milfoil)	Locally frequent in the westernmost settlement pond.
<i>Ophrys apifera</i> (Bee Orchid)	Several plants in damp grassland with light scrub on eastern plateau. (NB Numbers of plants were much lower this year than in the 2019 survey.)
<i>Sagina nodosa</i> (Knotted Pearlwort)	Scattered plants in damp, open ground in old sidings and coal washings, mostly in small numbers (probably no more than 40 plants).
<i>Samolus valerandi</i> (Brookweed)	Locally abundant in damp, disturbed ground north of sidings. Hundreds of seedlings present in area where track has recently been removed.
<i>Sparganium angustifolium</i> (Floating Bur-reed)	Two patches (each approx. 4m diameter) in concrete-lined settlement pond in west of area.
<i>Zannichellia palustris</i> (Horned Pondweed)	Present in two of the western settlement ponds. Much of the material observed had been uprooted by grazing ducks.

Table 2. Summary of Schedule 9 invasive plant species in Phase 1A area

Species	Summary
<i>Cotoneaster bullatus</i> (Hollyberry Cotoneaster)	Approximately 10 scattered plants on the eastern plateau and the adjacent scrub margin.
<i>Cotoneaster horizontalis</i> (Wall Cotoneaster)	Approximately 10 scattered plants on the eastern plateau and one beside an old track at the western margin.
<i>Cotoneaster integrifolius</i> (Entire-leaved Cotoneaster)	One small plant on the eastern plateau.
<i>Cotoneaster simonsii</i> (Himalayan Cotoneaster)	Approximately 10 scattered plants on the eastern plateau and beside the adjacent plantation. Several scattered plants beside roads at the western margin.
<i>Crocasmia crocosmiiflora</i> (Montbretia)	A row of plants at the base of a hedge along the top of a coal tip in the centre of the site (possibly planted).
<i>Fallopia japonica</i> (Japanese Knotweed)	Five small stands of Knotweed (mostly less than 5m diameter) around the western settlement ponds.
<i>Rosa rugosa</i> (Japanese Rose)	Two plants near the western margin (several others noted close by, but outside Phase 1A.)

Discussion

The recent investigation was carried out in much greater detail than in the general vegetation survey undertaken in 2019, and several additional plant species were confirmed that were not seen previously, including Pennyroyal, Knotted Pearlwort, Alternate Water-milfoil and Horned Pondweed. The most notable of these is Pennyroyal, which is included in Schedule 8 of the Wildlife and Countryside Act, and the Environment (Wales) Act 2016 Section 7 list of the living organisms of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. The tip where the Pennyroyal is growing was formed relatively recently but the patch appears to be the result of natural colonisation rather than intentional planting.

A few notable plants recorded previously were not included in the study. Bird Cherry was not mapped because it is present in most of the plantations (presumably as part of a planting scheme) and could easily be reintroduced as part of any new planting. Eyebright was not mapped because there are many thousands of plants present (mainly associated with the sidings and older areas of open grassland) and it would have been impractical to attempt to identify each plant to determine them to species level.

It is possible that some species might have been missed if they were hidden within dense vegetation, especially in areas of scrub or amongst tall grassland, or if they had already finished flowering and had died back. In a few cases plants could not be identified because the specimens that were seen were not yet flowering, and identification is not possible without flowers or ripe seed.

The habitats at this site have developed alongside the ongoing coal washing processes over many years, creating high levels of disturbance and unusual growing substrata for plants. The likelihood of being able to maintain a similar range of flora and fauna without the washery in an operational condition will be challenging, and it is likely that new habitats will need some ongoing management by grazing or occasional mechanical intervention to ensure that the notable plants are able to survive in their new mitigation areas.

Recommendations

Notable species

- Undertake any rescue/ translocation of rare species to a suitable receptor site before the main works phase begins. The new habitat should be at least as large as that being lost and include a similar mix of base-rich substrata, with flower-rich grassland, wetland and scrub features of at least equivalent nature conservation value.
- It would be best to create a number of different ponds and ditches in the mitigation area, with a range of depths and sizes to try to provide a similar range of variation to the existing water features.
- Different species will need to be translocated to the mitigation area in different ways. For example, Pennyroyal and Brown Sedge could be dug up and replanted in the main growing season. Bee orchids are best moved in winter when their basal rosettes are visible. Small Cudweed is an annual species, so moving the upper layer of soil from existing colonies should be the best way to transfer the seedbank. Aquatic plants such as Horned Pondweed and the Water Milfoils can probably be moved in buckets to the new ponds, with rooted specimens if possible, although they can probably be moved without roots and still survive. Floating Bur-reed will probably need to be physically dug up to ensure that the roots are transferred to the new location. Knotted Pearlwort and Brookweed could be translocated plants into suitable open habitat at the mitigation area. They are likely to survive in the short term but will probably need ongoing regular disturbance to maintain their habitat in the long term.
- A management plan should be set up to ensure that the habitat and species diversity in the mitigation area is maintained in the long term.

- It is strongly recommended that an Ecological Clerk of Works should be appointed to give advice throughout the construction period. Their duties should include overseeing the rescue of the notable species, and establishment of the mitigation habitats.

Invasive species

- Remove as many of the Schedule 9 invasive species as possible before the main works begin.
- Japanese Knotweed is likely to be the most difficult species to eradicate and it would be appropriate to consult a specialist to assist. Stem injection of herbicide may be an option if the treatment can commence before the end of the growing season.
- Montbretia can easily be spread by soil containing corms from the roots, so great care should be taken when working in the area where this grows. Options could include herbicide treatment, physical removal from site or deep burial of the Montbretia. Supervision would be advisable during any excavation to ensure that no corms are missed.
- The non-native Cotoneasters and Japanese Rose can be treated together, simply uprooting them by machine and letting them dry out may be easiest. Herbicide treatment could also be used.

I hope that the above helps as you plan this initial phase of the project. Please let me know if anything requires clarification, or if you would like any further input.

Yours sincerely,

A handwritten signature in dark ink, appearing to read 'P.W. Sturgess', written in a cursive style.

Peter Sturgess

Appendix 1. Photographs of key species



Carex disticha (Brown Sedge) on eastern plateau



Logfia minima (Small Cudweed) on loose soil on the railway sidings



Mentha pulegium (Pennyroyal) on eastern plateau



Myriophyllum alterniflorum
(Alternate Water-milfoil) in
pond north of railway sidings



Myriophyllum spicatum
(Spiked Water-milfoil) in
western settlement pond.



Ophrys apifera (Bee Orchid)
on eastern plateau.



Sagina nodosa (Knotted Pearlwort) on damp coal washings.



Samolus valerandi (Brookweed) in disturbed damp ground north of the railway sidings.



Sparganium angustifolium (Floating Bur-reed) in settlement pond.



Zannichellia palustris
(Horned Pondweed) in
settlement pond (showing
distinctive fruits).



Cotoneaster bullatus
(Hollyberry Cotoneaster) on
eastern plateau.



Cotoneaster horizontalis
(Wall Cotoneaster) beside
track at western margin.



Cotoneaster integrifolius
(Entire-leaved Cotoneaster)
on eastern plateau.



Cotoneaster simonsii
(Himalayan Cotoneaster)
beside eastern plantation.



Crocosmia crocosmiiflora
(Montbretia) on central coal
tip.



Fallopia japonica (Japanese Knotweed) near western ponds.



Rosa rugosa (Japanese Rose) at western margin.