

Natural Resources Wales

Stephenson Street Embankment, Newport

Vegetation survey 2019 update



August 2019

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Cover photographs: Left: Saltmarsh fringe immediately upstream of Transporter Bridge; Right: Saltmarsh upstream of Orb Electrical Steels, looking towards A48 Southern Distributor Road Bridge.

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1. Introduction

In 2018 Sturgess Ecology undertook a vegetation survey along part of the bank of the tidal section of the River Usk in Newport (approximate central grid reference SN985039) as far north as the Newport Transporter Bridge, as part of a range of studies to inform proposed flood defence works (Sturgess Ecology, 2018). As the design of these works has progressed it has become evident that several small parts of the flood bank upstream of the Transporter Bridge will need minor works to be carried out. Consequently, Natural Resources Wales has commissioned a further study of the saltmarsh habitat adjacent to these additional proposed works.

This report presents an outline of the survey methodology and summarises the findings through a series of vegetation descriptions and target notes.

The study area was limited to the saltmarsh habitat within 50m of the proposed works. Notes were also made of the immediately adjacent scrub and grassland habitat. An overview of the area is shown on an aerial photograph background in Figure 1.

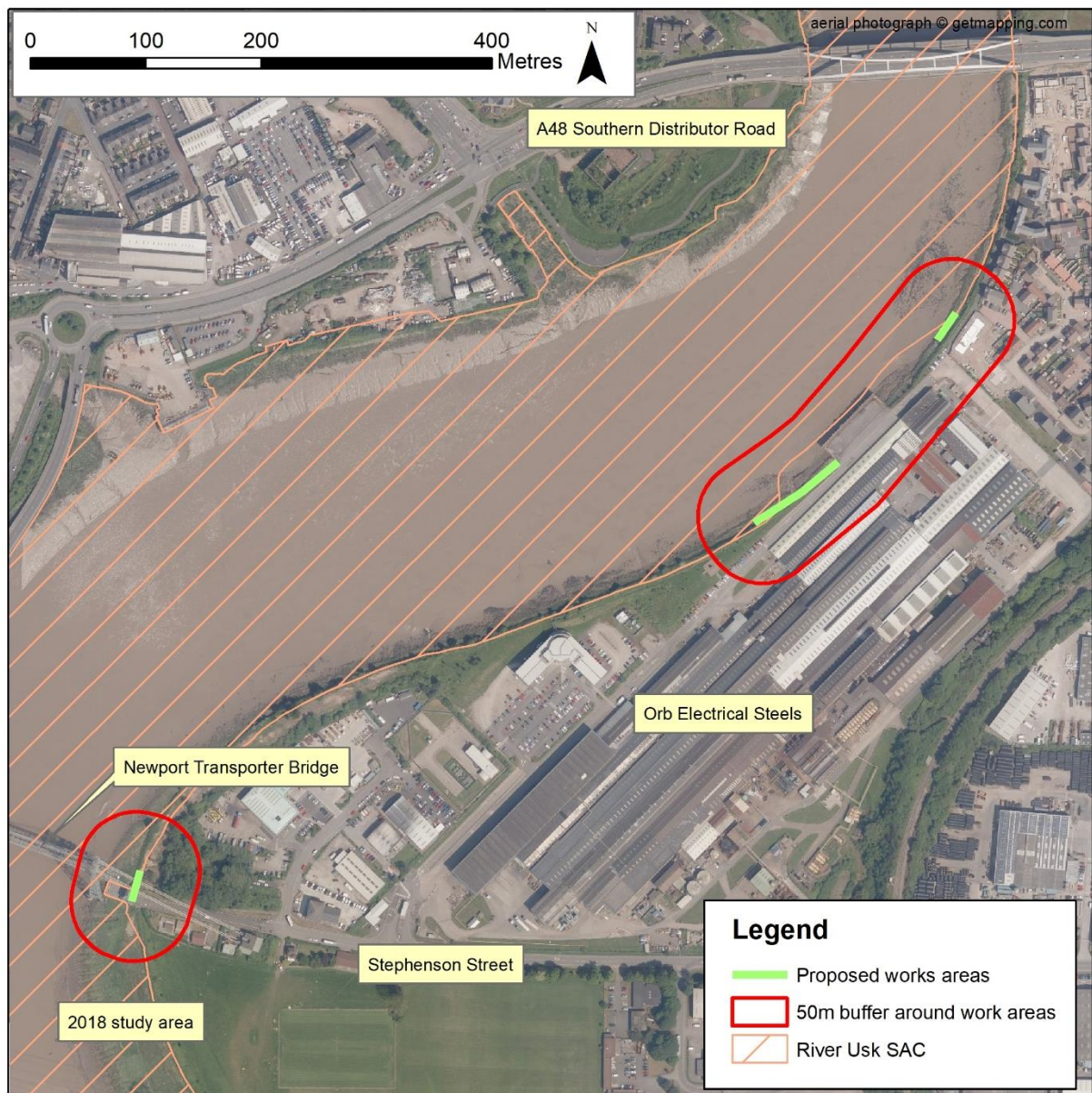


Figure 1. Overview of study area

2. Survey method

The survey followed the same approach as the 2018 study, mapping and describing the plant communities within the site using National Vegetation Classification (NVC) methods. As in 2018, the fieldwork and assessment were undertaken by Dr Peter Sturges CEnv MCIEM.

The survey work was carried out on 15 August 2019, during dry and sunny weather. The time and conditions are directly comparable to the 2018 survey.

The survey was mainly undertaken using a simple walk-through method, walking the site to examine and map the various vegetation types. The plant communities were plotted by eye onto an aerial photograph base plan. Photographs were also taken to illustrate the main vegetation types.

The vegetation was delineated into approximately homogeneous stands for mapping purposes. These mostly coincide with the broad habitats and therefore the mapping has attempted to use similar map colouring to standard JNCC habitat survey methodology (JNCC, 2010). The plant communities were described in terms of the published NVC communities (Rodwell, 1991, etc.) through the use of quadrat sampling and target notes.

A total of 19 quadrats were recorded. These involved recording every species within square 2x2m sample areas. These quadrat areas were generally selected as being representative samples of the stand in which they occurred. The cover of every species within each quadrat was assessed using the Domin scale, as shown in Table 1. An estimate was also made of the percentage cover by vegetation and the approximate vegetation height (as an average through the quadrat).

Table 1. Domin scale for recording vegetation cover

Percentage cover	Domin score
91-100%	10
76-90%	9
51-75%	8
34-50%	7
26-33%	6
11-25%	5
4-10%	4
<4% - many individuals	3
<4% - several individuals	2
<4% - few individuals	1
Associate species (within 1m of a quadrat)	A

The quadrats recorded from each similar plant community were grouped together into floristic tables, giving each distinct community its own table. Following NVC methodology, the occurrence of each species within the group of quadrats was assigned a constancy score as indicated in Table 2. The species within each table were then listed in order of their constancy score. Once the tables were completed, they were compared with the communities within the published NVC classification. This was done on the basis of the author's experience rather than using analytical software. However, TABLEFIT version 2.0 (Hill, 2015) was used to assist in interpreting some of the communities.

Table 2. Constancy scores for quadrat data

Frequency within quadrats	Constancy Score
81 - 100%	V
61 - 80%	IV
41 - 60%	III
21 - 40%	II
1 - 20%	I
Associate species (A) only	

Most of the saltmarsh in the study area was readily accessible. However, permission could not be obtained to gain access down the bank from Orb Electrical Steels to the central portion, due to safety concerns about the condition of the jetty and erosion of the banks in this area. It was also forbidden to walk under the jetty to access the saltmarsh from the north. The only approach that was permitted for surveying the central area was to gather as much information as possible by looking down from the top of the bank. This allowed broad description and mapping of the habitats, but no detailed investigation or quadrat data could be collected. Unfortunately it was not possible to see much of the upper margin of the saltmarsh from the top of the bank because of the wide belt of tall Bramble scrub.



The inaccessible saltmarsh section adjacent to Orb Electrical Steels.

3. Survey findings

A list of the plant species recorded during the survey is presented in Appendix 1, which includes the scientific and common names for each species.

The vegetation mapping is presented as Figure 2a and 2b. These broadly show the main blocks of different vegetation types, overlaid on an aerial photograph to provide a context for the observations. Figure 2a also includes the data from 2018 where this overlaps with the current 50m survey buffer.

The vegetation stands were plotted by eye and most do have clearly defined boundaries, so they should only be considered very approximate. As in 2018, the mix of communities at the seaward edge of the saltmarsh were too complex to map accurately due to the patchy

nature of the Cordgrass, so these have been mapped as a mosaic of the main community types. In some cases the plant communities have been described as target notes rather than by using quadrats (particularly the inaccessible central section).

The locations of the quadrats and target notes are shown in Figure 2. Where possible, they were sampled from communities dispersed widely across the site. However, because it was not possible to access the central section, a relatively high density of quadrats had to be collected from the accessible areas either side.

The vegetation descriptions and constancy tables are presented below. They attempt to describe the vegetation in terms of the published NVC communities. In some cases it has not been possible to match the vegetation with the published types very precisely, particularly where the plant communities have been subject to disturbance or where they are in a state of transition. The community descriptions are presented together with the quadrat data collected, arranged as NVC vegetation tables. The species in the tables are arranged in order of frequency.

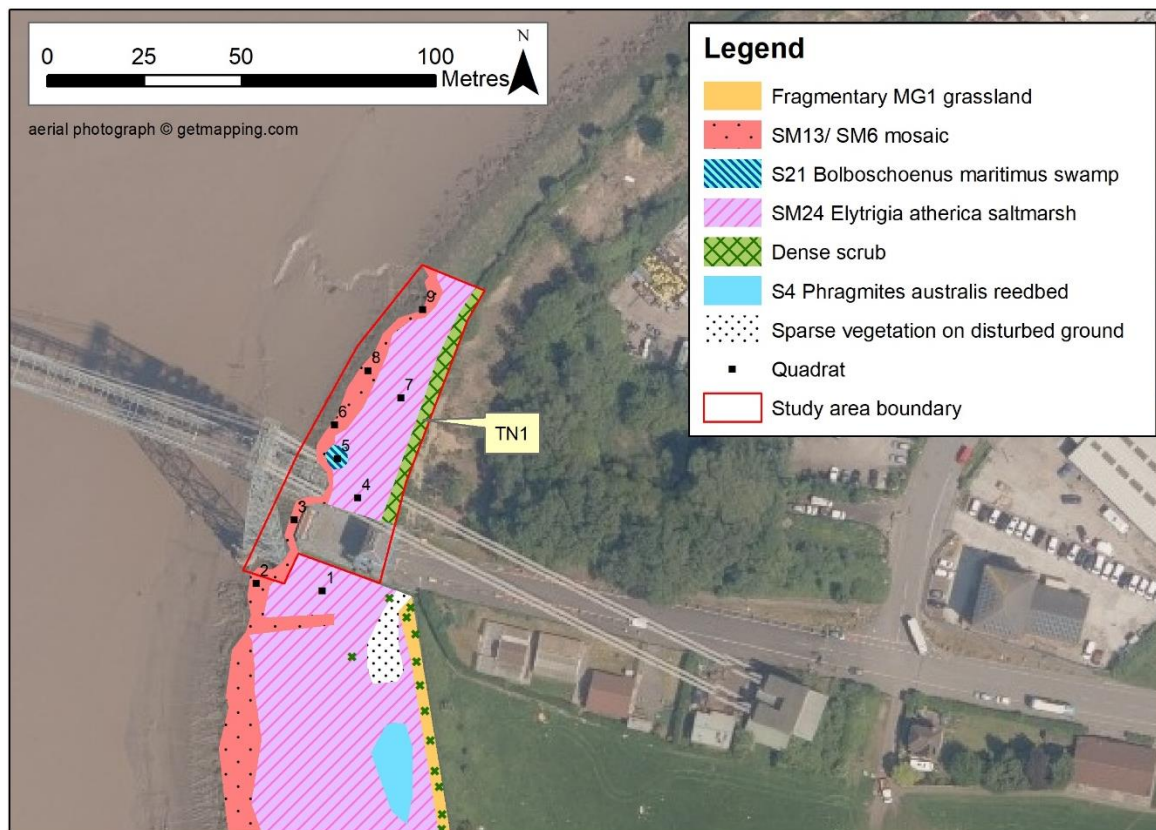


Figure 2a. Vegetation plan, southern part (including part of 2018 survey data).

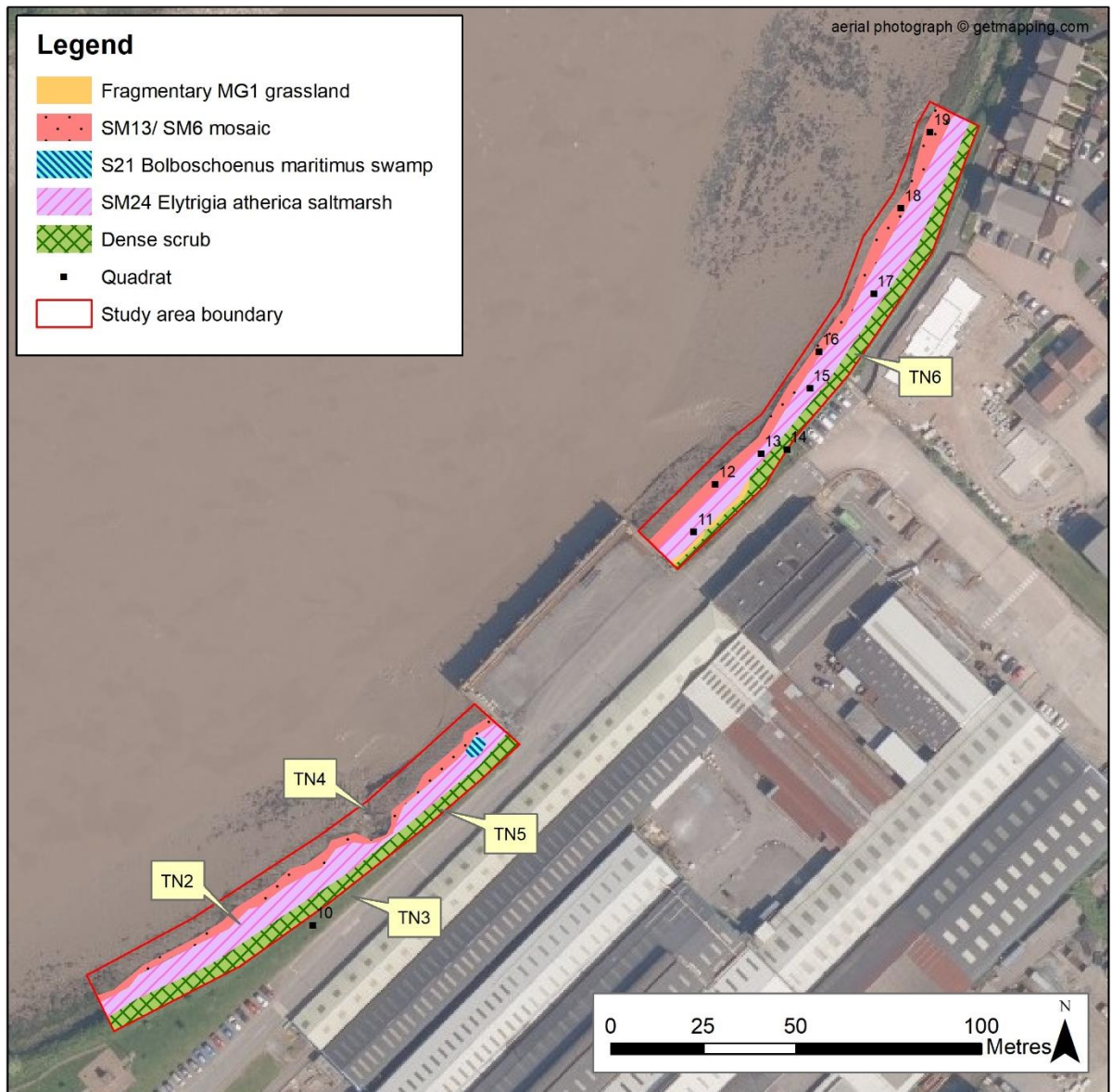


Figure 2b. Vegetation plan, northern part.

SM24 Elytrigia atherica saltmarsh

The most prevalent plant community within the study area is a belt of Sea Couch on the upper part of the saltmarsh. This has a very low diversity sward typically limited to a few sparse plants of Spar-leaved Orache. No species of special nature conservation significance were found in this community.

The overall diversity seen in the SM24 quadrats recorded in 2019 was very slightly higher than those recorded downstream in 2018. This is probably because the width of the Sea Couch belt is much narrower in this location so that the quadrats are more affected by transitions with adjacent communities higher and lower on the shore.

Table 3. Quadrat data for SM24 saltmarsh

Species	1	4	7	11	13	15	17	Frequency
<i>Elytrigia atherica</i>	10	10	10	10	9	10	10	V
<i>Atriplex prostrata</i>					2	1	4	III
<i>Beta vulgaris</i>		1	1					II
<i>Sonchus arvensis</i>		1	1					II
<i>Aster tripolium</i>				A	2			I
<i>Festuca rubra</i>			4					I
<i>Solanum dulcamara</i>		A	1					I
<i>Puccinellia maritima</i>				A				
<i>Rubus fruticosus</i>			A		A	A		
<i>Senecio jacobaea</i>							A	
<i>Eupatorium cannabinum</i>		A	A					
<i>Fraxinus excelsior</i>			A					
Total species	1	3	5	1	3	2	2	
Cover (%)	100	100	100	100	95	100	100	
Average sward height (cm)	50	60	50	25	80	20	40	

*SM24 saltmarsh (at Quadrat 7)*

Mosaic of SM13 Puccinellia maritima saltmarsh / SM6 Spartina anglica saltmarsh margin on lower shore

The lower part of the saltmarsh supports a mostly narrow strip of Sea Aster, Common Saltmarsh Grass and Annual Sea-blite. Common Cord-grass occurs patchily within this zone; mostly as small, dense stands of 2-4m diameter (e.g. Quadrats 2 & 19). These would best fit with SM6 *Spartina anglica* saltmarsh, although the patches are generally too small to map and often intergrade with the adjacent communities.

When compared with the 2018 data from downstream, the composition of this community was broadly very similar. There was a higher proportion of Sea Plantain, but no sign of any Scurvy-grass or Sea Spurrey. However, this may simply be an effect of the smaller study area and limited access to the central section.

Table 4. Quadrat data for SM13/ SM6 saltmarsh mosaic

Species	2	3	6	8	9	12	16	18	19	Frequency
<i>Aster tripolium</i>	A	1	2	4	4	4	6	1	1	V
<i>Puccinellia maritima</i>		9	2	5	4	6	8	8	2	V
<i>Suaeda maritima</i>	2	A	6		A	2	3	7	2	IV
<i>Atriplex prostrata</i>		2	1		1	2				III
<i>Elytrigia atherica</i>				2	A	1	2	2		III
<i>Plantago maritima</i>			1				1	1		II
<i>Spartina anglica</i>	10		8			A	A		10	II
<i>Glaux maritima</i>			A	8						I
<i>Triglochin maritimum</i>								1		I
<i>Beta vulgaris</i>						A				
Total species	2	3	6	4	3	5	5	6	4	
Cover (%)	90	90	95	95	50	80	95	90	100	
Average sward height (cm)	60	20	90	15	70	40	50	30	50	



Narrow strip of SM13 Puccinellia maritima saltmarsh (with SM24 in right of picture), near Quadrat 16).



SM13 *Puccinellia maritima* saltmarsh with patches of SM6 *Spartina anglica* saltmarsh (near Quadrat 6).

S21 *Bolboschoenus maritimus* swamp

Two patches within the middle shore were dominated by Sea Clubrush. The only one that was accessible is described by Quadrat 5. No frequency data is presented for this because the patch was not large enough to record more than a single quadrat. The small patch of this community that was visible from the jetty appeared to be similar in species composition to Quadrat 5.

The mix of species is broadly similar to the S21 community recorded in 2018. The species composition appears less diverse than before, but that may be because of the relatively small patch size available for examination, and also because the topography of the areas in this year's survey did not include any standing water or recently disturbed ground. No species of special nature conservation significance were recorded in the accessible parts of this community.

Table 5. Quadrat data for S21 *Bolboschoenus maritimus* swamp

Species	5
<i>Bolboschoenus maritimus</i>	9
<i>Aster tripolium</i>	3
<i>Atriplex prostrata</i>	2
<i>Plantago maritima</i>	1
<i>Glaux maritima</i>	1
<i>Elytrigia atherica</i>	A
<i>Puccinellia maritima</i>	A
<i>Suaeda maritima</i>	A
Total species	5
Cover (%)	95
Average sward height (cm)	90



S21 Bolboschoenus maritimus
swamp vegetation (at Quadrat
5).

W24 Rubus fruticosus – Holcus lanatus underscrub on flood bank

The upper edge of the saltmarsh along the whole of the survey section is defined by a steep bank that is largely covered by dense Bramble (TN1, TN5 & TN6). The Bramble scrub is accompanied by a relatively low diversity of coarse grasses and tall ruderal herbs; particularly False Oat-grass, Couch, Yorkshire Fog, Nettle, Hogweed, Rose-bay Willowherb, Hemp Agrimony and Yarrow. A slightly less heavily scrub-covered part of the bank is present at the north of the Orb Electrical Steels site. This contains sparsely vegetated rubble with a slightly higher plant diversity that includes Black Medick, Fern-grass, Maidenhair Spleenwort, Mugwort and Butterfly Bush.

No rare species were found in this community, although a few plants of the locally notable Black Horehound were noted in the roadside scrub immediately east of the Transporter Bridge (but this outside of the study area and not part of the saltmarsh community).



Dense Bramble on flood bank
(east of quadrat 6).

The list of plant species observed on the scrub-covered flood bank (combined for all sections) is as follows:

<i>Acer pseudoplatanus</i>	<i>Helminthotheca echioides</i>
<i>Achillea millefolium</i>	<i>Heracleum sphondylium</i>
<i>Agrimonia eupatoria</i>	<i>Hirschfeldia incana</i>
<i>Agrostis capillaris</i>	<i>Holcus lanatus</i>
<i>Agrostis stolonifera</i>	<i>Homalothecium sericeum</i>
<i>Alnus glutinosa</i>	<i>Hypericum perforatum</i>
<i>Anagallis arvensis</i>	<i>Kindbergia praelonga</i>
<i>Arrhenatherum elatius</i>	<i>Lactuca serriola</i>
<i>Artemisia vulgaris</i>	<i>Linaria vulgaris</i>
<i>Asplenium trichomanoides</i>	<i>Lolium perenne</i>
<i>Atriplex prostrata</i>	<i>Lotus corniculatus</i>
<i>Bellis perennis</i>	<i>Medicago lupulina</i>
<i>Beta vulgaris</i>	<i>Oenanthe crocata</i>
<i>Brachythecium rutabulum</i>	<i>Oenothera sp.</i>
<i>Buddleja davidii</i>	<i>Pastinaca sativa</i>
<i>Calliergonella cuspidata</i>	<i>Persicaria maculosa</i>
<i>Calystegia sepium</i>	<i>Plantago lanceolata</i>
<i>Carex flacca</i>	<i>Potentilla anserina</i>
<i>Carex hirta</i>	<i>Potentilla reptans</i>
<i>Catapodium rigidum</i>	<i>Prunella vulgaris</i>
<i>Centaurea nigra</i>	<i>Pulicaria dysenterica</i>
<i>Cerastium fontanum</i>	<i>Ranunculus repens</i>
<i>Chamerion angustifolium</i>	<i>Rosa canina</i>
<i>Chenopodium album</i>	<i>Rubus fruticosus</i>
<i>Chenopodium rubrum</i>	<i>Rumex obtusifolius</i>
<i>Cirsium arvense</i>	<i>Salix cinerea</i>
<i>Cirsium vulgare</i>	<i>Sambucus nigra</i>
<i>Clematis vitalba</i>	<i>Senecio jacobaea</i>
<i>Crataegus monogyna</i>	<i>Solanum dulcamara</i>
<i>Dactylis glomerata</i>	<i>Sonchus arvensis</i>
<i>Dipsacus fullonum</i>	<i>Sonchus oleraceus</i>
<i>Elytrigia atherica</i>	<i>Stachys palustris</i>
<i>Elytrigia repens</i>	<i>Tanacetum vulgare</i>
<i>Equisetum arvense</i>	<i>Taraxacum sp.</i>
<i>Eupatorium cannabinum</i>	<i>Torilis japonica</i>
<i>Festuca rubra</i>	<i>Tussilago farfara</i>
<i>Fissidens taxifolius</i>	<i>Urtica dioica</i>
<i>Galium aparine</i>	<i>Verbascum thapsus</i>
<i>Glaux maritima</i>	<i>Vicia cracca</i>
<i>Hedera helix</i>	<i>Vulpia bromoides</i>

Fragmentary MG1 Arrhenatherum elatius grassland

The occasionally mown grass area at the top of the flood bank within the Orb Electrical Steels site (TN3, and a small patch at Q14) lies outside the saltmarsh study area but was sampled by means of 2 quadrats to describe it and investigate whether it supported any species of nature conservation significance.

The MG1 grassland appeared broadly similar but slightly more diverse than the equivalent grassland community that was sampled in 2018. The difference is probably due to the

occasional grass cutting that happens at the Orb Electrical Steels site, which allows a higher proportion of low-growing plants to co-exist with taller species.

Table 8. Quadrat data for fragmentary MG1 *Arrhenatherum elatius* grassland

Species	10	14	Frequency
<i>Achillea millefolium</i>	3	2	V
<i>Arrhenatherum elatius</i>	2	2	V
<i>Elytrigia repens</i>	2	2	V
<i>Festuca rubra</i>	7	6	V
<i>Heracleum sphondylium</i>	2	1	V
<i>Medicago lupulina</i>	2	8	V
<i>Plantago lanceolata</i>	2	3	V
<i>Potentilla reptans</i>	4	1	V
<i>Rubus fruticosus</i>	1	2	V
<i>Taraxacum sp.</i>	1	1	V
<i>Vicia sativa</i>	1	2	V
<i>Agrostis stolonifera</i>	2		III
<i>Anagallis arvensis</i>	2		III
<i>Artemisia vulgaris</i>	2		III
<i>Bellis perennis</i>	3		III
<i>Buddleja davidii</i>		1	III
<i>Carex flacca</i>		2	III
<i>Crepis capillaris</i>	2		III
<i>Dactylis glomerata</i>	1		III
<i>Equisetum arvense</i>		2	III
<i>Galium aparine</i>	1		III
<i>Holcus lanatus</i>		1	III
<i>Lolium perenne</i>	2		III
<i>Lotus corniculatus</i>	2		III
<i>Ranunculus repens</i>		2	III
<i>Senecio jacobaea</i>	1		III
<i>Trifolium dubium</i>		2	III
<i>Trifolium pratense</i>	2		III
<i>Trifolium repens</i>		1	III
<i>Eupatorium cannabinum</i>	A		
<i>Hirschfeldia incana</i>		A	
<i>Pastinaca sativa</i>	A		
<i>Rumex obtusifolius</i>	A		
<i>Sonchus oleraceus</i>		A	
<i>Urtica dioica</i>	A		
<i>Vicia cracca</i>		A	
Total species	22	18	
Cover (%)	100	100	
Average sward height (cm)	10	10	



Fragmentary MG1
Arrhenatherum elatius
grassland at top of bank (at
Quadrat 14).

Additional notes on inaccessible section of study area.

The central section of the saltmarsh immediately south-east of the jetty could not be accessed. However the plant communities were viewed from the top of the bank, and partly from the jetty. There were no indications from these positions that there were any different communities present. The zonation of plant communities and range of species appeared very similar to the habitats investigated more fully to the north-east and south-west.

The main block of the saltmarsh at TN2 is a strip of SM24 Sea Couch, with a mix of SM13/SM6 along the seaward edge, dominated by Sea Aster and Common Saltmarsh-grass. The width of the SM13 belt appears wider than the belt to the north-east of the jetty, and there are several larger blocks of SM6 Cord-grass saltmarsh towards the south-eastern end. The Bramble bank adjoining the upper part of the saltmarsh appears to be steeper than the other parts, so it was not easy to see the vegetation at the foot of the bank. Two species that were observed at the foot of the bank which were not seen elsewhere in the study area included the wetland herbs Marsh Woundwort and Hemlock Water-dropwort. It is feasible that there be other, lower-growing wetland species that were not visible from the top.

The saltmarsh at TN4 is a steep-sided eroding section around the location of an outfall pipe. The steep banks are sparsely vegetated by Sea Aster, Spear-leaved Orache and accumulated driftwood. There is a patch of SM21 Sea Club-rush swamp vegetation to the north-east of this, but it appeared very species-poor and broadly similar to the one investigated at Quadrat 5.



Looking north-east along the inaccessible section (TN2) towards the Orb Electrical Steels jetty.

4. Evaluation

This section evaluates the nature conservation significance of the plant communities in a geographical context, following the approach set out in 'Guidelines for Ecological Impact Assessment' (CIEEM, 2018). The criteria used to assist in the evaluation are summarised in Table 9.

Table 9: Evaluation of habitats

Level of Value	Habitats
International	Areas designated as Special Areas of Conservation (SAC), Special Protection Areas (SPA) or Ramsar sites in response to European Directives and International Conventions.
National	Areas designated as Sites of Special Scientific Interest (SSSI), National Nature Reserve (NNR), or equivalent for key areas, habitats and plant communities.
Regional	Areas of habitat of suitable size and quality to be considered for notification as SSSI (based on Guidelines for the Selection of Biological SSSIs, JNCC 1998). Extensive areas of Environment (Wales) Act (2016) Section 7 habitats, listed as 'habitats of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.
County	Areas meeting Wildlife Sites Guidelines selection criteria; areas of Section 7 habitats; areas of Ancient woodland.
District/Local value	Areas of LBAP habitat. Important hedgerows classified under The Hedgerow Regulations 1997. Any non-designated habitat assemblage of moderate biodiversity value.

Most of the saltmarsh habitat along this section of the Usk through Newport lies within the River Usk SAC/ Lower Usk SSSI and is therefore considered part of an internationally important site. In this case the SSSI and SAC boundary has been drawn around a wide margin either side of the Orb Electrical Steels jetty, so that much of the proposed works area is outside of the protected site (see Figure 1). In comparison with the salt-marsh surveyed during 2018, the sections examined during the present survey formed a narrower strip and appeared to be less diverse than the downstream section, and they supported fewer species of nature conservation significance. However, there is no clearly defined boundary evident within the saltmarsh habitat, so it is proposed that it should all be treated as though it were inside the SSSI/ SAC. This probably makes no difference to the proposed works because they will be limited to the upper part of the flood bank.

None of the plant species recorded during the survey are included in the Environment (Wales) Act 2016 Section 7 lists of species of 'principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales'. Similarly, none were found that are listed as being locally notable in the Wildlife Sites Guidelines (Wales Biodiversity Partnership, 2008). The only species listed as notable in the Wildlife Sites Guidelines was Black Horehound, which was present in scrub to the north-east of the Transporter Bridge. (This is listed as a 'Contributory Species' which is found in less than 30 10km grid squares in Monmouthshire, Glamorgan and Carmarthenshire). However, this was part of the roadside scrub and not part of the saltmarsh study area).

No non-native invasive plant species that are listed on Schedule 9 of the Wildlife and Countryside Act were found during the survey. It is feasible that a small quantity of such species might be present in the scrub that was inaccessible during the survey.



Black Horehound in roadside scrub East of Transport Bridge.

5. Recommendations

The implementation of the proposed works should be reviewed and agreed by Natural Resources Wales nature conservation section due to the site's SAC and SSSI designations.

The proposed flood defence works would involve increasing the height of the flood bank in certain sections. Because the work would primarily involve altering the height of the bank it should be feasible to do this without any need to widen the bank towards the river. If this is possible the only habitats that would be affected would be the Bramble scrub with tall herbs and the adjacent mown grassland. Both of these low value habitats would be expected to regenerate within a few years of the disturbance and no specific mitigation to translocate or reinstate rare plant communities would be required.

If there is likely to be a potential for impacts on the central section of saltmarsh habitat (at TN2 and TN4), rather than just the flood bank, it would be appropriate to carry out a further survey to clarify whether there are any rare species that would be affected, so that specific mitigation measures can be developed if necessary (e.g. protecting or transplanting locally uncommon species before the work commences).

6. References

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Appendix 1. Plant species list

The following species were all identified during the vegetation survey. However, due to the size of the site and nature of the sampling this should not be considered a comprehensive list of every plant species within the study area.

Species	Common name
VASCULAR PLANTS	
<i>Acer pseudoplatanus</i>	Sycamore
<i>Achillea millefolium</i>	Yarrow
<i>Agrimonia eupatoria</i>	Agrimony
<i>Agrostis capillaris</i>	Common Bent
<i>Agrostis stolonifera</i>	Creeping Bent
<i>Alnus glutinosa</i>	Alder
<i>Anagallis arvensis</i>	Scarlet Pimpernel
<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Artemisia vulgaris</i>	Mugwort
<i>Asplenium trichomanoides</i>	Maidenhair Spleenwort
<i>Aster tripolium</i>	Sea Aster
<i>Atriplex prostrata</i>	Spear-leaved Orache
<i>Ballota nigra</i>	Black Horehound
<i>Bellis perennis</i>	Daisy
<i>Beta vulgaris</i>	Sea Beet
<i>Bolboschoenus maritimus</i>	Sea Club-rush
<i>Buddleia davidii</i>	Butterfly Bush
<i>Calystegia sepium</i>	Hedge Bindweed
<i>Carex flacca</i>	Glaucous Sedge
<i>Carex hirta</i>	Hairy Sedge
<i>Catapodium rigidum</i>	Fern Grass
<i>Centaurea nigra</i>	Common Knapweed
<i>Cerastium fontanum</i>	Common Mouse-ear
<i>Chamerion angustifolium</i>	Rose-Bay Willowherb
<i>Chenopodium album</i>	Fat Hen
<i>Chenopodium rubrum</i>	Red Goosefoot
<i>Cirsium arvense</i>	Creeping Thistle
<i>Cirsium vulgare</i>	Spear Thistle
<i>Clematis vitalba</i>	Traveller's Joy
<i>Conyza floribunda</i>	Bilbao Fleabane
<i>Crataegus monogyna</i>	Hawthorn
<i>Crepis capillaris</i>	Smooth Hawkbit
<i>Dactylis glomerata</i>	Cock's-foot Grass
<i>Daucus carota</i>	Wild Carrot
<i>Dipsacus fullonum</i>	Teasel
<i>Elytrigia atherica</i>	Sea Couch
<i>Elytrigia repens</i>	Common Couch
<i>Epilobium hirsutum</i>	Greater Willowherb
<i>Epilobium parviflorum</i>	Hoary Willowherb
<i>Equisetum arvense</i>	Field Horsetail
<i>Eupatorium cannabinum</i>	Hemp Agrimony
<i>Festuca rubra</i>	Red Fescue
<i>Fraxinus excelsior</i>	Ash
<i>Galium aparine</i>	Cleavers

Species	Common name
<i>Glaux maritima</i>	Sea Milkwort
<i>Hedera helix</i>	Ivy
<i>Helminthotheca echioides</i>	Bristly Ox-tongue
<i>Heracleum sphondylium</i>	Hogweed
<i>Hirschfeldia incana</i>	Hoary Mustard
<i>Holcus lanatus</i>	Yorkshire Fog
<i>Hypericum perforatum</i>	Perforate St. John's-wort
<i>Hypochaeris radicata</i>	Common Cat's-Ear
<i>Lactuca serriola</i>	Prickly Lettuce
<i>Linaria vulgaris</i>	Common Toadflax
<i>Lolium perenne</i>	Perennial Rye-grass
<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil
<i>Medicago lupulina</i>	Black Medick
<i>Oenanthe crocata</i>	Hemlock Water-dropwort
<i>Oenothera sp.</i>	Evening Primrose
<i>Pastinaca sativa</i>	Wild Parsnip
<i>Persicaria maculosa</i>	Redshank
<i>Plantago lanceolata</i>	Ribwort Plantain
<i>Plantago maritima</i>	Sea Plantain
<i>Potentilla anserina</i>	Silverweed
<i>Potentilla reptans</i>	Creeping Cinquefoil
<i>Prunella vulgaris</i>	Self-Heal
<i>Puccinellia maritima</i>	Common Saltmarsh-grass
<i>Pulicaria dysenterica</i>	Fleabane
<i>Ranunculus repens</i>	Creeping Buttercup
<i>Rosa canina</i>	Dog Rose
<i>Rubus fruticosus</i>	Bramble
<i>Rumex obtusifolius</i>	Broad-Leaved Dock
<i>Salix cinerea</i>	Grey Willow
<i>Sambucus nigra</i>	Elder
<i>Senecio jacobaea</i>	Ragwort
<i>Solanum dulcamara</i>	Bittersweet
<i>Sonchus arvensis</i>	Perennial Sow-thistle
<i>Sonchus oleraceus</i>	Smooth Sow-thistle
<i>Spartina anglica</i>	Common Cord-grass
<i>Stachys palustris</i>	Marsh Woundwort
<i>Suaeda maritima</i>	Annual Seablite
<i>Tanacetum vulgare</i>	Tansy
<i>Taraxacum sp.</i>	Dandelion
<i>Torilis japonica</i>	Upright Hedge-parsley
<i>Trifolium dubium</i>	Lesser Trefoil
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Triglochin maritimum</i>	Sea Arrowgrass
<i>Tussilago farfara</i>	Colt's Foot
<i>Urtica dioica</i>	Nettle
<i>Verbascum thapsus</i>	Great Mullein
<i>Vicia cracca</i>	Tufted Vetch
<i>Vicia sativa</i>	Common Vetch
<i>Vulpia bromoides</i>	Squirreltail Fescue
BRYOPHYTES	

Species	Common name
<i>Brachythecium rutabulum</i>	Rough-stalked Feather-moss
<i>Calliergonella cuspidata</i>	Pointed Spear-moss
<i>Bryum</i> sp.	Thread-moss
<i>Didymodon insulanus</i>	Cylindric Beard-moss
<i>Fissidens taxifolius</i>	Common Pocket-moss
<i>Homalothecium lutescens</i>	Yellow Feather-moss
<i>Homalothecium sericeum</i>	Silky Wall Feather-moss
<i>Kindbergia praelonga</i>	Common Feather-moss
LICHENS	
<i>Physcia tenella</i>	Lichen
<i>Xanthoria parietina</i>	Lichen

Appendix 2. Incidental fauna observations

Species	Common name
DRAGONFLIES	
<i>Sympetrum striolatum</i>	Common Darter Dragonfly
BUTTERFLIES & MOTHS	
<i>Pieris napi</i>	Green-veined White Butterfly
<i>Vanessa cardui</i>	Painted Lady Butterfly
BIRDS	
<i>Carduelis carduelis</i>	Goldfinch
<i>Corvus corone</i>	Carrion Crow
<i>Larus argentatus</i>	Herring Gull
<i>Larus fuscus</i>	Lesser Black-backed Gull
<i>Larus ridibundus</i>	Black-headed Gull
<i>Turdus merula</i>	Blackbird