

Figure 1. Aerial photograph of Green Beach Extension, indicated by red line.

Recording 2024

Visits during spring and summer 2024 found 52 vascular plant taxa (Table 1). All but one were natives, being typical of an early-stage saltmarsh community with some sand-dune and dune-slack affinities. Only six (11.5%) were nationally or regionally notable.

By August 2024, rapid accretion was taking place, with embryo dunes in the southern section up to 0.6 m high forming around a wide variety of saltmarsh and sand-dune plants, including Common Saltmarsh-grass, Creeping Bent (*Agrostis stolonifera*), Reed Canary-grass (*Phalaris arundinacea*), Marram (*Ammophila arenaria*), Common Couch (*Elymus repens*), Sea Club-rush (*Bolboschoenus maritimus*) and, especially, Lyme-grass (*Leymus arenarius*). To the north, 'Puccinellia hummocks' were becoming well established.

Ellenberg Salinity (S) values for the Green Beach Extension plants ranged from 0 to 7 (Table 1), with a mean of 2, indicating a flora adapted to both saline and non-saline situations, with saline habitats not strongly predominant (Hill *et al.*, 2004). This compares with a mean S-value of 2.76 for the adjacent Even Newer Green Beach when it began to form in 2017. The lower value for the Extension may be due to occasional freshwater flooding from the Sands Lake outflow, which allowed colonisation by species with lower tolerance of saline conditions.

Recording 2025

Monthly recording visits were made between May and September, notes being made on changes in topography and the frequency of all vascular taxa. A total of 34 vascular plants was recorded, 18 fewer than in the previous year (Table 1). The missing taxa were a mix of typical maritime, freshwater and ruderal species, their absence being attributed to severe spring and summer droughts and occasional high winds in the summer, resulting in less freshwater influence and copious fresh sand deposition over the vegetation, especially on the strand-line. Four additional species were found, namely *Euphorbia paralias* (Sea Spurge), *Jacobaea vulgaris* (Common Ragwort), *Persicaria maculosa* (Redshank) and *Tripleurospermum maritimum* (Sea Mayweed). These are all typical early colonists of Green Beach habitats. In 2025, five (15%) regionally or nationally notable taxa were identified but no non-native species. A very low proportion of aliens is typical of the harsh 'Green Beach' environment, being subject to marine overwash and the effects of blowing sand, to which non-native generalists are often poorly adapted. Ellenberg Salinity Values for vascular plants

in 2025 had a mean of 2.4, a slightly higher figure than in 2024. This may have been due to the absence of spring flooding and therefore fewer freshwater taxa with no adaptation to saline conditions.

Topographic changes included further growth, both of embryo dunes in the south up to 0.7 m high and ‘hummocks’ to the north, including one formed around *Juncus articulatus* (Jointed Rush) (Fig. 2). Two parallel bands of vegetation were apparent. Travelling from the northern end at SD 29890 13401, the feature began with *Puccinellia* hummocks, 0.5 m high, in a zone 15 m wide (Fig. 3). Moving south, these soon increased in height and become increasingly dominated by *Leymus arenarius*, creating a new ridge, 7 – 8 m out from the foredune and about 15 m wide (Fig. 4). In places, fresh sand had blown across the gap to coalesce with the old frontal ridge (Fig. 5). Along its western edge, the new ridge consisted of well-established embryo dunes 0.8 to 1 m high, with occasional *Ammophila* tussocks (Fig. 6). The overall size of the Green Beach Extension, at 320 x 40 m (1.3 ha), was about the same as in 2024.

The changes described in this report resemble the early stages of Green Beach development elsewhere on this coast, having been attributed to rising beach levels (Smith & Lockwood, 2021). This is a natural process of accretion associated with the outer fringes of the Ribble Estuary, having positive benefits for coast protection, as well as for nature conservation.



Figure 2. Hummock formed around *Juncus articulatus*, Green Beach Extension, May 2025.



Figure 3. *Puccinellia* hummocks Green Beach Extension, June 2025.



Figure 4. New dune ridge forming, Green Beach Extension, May 2025.



Figure 5. Sand-blow from Green Beach Extension, September 2025.



Figure 6. Embryo dunes forming on central section of Green Beach Extension, September 2025.

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References

- Hill, M.O., Preston, C.D. & Roy, D.B. 2004. *PLANTATT. Attributes of British and Irish plants: status, size, life history, geography and habitats*. Centre for Ecology & Hydrology, Cambridgeshire.
- Smith, P.H. 2024. *Flora of Green Beach (south) extension on the Sefton Coast, Merseyside*. Unpub. Report.
- Smith, P.H. & Lockwood, P.A. 2021. Fifteen years of habitat, floristic and vegetation change on a pioneer sand-dune and slack system at Ainsdale, north Merseyside, UK. *British & Irish Botany* 3: 232-262.

Table 1. Vascular plant list for the Green Beach (south) extension, 2024, 2025.

* = non-native; r = rare, o = occasional, f = frequent, a = abundant, l = locally, v = very; NT = Near Threatened; VU = Vulnerable (italics: England Red List); SCI = Species of Conservation Importance in North West England. S value = Ellenberg Salinity Value.

Taxon	English name	Freq. 2024	Freq. 2025	S value
<i>Agrostis stolonifera</i>	Creeping Bent	la	la	1
<i>Ammophila arenaria</i>	Marram	o	o	3
<i>Atriplex laciniata</i> SCI	Frosted Orache	o		3
<i>Atriplex littoralis</i>	Grass-leaved Orache	r	o	3
<i>Atriplex prostrata</i>	Spear-leaved Orache	o	o	2
<i>Beta vulgaris</i> subsp. <i>maritima</i>	Sea Beet	o	la	3
<i>Bolboschoenus maritimus</i>	Sea Club-rush	la	la	4
<i>Carex arenaria</i>	Sand Sedge	lf		1
<i>Carex extensa</i>	Long-bracted Sedge	o	r	4
<i>Carex otrubae</i>	False Fox-sedge	o	r	2
<i>Eleocharis palustris</i>	Common Spike-rush	vlf		1
<i>Elymus junceiformis</i>	Sand Couch	o	o	3
<i>Elymus repens</i>	Common Couch	lf	la	2
<i>Epilobium hirsutum</i>	Great Willowherb	o		0
<i>Epilobium obscurum</i>	Short-fruited Willowherb	r	o	0
<i>Eryngium maritimum</i> NT SCI	Sea Holly	r	o	3
<i>Euphorbia paralias</i> SCI	Sea Spurge		r	3
<i>Festuca rubra</i>	Red Fescue	r		2
<i>Honckenya peploides</i>	Sea Sandwort	o	vlo	3
<i>Hypochaeris radicata</i>	Cat's-ear	r		0
<i>Iris pseudacorus</i>	Yellow Iris	o	o	1
<i>Jacobaea vulgaris</i>	Common Ragwort		r	0
<i>Juncus articulatus</i>	Jointed Rush	la	o	1
<i>Juncus gerardii</i>	Saltmarsh Rush	r		3
<i>Leymus arenarius</i>	Lyme-grass	o	lf	3
<i>Lolium multiflorum</i> *	Italian Rye-grass	r		0
<i>Lolium perenne</i>	Perennial Rye-grass	r		0
<i>Lysimachia maritima</i>	Sea Milkwort	o	lf	4
<i>Myosotis laxa</i> subsp. <i>caespitosa</i>	Tufted Forget-me-not	r		0
<i>Nasturtium officinale</i>	Water-cress	r		0
<i>Oenanthe crocata</i>	Hemlock Water-dropwort	r		1
<i>Persicaria maculosa</i>	Redshank		r	0
<i>Phalaris arundinacea</i>	Reed Canary-grass	o	lf	1
<i>Phragmites australis</i>	Common Reed	lf	lf	2
<i>Plantago coronopus</i>	Buck's-horn Plantain	r		2
<i>Plantago maritima</i>	Sea Plantain	o	r	3

<i>Polygonum aviculare</i>	Knotgrass	r		0
<i>Polygonum oxyspermum</i> subsp. <i>raii</i> SCI	Ray's Knotgrass	r		3
<i>Potentilla anserina</i>	Silverweed	o		2
<i>Puccinellia maritima</i>	Common Saltmarsh- grass	la	lf	5
<i>Ranunculus flammula</i> VU	Lesser Spearwort	r		0
<i>Rumex conglomeratus</i>	Clustered Dock	o		0
<i>Rumex crispus</i>	Curled Dock	o	o	2
<i>Rumex obtusifolius</i>	Broad-leaved Dock	r	r	0
<i>Salsola kali</i> VU SCI	Prickly Saltwort	o	o	3
<i>Schedonorus arundinaceus</i>	Tall Fescue	r	r	1
<i>Schoenoplectus tabernaemontani</i> SCI	Grey Club-rush	r	r	3
<i>Sonchus asper</i>	Prickly Sowthistle	r		0
<i>Sonchus oleraceus</i>	Smooth Sowthistle	o		0
<i>Spartina anglica</i>	Common Cord-grass	r	r	7
<i>Suaeda maritima</i>	Annual Sea-blite	r		7
<i>Taraxacum</i> agg.	Dandelion	r	r	1
<i>Triglochin maritima</i>	Sea Arrowgrass	o	o	4
<i>Tripolium pannonicum</i>	Sea Aster	o	o	5
<i>Tripleurospermum maritimum</i>	Sea Mayweed		r	1
<i>Veronica catenata</i>	Pink Water-speedwell	r		0
56 taxa, 2 non-native, 7 notable		52	34	