

Rush Wall Solar Park

Environmental Statement

Appendix 5.8

National Vegetation Classification survey of reens

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Rush Wall Solar Park
August 2019

Report no: NVC-526.1

A report by

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Report details

Site name: Rush Wall
Site address: Rush Wall, Gwent Levels, Newport
Grid references: ST 41317 86266, ST 42187 86018, ST 41447 85672,
ST 41898 85707, ST 41945 84908, ST 42083 84976
Survey date: 22nd August 2019
Report date: 9th August 2019
Report author: Yolande Knight BSc (Hons) PhD MRSB

Declaration of compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of practice for planning and development.

Code of Professional Conduct

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of survey data and report

The findings of this report are valid for 24 months from the date of survey. If work has not commenced within this period, an updated survey by a suitably qualified ecologist will be required.

Revisions

Date	Report no:	Comment
02/12/2019	NVC-526	Original report

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1. Introduction

Western Ecology has been commissioned to complete a Phase 2 National Vegetation Classification (NVC) survey of reens at Rush Wall.

1.1. Survey aims

This report describes the results of the NVC survey in order to determine the ecological status, distribution and nature conservation value of the plant communities (habitat types) on the site known as Rush Wall.

2. Survey methodology

2.1. Desktop survey

The desktop survey from South East Wales Biodiversity Records Centre collated existing biological records for plant species within 2km. The data search also included a search within 4km for statutory and non-statutory nature conservation sites selected for plant communities.

2.2. Field survey

An NVC Survey of the site was completed by Yolande Knight BSc (Hons) PhD MRSB on the 22nd August, between 11:30 and 15:30, with an average air temperature of average air temperature of 20°C, light south-westerly winds, dry and with ranging between overcast and partly sunny throughout the survey.

Habitats were classified using a variation on the NVC Survey methodology (Rodwell, J.S., 2006), with identification of stands of vegetation at particular sample points chosen along the reens. All vascular plants found within the aquatic, margin and bank environments at areas identified as having uniform stand of vegetation within a 10 metre length for each sample point, using 1m² quadrats (size of quadrat chosen to take in to account size and difficulty of sampling aquatic habitat in reens), were recorded. As per NVC methodology, plant species found in each quadrat were then accorded a Domin value of cover/abundance, with each species then being assigned a Constancy/frequency value. For plant communities occupying areas without obvious stands of vegetation, quadrats were not used, but species lists compiled and Domin values estimated.

Sample points are identified in Plan 1, with each pin showing the central point of a 10 metre length.



Plan 1: Reen sample points for Rush Wall.

Three sets of quadrat data were collected from each of the 6 sample points (A-F), with the data split into two habitat types: aquatic and emergent/margin. Species constancy was then calculated as per NVC constancy values:

Constancy values in the NVC	
Frequency of species in sample quadrats in a stand of homogeneous vegetation (representative stand)	
• 81-100%	V Constant
• 61-80%	IV Constant
• 41-60%	III Frequent
• 21-40%	II Occasional
• 1-20%	I Sparse

Species abundance (Domin range) was then calculated, combining the data from the three quadrats per habitat per sample.

The Domin Scale	
Domin value	Cover-abundance
10	91-100%
9	76-90%
8	51-75%
7	34-50%
6	26-33%
5	11-25%
4	4-10%
3	<4% frequent
2	<4% occasional
1	<4% rare

Plant species were identified according to Stace (1997) and are listed, along with constancy and frequency, in Section 3.1: Species data from sample points.

2.3. Survey constraints

All areas of the site were readily accessible. The survey was undertaken towards the end of the optimal time of year for botanical surveys.

It should be noted that habitats, and the species they may support, change over time due to natural processes and because of human influence.

2.4. Study area

The study area was determined by the development proposals and an assessment of reed quality based on water clarity and water flow.

3. Results

3.1. Species data from sample points

Vegetation stand quadrat samples, and other samples taken where quadrats were not appropriate, were combined for each sample point (A-F), but separated out into aquatic/emergent and margin habitats (Tables 1 and 2).

Table 1: Species data from sample points A-F, margin bank habitat.

Sample sites: margin		A	B	C	D	E	F	Constancy	Domin range
Bramble	<i>Rubus fruticosus</i> agg.	4		2	2	6	6	V	(2-6)
Common Nettle	<i>Urtica dioica</i>	4	4	4		6	6	V	(4-6)
Common Reed	<i>Phragmites australis</i>	8	10	10	10	4	4	V	(4-10)
Great Willowherb	<i>Epilobium hirsutum</i>	4	3	4	4	6	6	V	(3-6)
Fat Hen	<i>Chenopodium album</i>		5		4	6	6	IV	(4-6)
Soft Rush	<i>Juncus effusus</i>	3	2		2	1	1	IV	(1-3)
Creeping Buttercup	<i>Ranunculus repens</i>				2	2	2	III	(2)
Creeping Thistle	<i>Cirsium arvense</i>		3			2	2	III	(2-3)
Hedge Bindweed	<i>Calystegia sepium</i>		2		4			II	(2-4)
Hogweed	<i>Heracleum sphondylium</i>					2	2	II	(2)
Pendulous Sedge	<i>Carex pendula</i>					2	2	II	(2)
Redshank	<i>Persicaria maculosa</i>					4	4	II	(4)
Rose	<i>Rosa</i> sp.			2		1		II	(1-2)
Yellow Flag	<i>Iris pseudacorus</i>	3	2					II	(2-3)
Broadleaved Dock	<i>Rumex obtusifolius</i>	4						I	(4)
Bristly Oxtongue	<i>Helminthotheca echioides</i>		1					I	(1)
Bittersweet	<i>Solanum dulcamara</i>				1			I	(1)
Cock's-foot	<i>Dactylis glomerata</i>	3						I	(1)
Equal-leaved Knotgrass	<i>Polygonum arenastrum</i>				2			I	(2)
Common Horsetail	<i>Equisetum arvense</i>	2						I	(2)
Fool's Water-cress	<i>Apium nodiflorum</i>				2			I	(2)
Hawthorn	<i>Crataegus monogyna</i>			1				I	(1)
Perennial Rye-grass	<i>Lolium perenne</i>	1						I	(1)
Reed Sweet-grass	<i>Glyceria maxima</i>	7						I	(7)

Table 2: Species data from sample points A-F, aquatic/emergent¹ habitat.

Sample sites: aquatic/emergent		A	B	C	D	E	F	Constancy	Domin range
Common Duckweed	<i>Lemna minor</i>	6	10	9	10	10	10	V	(6-10)
Common Water-plantain	<i>Alisma plantago-aquatica</i>				2			I	(2)
Frogbit	<i>Hydrocharis morsus-ranae</i>	2						I	(2)
Rigid Hornwort	<i>Ceratophyllum demersum</i>	8						I	(8)

¹ NB. Sparse *P. australis* can be also found within emergent habitat at sample point A, in addition to margin habitat.

3.2. Determination of NVC plant community types

Determination of NVC plant community types were made where appropriate (i.e. where there were obvious stands of vegetation). The survey revealed the reens and banks to comprise a small number of different plant community types.

Sample A

Aquatic/emergent habitat: A5 *Ceratophyllum demersum* community, with patchy floating *Lemna minor*, and <4% occasional *Hydrocharis morsus-ranae*.

This plant community is typical of still or slow-moving, eutrophic waters, including sluggish streams, pools, dykes and canals, and is becoming increasingly common in such waters because of eutrophication with agricultural run-off.

Margin habitat: no obvious stands of particular species were present, making it difficult to identify a clear NVC community. *Phragmites australis* and *Glyceria maxima* were frequent, with *P. australis* present both as emergent (sparse), and on the bank- although it should be noted that the ree bank sides are steeply cut. Other vegetation present included occasional scrub, ruderal and common grass species associated with surrounding habitats. The banks of this sample point had been cut back in the last few months, lacking the large stands of vegetation seen at other sample points.



Sample A ree.



Sample B ree.

Sample B

Aquatic/emergent habitat: A2 Common Duckweed *Lemna minor*, with no sub-communities.

This is a plant community of standing or very slow-moving, mesotrophic to eutrophic waters found throughout most of lowland Britain. It is extremely common over the still surfaces of ponds and lakes and the edges or sluggish reaches of streams, and in ditches and canals.

Margin habitat: S4 Common Reed *Phragmites australis*, with no sub-communities in the stands of vegetation. Scattered scrub, ruderal and climbing vegetation is occasionally present at the edges of the *P. australis* stands.

This plant community is a natural dominant in a wide range of permanently wet or periodically waterlogged habitats of differing trophic state and with a variety of substrates. Stands are common along dykes, canals and sluggish lowland rivers.

Sample C

Aquatic/emergent: A2 Common Duckweed *Lemna minor*, with no sub-communities. See Sample B.

Margin: S4 Common Reed *Phragmites australis*, with no sub-communities in the stands of vegetation. See Sample B.



Sample C reen.



Sample D reen.

Sample D

Aquatic/emergent: A2 Common Duckweed *Lemna minor*, with occasional emerging *Alisma plantago-aquatica* (identified in Rodwell, JS 2006b as a sub-community for *Lemna trisulca*). See Sample B.

Margin: S4 Common Reed *Phragmites australis*, with no identified sub-communities in the stands of vegetation. Sparse *Apium nodiflorum* was present associated with the bank/margin, and not emergent, within one quadrat (a species identified in Rodwell, JS 2006b as an aquatic sub-community for *L. minor*). See Sample B.

Sample E

Aquatic/emergent: A2 Common Duckweed *Lemna minor*, with no sub-communities. See Sample B.

Margin: no obvious stands of particular species were present, making it difficult to identify a clear NVC community. A mix of tall ruderals included *Urtica dioica* and *Epilobium hirsutum*, with *Rubus fruticosus* agg., with occasional *Phragmites australis*, *Carex pendula* and *Juncus effusus*.



Sample E reed.



Sample F reed.

Sample F

Aquatic/emergent: A2 Common Duckweed *Lemna minor*, with no sub-communities. See Sample B.

Margin: no obvious stands of particular species were present, making it difficult to identify a clear NVC community. See Sample E.

3.3. Desktop study

There are 36 records for notable plants within 2km of the Site. The species recorded are detailed in Table 3.

Table 3. Notable plant records within 2km

Latin name	Common name	Conservation status	Count
<i>Bupleurum tenuissimum</i>	Slender Hare's-ear	S7, UKBAP, RD1 (UK), RD2 (UK), LBAP (CON, FLI, VOG), LI(VC51, LR)	1
<i>Hyacinthoides non-scripta</i>	Bluebell	WCA8	4
<i>Oenanthe fistulosa</i>	Tubular Water-dropwort	RDB1 [UK] - DD, RDB2 [UK] - R	31

References

Rodwell, J.S. (1995) *British Plant Communities Volume 4: Aquatic Communities, Swamps and Tall-herb Fens*. Cambridge: Cambridge University Press.

Rodwell, J.S. (2006) *National Vegetation Classification: Users' Handbook*. Peterborough: Joint Nature Conservation Committee.

Stace, C., 1997. *New Flora of the British Isles*. 2nd edition. Cambridge University Press, Cambridge.

Legislation and Policy used to assess habitats and species

Environment (Wales) Act 2016

This Act of the National Assembly for Wales puts in place legislation to enable the on-going planning and management of the natural resources of Wales.

European Habitats and Species Directive (CEC, 1992)

The main aim of the Habitats Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.

European Red Data lists (IUCN, 2000)

International Union for Conservation of Nature (IUCN) and the European Commission have been working together on an initiative to assess around 6,000 European species according to IUCN regional Red Listing Guidelines. Through this process they have produced a European Red List identifying those species which are threatened with extinction at the European level so that appropriate conservation action can be taken to improve their status.

European Council Birds Directive (CEC, 1979)

The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. An important part of this Directive is the identification and classification of Special Protected Areas (SPAs) to protected vulnerable bird species listed in Annex 1 of the Directive and regularly occurring migrating species.

The Wildlife and Countryside Act (WCA) 1981 (as amended)

This Act is the primary legislation that protects animals, plants and certain habitats in the UK.

The Conservation of Habitats and Species Regulations 2017

The Conservation of Habitats and Species Regulations 2017 consolidate and update the Conservation of Habitats and Species Regulations 2010, and transpose Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (“the Habitats Directive”) and elements of Directive 2009/147/EC on the conservation of wild birds (“the Birds Directive”) in England, Wales, and to limited extent, Scotland and Northern Ireland.

The objectives of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species.

The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species. These sites form a network termed Natura 2000 and include Special Areas of Conservation and Special Protection Areas.

Protection of Badgers Act 1992

The Protection of Badgers Act 1992 consolidated and improved previous legislation. Under the Act it is an offence to kill, injure or take a Badger, or to damage or interfere with a sett used by a Badger unless a licence is obtained from a statutory authority.

The Hedgerow Regulations 1997

The Hedgerows Regulations 1997 protect certain hedgerows from being removed (uprooted or destroyed) if they meet certain criteria.

The Countryside and Rights of Way (CROW) Act 2000

This Act increases measures for the management and protection for Sites of Special Scientific Interest (SSSI) and strengthens wildlife enforcement legislation.

Circular 06/2005 Biodiversity and geological conservation – statutory obligations and their impact within the planning system

This circular provides administrative guidance on the application of the law relating to planning and nature conservation as it applies in England. It complements the national planning policy in the National Planning Policy Framework and the Planning Practice Guidance.

Natural Environment and Rural Communities Act 2006

The Act made amendments to the both the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way (CROW) Act 2000. For example, it extended the CROW biodiversity duty to public bodies and statutory undertakers.

UK Post-2010 Biodiversity Framework, 2012

The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach', and is the result of a change in strategic thinking.

The natural choice: securing the value of nature (2011) (Natural Environment White Paper)

This White Paper outlines the Governments vision for the future of landscape and ecosystem services.