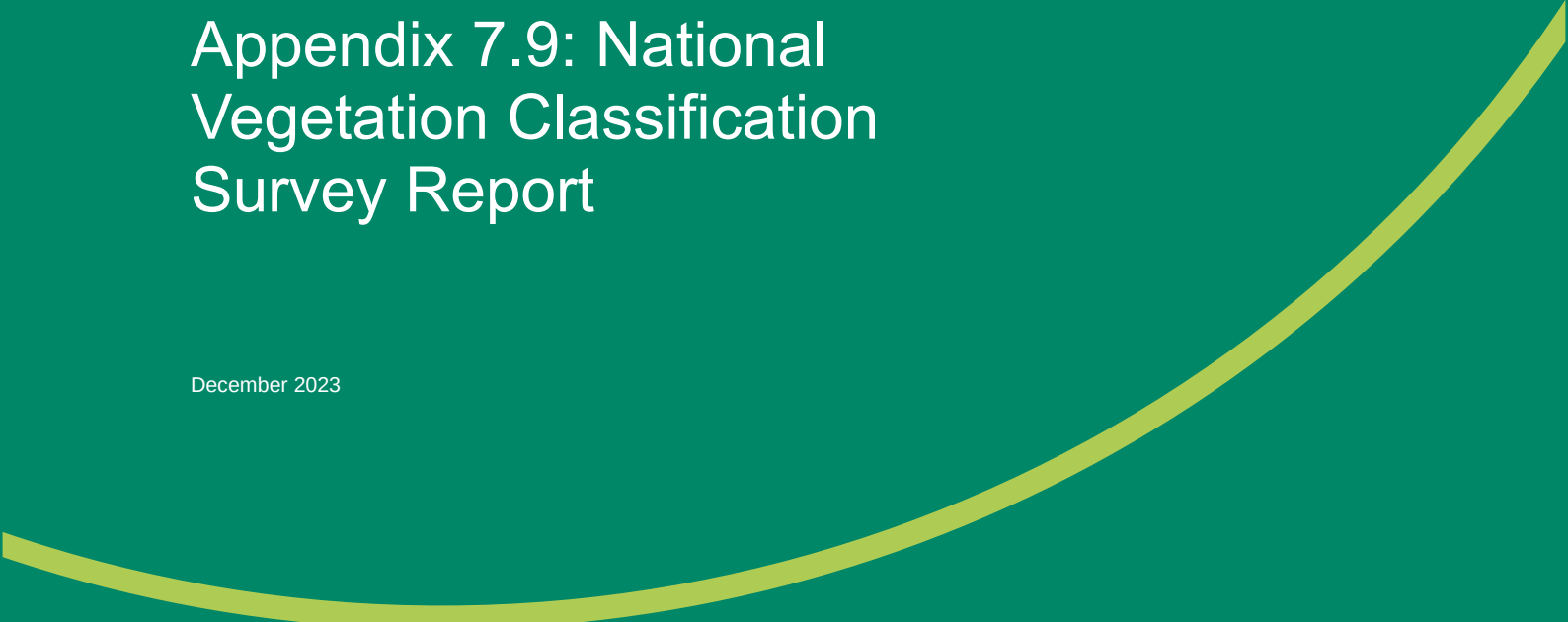


National Grid
Cable Tunnel Replacement
Project

Environmental Statement -
Volume VI

Appendix 7.9: National
Vegetation Classification
Survey Report

December 2023



Quality information

Prepared by		Checked by		Verified by		Approved by
MP		JS		TJC		HT
Associate Ecologist		Technical Director		Associate Director		Principal EIA Consultant

Prepared for:

National Grid Electricity Transmission

Prepared by:

AECOM Limited
Aldgate Tower, 2 Leman Street
London, E1 8FA
United Kingdom

T: +44 20 7061 7000
aecom.com

© 2023 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of our client (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1	Introduction.....	1
1.1	Background	1
1.2	Site Description	1
1.3	Pre-existing Information.....	2
1.4	Objectives	2
2	Legislation	3
3	Methods.....	4
3.1	Desk Study.....	4
3.2	Grassland and Swamp/Reed-bed NVC survey	4
3.3	Other habitats.....	5
3.4	Assumptions and Limitations	5
3.5	Quality Assurance	5
4	Results	6
4.1	Grassland and Swamp/Reed-bed NVC survey	6
4.2	Other flora species	8
5	References	9
	Annex A Figures and Photographs	10
	Annex B Field Survey Results	15

Tables

Table 1: NVC Survey Results Grassland and Swamp/Reed-bed	7
Table 2: Other Habitats.....	7

1 Introduction

1.1 Background

1.1.1 AECOM Ltd (hereafter referred to as AECOM) was commissioned by National Grid to undertake an ecological assessment to support the Environmental Statement for the (Tilbury to Grain and Tilbury to Kingsnorth) TKRE Cable Tunnel Replacement Project (hereafter referred to as ‘the Proposed Development’). The Proposed Development relates to the replacement of the below ground cabled section of the TKRE 400 kV circuits with the construction of new bored tunnel under the River Thames to carry new cross linked polyethylene (XLPE) cables, together with new associated infrastructure either side of the Thames comprising:

- **A new cable sealing end compound:** consisting of:
 - **a new tunnel headhouse** which will cover the shaft into the tunnel;
 - **a new overhead line gantry structure** which will connect the overhead line downlead conductors and transfer them to six sealing end structures; and
- **Modifications to the existing overhead line (OHL):** The new OHL conductors will be connected to the existing TKRE 400kV OHL conductors via new terminal pylons. The old OHL conductors and existing pylons will be either replaced, refurbished or removed.

1.1.2 The required headhouses and SECs would fall within the jurisdiction of Thurrock Council (north of the River Thames) and Gravesham Borough Council (south of the River Thames).

1.2 Site Description

1.2.1 The extent of land required for the Proposed Development (hereafter ‘the Site’) is split into two areas, one in Tilbury (‘the Tilbury Site’) (Annex A - Figure 1) and the other in Gravesend (‘the Gravesend Site’) (Annex A – Figure 2). They are split from each other by the River Thames and Thames Estuary.

Tilbury Site

1.2.2 The area north of the River Thames is located in Tilbury in the borough of Thurrock, Essex at Ordnance Survey (OS) grid reference TQ 66312 75869. The Tilbury Site is a mixture of in-use and disused industrial grounds and consists of a mixture of sparsely vegetated hard-standing, and larger areas of grassland, scrub and adjoining ditches.

1.2.3 The southern section of the Tilbury Site forms part of the larger Tilbury Power Station Local Wildlife Site (LWS), which is designated on the basis of its coastal grazing marshes, post-industrial sites and hotspots for reptile diversity. The habitat also supports key invertebrate communities. These habitats and the field in the north of the Tilbury Site form part of a larger network of habitat that Natural England are considering as an extension to the Mucking Flats and Marshes Site of Special Scientific Interest (SSSI). The area is yet to be formally designated but it is understood to be under consideration as a SSSI based on its value for invertebrates, reptiles, birds and notable plants.

1.2.4 The Tilbury Site is surrounded by an industrial and agricultural landscape with the River Thames adjacent to the south.

Gravesend Site

1.2.5 The area to the south of the River Thames is located in Gravesend, in the borough of Gravesham, Kent at OS grid reference TQ 67440 74151. The habitats on Site include grassland, scrubland, bare ground, ditches and marshy grassland. The eastern sections of the Gravesend Site are within Milton Rifle Range, and the western sections contain grazed pasture fields and the existing Eastcourt Marshes Electricity Substation.

- 1.2.6 The Gravesend Site is located within the Canal and Grazing Marsh, Higham LWS which is designated on the basis of areas of managed and unmanaged grazing marsh, salt marsh and reedbed habitat. The Site is also known to support good populations of reptiles and bats as well as bird and invertebrate assemblages.
- 1.2.7 The River Thames adjoins the northern boundary and the Thames and Medway Canal runs along the southern boundary of the Gravesend Site.

1.3 Pre-existing Information

- 1.3.1 A Preliminary Ecological Appraisal (PEA)¹ was completed in November 2022 in support of the Proposed Development, covering a wider area than the Red Line Boundary shown on Figure 1.1 in Volume VII as part of the site selection process.
- 1.3.2 The PEA identified the need for further botanical survey to characterise the grassland swamp and reed bed communities present within both the Gravesend Site and the Tilbury Site.

1.4 Objectives

- 1.4.1 The objectives of the National Vegetation Classification (NVC) survey were to:
- Characterise the grassland, swamp and reedbed habitats in accordance with the National Vegetation Classification (NVC);
 - Determine the presence of any protected and/or notable plant species; and
 - Inform the baseline condition assessment scoring for a future Biodiversity Net Gain (BNG) calculation.

¹ AECOM Ltd (2023) TKRE Preliminary Ecological Appraisal.
December 2023

2 Legislation

- 2.1.1 Certain plants are specially protected under UK legislation. Plants in the UK are protected under two key pieces of legislation, which contain sanctions and penalties for non-compliance. They are:
- the Wildlife and Countryside Act 1981 (as amended) where specially protected species are listed under Schedule 8; and
 - the Conservation of Habitats and Species Regulations 2017 (as amended) where protected species are listed under Schedule 4.
- 2.1.2 Under both pieces of legislation, it is an offence to intentionally pick, uproot or destroy certain wild plants, or to possess, sell or exchange them.
- 2.1.3 Certain wild plants are protected against uprooting, cutting, picking, destroying or selling under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).
- 2.1.4 All wild plants cannot be uprooted under section 13 of the Wildlife and Countryside Act 1981 (as amended), unless this is carried out by the owner or occupier of the land on which the plant is growing, or by someone having their permission to do so, or unless the action is authorised in writing by the appropriate local authority.
- 2.1.5 Invasive non-native species (INNS) that cause significant negative impacts on biodiversity and/or the economy are listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to plant or cause to grow in the wild any species listed under Schedule 9.

3 Methods

3.1 Desk Study

- 3.1.1 Records of protected and/or notable species recorded within a 2km radius of the Proposed Development were obtained from Essex Field Club and Kent and Medway Biological Records Centre (KMBRC) in support of the PEA².
- 3.1.2 In addition, a review of publicly available information collected in support of nearby large scale infrastructure developments has been undertaken, and included a search for relevant data in planning documentation for the following developments:
- Lower Thames Crossing³;
 - Thurrock Flexible Generation Plant⁴; and
 - Tilbury 2⁵.
- 3.1.3 In addition, Natural England's 2022 survey of vascular plants in the North Thames Estuary and Marshes⁶ was reviewed for relevant species records.

3.2 Grassland and Swamp/Reed-bed NVC survey

- 3.2.1 The survey focused on grassland and reed-bed habitats within the Sites. Notes were also made of species present along tracks, ruderal/ephemeral vegetation, scrub and ditch margins on the Site.
- 3.2.2 The survey was undertaken by an experienced botanist on 21st and 22nd August 2023. The NVC survey was carried out (where applicable) in accordance with the standard methodology as detailed for grasslands in *British Plant Communities, Volume 3. Grasslands and montane communities* (Ref 1).
- 3.2.3 The NVC survey involved recording plant species present within a 2 m x 2 m quadrat (for short herbaceous vegetation) or a 4 m x 4m quadrat (for tall and more open herb communities) and a 10 m x 10m quadrat in very tall herbaceous/swamp/reed-bed. In each discrete grassland type, between five or six randomly selected quadrats were recorded, depending on the extent and variability of the grassland. Each plant species in a quadrat was given a by eye estimate of cover using the Domin scale and bare ground was recorded where present.
- 3.2.4 Other typical and/or noteworthy plant species in the wider grassland but not picked up in the quadrats was also recorded. Such species, even if rare within the ground flora, could be relevant for the classification of the associated NVC community. Each discrete grassland type was assigned, where applicable, to its relative NVC community using the keys and descriptions given in *British Plant Communities, Volume 3. Grasslands and montane communities* (Ref 1). Botanical nomenclature in this report follows that of *New Flora of the British Isles, 4th edition* (Ref 2) for vascular plants and *Mosses and Liverworts of Britain and Ireland: a field guide* (Ref 3) for bryophytes. The scientific name is given only the first time the species is mentioned in the main text.
- 3.2.5 NVC survey is not appropriate where vegetation has a history of prior disturbance, as heavily-disturbed or recently-established habitats would be unlikely to align with any of the described NVC communities. Where this was the case (in particular, in sections of disturbed ground at the Tilbury Site) notes were made on the species and abundance based on professional judgement rather than an NVC survey.

² AECOM Ltd (2023) TKRE Preliminary Ecological Appraisal.

³ National Infrastructure Planning website – Lower Thames Crossing DCO documents. Available at

<https://infrastructure.planninginspectorate.gov.uk/projects/south-east/lower-thames-crossing/?ipcsection=docs>

⁴ National Infrastructure Planning website –Thurrock Flexible Power Generation Plant DCO documents. Available at

<https://infrastructure.planninginspectorate.gov.uk/projects/south-east/thurrock-flexible-generation-plant/?ipcsection=docs>

⁵ National Infrastructure Planning website – Tilbury 2 DCO documents. Available at <https://infrastructure.planninginspectorate.gov.uk/projects/south-east/tilbury2/?ipcsection=docs>

⁶ Natural England (2023) NECR494 North Thames Estuary and Marshes Vascular Plant and Charophyte Survey 2022. Available at <https://publications.naturalengland.org.uk/publication/5531852820185088>

- 3.2.6 The rarity of higher plants given is based on *New Flora of the British Isles, 4th edition* (Ref 2), where;
- Uncommon – a species found in not more than 250 different 10 x 10km grid squares in the British Isles since 1987;
 - Scarce - a species found in not more than 100 different 10 x 10km grid squares since 1987; and
 - Rare – a species found in not than 15 different 10 x 10km grid squares since 1987.
- 3.2.7 Protected species (WCA Schedule 8), priority species (s41) and notable species as listed on the Essex Vascular Plant Red List⁷ and Kent Rare Plant Register⁸ are listed in the results.

3.3 Other habitats

- 3.3.1 Notes were also made on scrub, tall herbs, species present along tracks/edge habitats and ditch margins to provide information on species composition, habitat structure and condition for use in the Biodiversity Net Gain Metric 4.0 condition assessment.

3.4 Assumptions and Limitations

Survey areas and access

- 3.4.1 Survey areas were chosen to provide a representative sample of the grasslands on Site, based on the best quality in terms of potential species diversity and potential for protected/notable flora species which could be impacted as a result of the Proposed Development. There was limited access to the northern parcel of grassland at Tilbury although sampling around the perimeter and a view across the site provided enough information to assess the habitats present in this area.
- 3.4.2 It should be noted that a specific survey of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) within the Site, such as those associated with wetlands, has not been undertaken, but they were recorded where present within the grassland habitats surveyed.

NVC survey

- 3.4.3 The NVC surveys were undertaken at an appropriate time of year during August and under suitable weather conditions for grassland survey. However, it should be noted that grassland survey results, and the description of communities (where applicable), represent a current community evaluation at the time of survey (as opposed to one seeking to describe what the community was before any human interference, or what it might become in the future). This is only a snapshot of the vegetation communities present and should not be interpreted as a static long-term reference.
- 3.4.4 These limitations did not significantly limit this flora report / assessment. Ecological data in relation to habitats and flora species are valid for 18 months based on best guidance (Ref 4). Notwithstanding any further surveys recommended, on this basis, it is recommended that surveys for flora will need appraisal and, if required, repeating in summer 2025, if a planning application has not been made by then.

3.5 Quality Assurance

- 3.5.1 All AECOM ecologists follow the Chartered Institute of Ecology and Environmental Management (CIEEM) code of professional conduct when undertaking ecological work and many are Full or Fellow Members. They are appropriately qualified and will conduct their work using all reasonable skill and care. Many senior AECOM ecologists are also Chartered Environmentalists or Ecologists.

⁷ <https://www.essexfieldclub.org.uk/portal.php/p/Essex+Red+Data+List>

⁸ https://bsbi.org/wp-content/uploads/dlm_uploads/rare-plant-register-list-v16-with-English-names.pdf

4 Results

4.1 Grassland and Swamp/Reed-bed NVC survey

- 4.1.1 A summary of the results of the NVC flora survey is provided below with NVC community type UK habitat classification and BNG Metric 4.0 condition (see Table 1). Locations are shown on the figures in Annex A and full results are provided in Annex B. Other habitats, comprising wet drains with marginal vegetation, ruderal/ephemeral habitats and scrub are described and listed in Table 2 and on Figures 1 and 2 in Annex A.

Gravesend

- 4.1.2 This site comprises an L shaped land parcel, with three separate fields comprising MG1b *Arrhenatherum elatius* grassland – *Urtica dioica* subcommunity (Land Parcel G1), MG1a *Arrhenatherum elatius* grassland – *Festuca rubra* subcommunity (G3) and MG6 *Lolium perenne* – *Cynosurus cristatus* grassland (G4). G1 is located to the east and comprises species poor tall unmanaged grassland with false oat-grass (*Arrhenatherum elatius*), common couch (*Elymus repens*), common nettle (*Urtica dioica*) and cleavers (*Galium aparine*). G1 transitions to the north to NVC community S4 *Phragmites australis* swamp and reedbeds (W1) located adjacent to the drain and is dominated by common reed (*Phragmites australis*). G2 comprises tall ruderal herbs with creeping thistle (*Cirsium arvense*) and hemlock (*Conium maculatum*).
- 4.1.3 G4 is dominant in the other two fields to the west and north and shows affinity to MG6 *Lolium perenne* – *Cynosurus cristatus* grassland, with some species indicating previous flooding with brackish water and bare ground (around entrances/feed areas) including creeping bent (*Agrostis stolonifera*), sea beet (*Beta vulgaris* subsp. *maritima*), hoary cress (*Lepidium draba*) and spear-leaved orache (*Atriplex prostrata*). Other species include meadow barley (*Hordeum secalinum*), perennial ryegrass (*Lolium perenne*), common couch and white clover (*Trifolium repens*). On slightly raised ground to the north at G3 there are small areas of MG1a *Arrhenatherum elatius* grassland – *Festuca rubra* subcommunity grassland with cock's-foot (*Dactylis glomerata*), soft brome (*Bromus hordeaceus* ssp. *hordeaceus*), hoary cress, yarrow (*Achillea millefolium*), ribwort plantain (*Plantago lanceolata*), common couch and red fescue (*Festuca rubra* agg.). These fields at G3 and G4 are grazed by horses and contain areas of tall ruderal herb vegetation and bramble (*Rubus fruticosus* agg.) and mixed scrub habitats. Short perennial/ephemeral vegetation grazed short by rabbits and bare ground areas are present at R1. Brackish drains are present at D1, fringed with common reed, bulrush (*Typha latifolia*) sea club-rush (*Bolboschoenus maritimus*), sea Aster (*Aster tripolium*) and celery leaved buttercup (*Ranunculus sceleratus*). No submerged or floating aquatic macrophytes were observed.

Tilbury

- 4.1.4 The site comprises two distinct land parcels to the south and north comprising MG1b *Arrhenatherum elatius* grassland – *Urtica dioica* subcommunity (G5) to the south and MG1b *Arrhenatherum elatius* grassland (G6 and G7) to the north. G5 is relatively diverse grassland in places with false oat-grass, goat's rue (*Galega officinalis*), rough meadow grass (*Poa trivialis*), creeping cinquefoil (*Potentilla reptans*), black medick (*Medicago lupulina*), fennel (*Foeniculum vulgare*), wild carrot (*Daucus carota*), mugwort (*Artemisia vulgaris*), common couch, ribwort plantain (*Plantago lanceolata*) and crow garlic (*Allium vineale*). G6 and G7 are species poor dominated by grasses including false oat-grass and tall fescue (*Schedonorus arundinaceus*) with bristly ox-tongue and creeping thistle. The grasslands are unmanaged with scattered, mixed scrub and localised patches of tall ruderal herbs.
- 4.1.5 A larger area of ruderal/ephemeral vegetation is present at R2 on previously disturbed/bare ground to the south and alongside the eastern track. Species include creeping thistle, sea beet, mugwort, common nettle, wild carrot, narrow-leaf Bird's-foot Trefoil (*Lotus tenuis*), goat's rue and bristly ox-tongue (*Helminthotheca echioides*). S4 *Phragmites australis* swamp and reedbeds (W2 and W3) and encroaching mixed scrub (S4 and S5) are present in both land parcels. Scrub species include Russian olive (*Elaeagnus angustifolia*), bramble, common hawthorn (*Crataegus monogyna*), blackthorn (*Prunus spinosa*), common plum (*Prunus domestica*) and buddleja (*Buddleja davidii*).

Table 1: NVC Survey Results Grassland and Swamp/Reed-bed

Site and Land Parcel	NVC community	UK habitat classification	Metric 4.0 Condition
<i>Gravesend</i> Grassland (G), Swamp/Reed-bed (W)			
G1	MG1b <i>Arrhenatherum elatius</i> grassland – <i>Urtica dioica</i> subcommunity	g4 Modified grassland	Poor
G2	Not classified	g4 Modified grassland - Other tall herb community	Poor
G3	MG1a <i>Arrhenatherum elatius</i> grassland – <i>Festuca rubra</i> subcommunity	g3c5 <i>Arrhenatherum</i> neutral grassland	Moderate
G4	MG6 <i>Lolium perenne</i> – <i>Cynosurus cristatus</i> grassland	g3c6 <i>Lolium</i> - <i>Cynosurus</i> neutral grassland	Moderate
W1	S4 <i>Phragmites australis</i> swamp and reedbeds	f2e reedbeds	Moderate
<i>Tilbury</i>			
G2	Not classified	g4 Modified grassland - Other tall herb community	Poor
G5	MG1b <i>Arrhenatherum elatius</i> grassland – <i>Urtica dioica</i> subcommunity	g3c5 <i>Arrhenatherum</i> neutral grassland	Moderate
G6	MG1 <i>Arrhenatherum elatius</i> grassland	g4 Modified grassland	Moderate
G7	MG1 <i>Arrhenatherum elatius</i> grassland	g4 Modified grassland	Moderate
W2	S4 <i>Phragmites australis</i> swamp and reedbeds	f2e reedbeds	Poor
W3	S4 <i>Phragmites australis</i> swamp and reedbeds	f2e reedbeds	Moderate

Table 2: Other Habitats

Site and Land Parcel	NVC community	UK habitat classification	Metric 4.0 Condition
<i>Gravesend</i> Drain (D), Ruderal/ephemeral (R), Scrub (S)			
D1	n/a	r1g other standing water	Poor
R1	n/a	81 Ruderal/ephemeral	Poor
S1	n/a	h3d bramble dominated scrub.	Not assessed
S2	n/a	h3h mixed scrub	Moderate
S3	n/a	h3h mixed scrub	Moderate
<i>Tilbury</i>			
D1	n/a	r1g other standing water	Poor
R2	n/a	81 Ruderal/ephemeral	Moderate
S4	n/a	h3h mixed scrub	Moderate
S5	n/a	h3h mixed scrub	Moderate

4.2 Other flora species

Gravesend

- 4.2.1 The desk study identified no previous records of protected and/or notable plants from within or adjacent to the Gravesend Site.
- 4.2.2 During the invertebrate field survey a stand of divided sedge (*Carex divisa*) was identified just to the east of the Gravesend Site within the northern section of the Milton Rifle Range (see ES Volume VI – Appendix 7.8). Divided sedge is a Species of Principal Importance listed in Schedule 41 of the Wildlife and Countryside Act 1981 (as amended), and is listed as vulnerable in the Vascular Plant Red Data List for Great Britain (Ref 5). The stand is outside of the Gravesend Site and will not be affected by the Proposed Development.

Tilbury

- 4.2.3 A vascular plant survey undertaken by Natural England in 2022⁹ yielded records of a number of protected and/or notable plants in the vicinity of the Tilbury Site, including stands of the following (threat status in brackets):
- wormwood (*Artemisia absinthium*), annual beard grass (*Polypogon monospliensis*) and narrow-leaved bird's-foot trefoil (*Lotus tenuis*) – scattered through southern field and ashfields to the east of the Site (all Least Concern);
 - Low goosefoot (*Oxybasis chenopodoides*) found on the edges of saline pools/drains (Least Concern);
 - Hairy vetch (*Vicia villosa*) – in track sides and grasslands in field south of the proposed Tilbury SEC (no status).
- 4.2.4 The AECOM 2023 vegetation surveys identified stands of narrow-leaved bird's-foot trefoil on the western boundary of the Tilbury Site within the strip of disturbed ground associated with the ditch that adjoins the existing Tilbury SEC. This is a similar location to that described in the results of the Natural England survey in 2022.
- 4.2.5 The invasive non-native species (INNS) shrub Russian olive (*Elaeagnus angustifolia*) is present in the scrub at Tilbury. Whilst listed as an INNS, this shrub is not listed on Schedule 9 of the Wildlife and Countryside Act. Schedule 9 lists non-native species that are already established in the wild, which continue to pose a conservation threat to native biodiversity and habitats, so that further releases should be regulated.
- 4.2.6 No other Schedule 9 plant species were noted during the surveys. Due to their inherent invasive nature the possibility in the future of Schedule 9 species within the Site cannot be ruled out. It should be noted that a detailed survey of all the habitats within the Site, such as wetlands, for Schedule 9 invasive non-native species has not been undertaken as they are retained (see limitations).
- 4.2.7 No other Uncommon, Scarce or Rare species were recorded in the NVC survey area.

⁹ Natural England (2023) NECR494 North Thames Estuary and Marshes Vascular Plant and Charophyte Survey 2022. Available at <https://publications.naturalengland.org.uk/publication/5531852820185088>

5 References

Ref 1 RODWELL, J.S., (1992) British Plant Communities, Volume 3. Grasslands and montane communities. Cambridge University Press.

Ref 2 STACE, C.A., (2019) New Flora of the British Isles, 4th edition. C&M Floristics.

Ref 3 ATHERTON, I., BOSANQUET, S. & LAWLEY, M, (2010) Mosses and Liverworts of Britain and Ireland: a field guide. British Bryological Society.

Ref 4 CIEEM: Advice Note on the lifespan of ecological surveys and reports <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf> (Accessed December 2019)

Ref 5 2006 CHEFFINGS, C. and FARRELL, L. (Editors) (2006) The Vascular Plant Red Data List for Great Britain - A tool for assessing the current conservation status of vascular plants on SSSIs in England- May 2006, ENRR 690 (Leach & Rusbridge)

Annex A Figures and Photographs



AECOM

PROJECT
National Grid TKRE Cable
Tunnel Options Appraisal

CLIENT
National Grid

CONSULTANT
AECOM Limited
100 Embankment
Cathedral Approach
Manchester, M3 7FB
www.aecom.com

- LEGEND**
- Red Line Boundary (Above Ground)
 - UK Hab (NVC Community)
 - Water - Other Standing Water
 - Grassland - Modified grassland (MG1 *Arrhenatherum elatius* grassland)
 - Arrhenatherum* neutral grassland (MG1b *Arrhenatherum elatius* grassland - *Urtica dioica* subcommunity)
 - Grassland - Other neutral grassland
 - Heathland and shrub - Bramble scrub
 - Heathland and shrub - Mixed scrub
 - Sparsely vegetated land - Ruderal/Ephemeral
 - Urban - Artificial unvegetated, unsealed surface
 - Urban - Developed land; sealed surface
 - Wetland - Reedbeds (S4 *Phragmites australis* swamp and reedbeds)

NOTES
© 2023 Microsoft Corporation © 2023 Maxar
©CNES (2023) Distribution Airbus DS

ISSUE PURPOSE

DRAFT

PROJECT NUMBER

60677311

FIGURE TITLE

NVC Communities - Tilbury

FIGURE NUMBER

Figure 1



AECOM

PROJECT

National Grid TKRE Cable
Tunnel Options Appraisal

CLIENT

National Grid

CONSULTANT

AECOM Limited
100 Embankment
Cathedral Approach
Manchester, M3 7FB
www.aecom.com

LEGEND

- Red Line Boundary (Above Ground)
- UK Hab (NVC Community)
- Water - Other Standing Water
- Grassland - Modified grassland (MG1 *Arrhenatherum elatius* grassland)
- Arrhenatherum* neutral grassland (MG1b *Arrhenatherum elatius* grassland - *Urtica dioica* subcommunity)
- Lolium-Cynosurus neutral grassland (MG6 *Lolium perenne*-*Cynosurus cristatus* grassland)
- Heathland and shrub - Mixed scrub
- Sparsely vegetated land - Ruderal/Ephemeral
- Urban - Developed land; sealed surface
- Wetland - Reedbeds (S4 *Phragmites australis* swamp and reedbeds)

NOTES

© 2023 Microsoft Corporation © 2023 Maxar
©CNES (2023) Distribution Airbus DS

ISSUE PURPOSE

DRAFT

PROJECT NUMBER

60677311

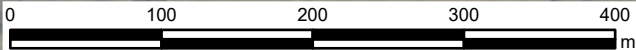
FIGURE TITLE

NVC Communities - Gravesend

FIGURE NUMBER

Figure 2

1:5,000 @ A3



This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.

General Site Photographs



Photo 1 – Gravesend site from the North



Photo 2 - Gravesend site south-east section



Photo 3 - Gravesend site south-west field



Photo 4 - Gravesend site north section



Photo 5 – Tilbury north section



Photo 6 – Tilbury south section



Photo 7 - Tilbury south section in area of recent ground disturbance



Photo 8 – Tilbury east access track

Annex B Field Survey Results

Project Name	TKRE	Date	21/8/23	Recorders	MP	Area	Gravesend – G1	Photo ref.	See below	Sheet no.	
--------------	------	------	---------	-----------	----	------	----------------	------------	-----------	-----------	--

Broad vegetation type	Swamp	Grassland				X	Substrate	Acid			Condition	Improved				
	Mire	Tall-herb fen						Calcareous				Semi-improved				
	Heath	Open habitat						Neutral				X				
	Maritime							Not known				Unimproved				
												Not relevant				
Hydrology	Wet	Transitional				Age/ origin	Sown/recent origin			☐	Aspect	n/a	Slope	n/a	Water Depth	n/a
	Dry	X					Semi-natural									
Layers Mean Height		0.9	m	0.1	m		cm		mm	Habitat Area			m x		m	
Layers Cover		100	%	3	%		%		%	Quadrat/sample size		4	m x	4	m	

Quadrat	1		2		3		4		5		Frequency (I-V)
Quadrat Grid Reference	TQ6770873987		TQ6767773997		TQ6764974003		TQ67632740000		TQ6760673994		
Species List	%	Domin	%	Domin	%	Domin	%	Domin	%	Domin	
<i>Elymus repens</i>		8		8		7		7		8	V
<i>Arrhenatherum elatius</i>		5		6		6		6		5	V
<i>Lactuca serriola</i>		2		2							II
<i>Galium aparine</i>		3		3		2				2	IV
<i>Urtica dioica</i>		3		4		3		4		3	V
<i>Anthriscus sylvestris</i>		1									I
<i>Taraxacum officinale</i> agg.				2		1					II
<i>Rumex crispus</i>				1						1	II
<i>Alopecurus pratensis</i>						2					I
<i>Dactylis glomerata</i>				1		2					II
<i>Rumex cristatus</i>								2			I
<i>Conium maculatum</i>								1			I
<i>Senecio erucifolius</i>										2	I
<i>Heracleum sphondylium</i>										1	I
Bare rock/hardstanding		0		0		0		0		0	
Bare soil		0		0		0		0		0	
Leaf litter/ thatch		10		10		10		10		9	
Permanent open water		0		0		0		0		0	

Further information required, see back of sheet											
Domin scale	1: few individuals, 2: several individuals, 3: many individuals, 4: 4-10%, 5: 11-25%, 6: 26-33%, 7: 34-50%, 8: 51-75%, 9: 76-90%, 10: 91-100%										
Quadrat sizes	Short herbaceous 2x2m; tall and more open herb communities 4x4m; species poor, very tall herbaceous 10x10m; linear features such as streams, ditches, verges can use strips e.g. 1x4m, 2x8m.										
Frequency	Number of quadrats which the species occurs in, use Roman numerals I to V, where I=20% of quadrats and V=100%.										

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations

MG1b *Arrhenatherum elatius* grassland – *Urtica dioica* subcommunity. Unmanaged, species poor, thick thatch layer.



Photo 1. Overview

Photo 2. Close up of grassland

Other flora in wider habitat area- accurate typing of vegetation may require information on other flora present but missed by the quadrats

Other species include *Crataegus monogyna* scrub (1%). Localised patches of tall ruderal herbs comprising *Cirsium arvense* (5%) and *Conium maculatum* (2%) (mapped as **G2**).

Project Name	TKRE	Date	21/8/23	Recorders	MP	Area	Gravesend – G3	Photo ref.	See below	Sheet no.	
--------------	------	------	---------	-----------	----	------	----------------	------------	-----------	-----------	--

Broad vegetation type	Swamp		Grassland			X	Substrate	Acid			Condition	Improved			
	Mire		Tall-herb fen					Calcareous				Semi-improved			
	Heath		Open habitat					Neutral				X			
	Maritime							Not known				Unimproved			
Hydrology	Wet		Transitional			Age/ origin	Sown/recent origin			Aspect	n/a	Slope	n/a	Water Depth	n/a
	Dry		X				Semi-natural								
Layers Mean Height		0.7	m	0.2	m		cm		mm	Habitat Area			m x		m
Layers Cover		50	%	60	%		%		%	Quadrat/sample size		2	m x	2	m

Quadrat	1		2		3		4		5		Frequency (I-V)
Quadrat Grid Reference	TQ6744774188		TQ6741874060		TQ6746274149		TQ6744574183		TQ6745574216		
Species List	%	Domin	%	Domin	%	Domin	%	Domin	%	Domin	
<i>Bromus hordeaceus ssp hordeaceus</i>		5		5				5		4	IV
<i>Dactylis glomerata</i>		4		2				3		4	IV
<i>Agrostis stolonifera</i>		3		3		1		2		5	V
<i>Lepidium draba</i>		2		3		1		3		2	V
<i>Achillea millefolium</i>		5		3		4		4		2	V
<i>Plantago lanceolata</i>		6		3		6		4		2	V
<i>Rumex crispus</i>		2		2				1			III
<i>Festuca rubra agg.</i>		2				4		3			III
<i>Elymus repens</i>		3		4		3				3	IV
<i>Arrhenatherum elatius</i>		2		4		2		3		2	V
<i>Jacobaea vulgaris</i>		1						2		1	III
<i>Rubus fruticosus agg</i>		1									I

<i>Cirsium arvense</i>		1								I
<i>Agrostis capillaris</i>		2					2		2	III
<i>Balota nigra</i>				2						I
<i>Beta vulgaris ssp maritimus</i>				2						I
<i>Sonchus asper</i>				1						I
<i>Rumex conglomeratus</i>				1						I
<i>Leontodon autumnalis</i>				1					2	II
<i>Crepis capillaris</i>						2			1	II
<i>Potentilla reptans</i>						3			4	II
<i>Cirsium vulgare</i>						1			2	II
<i>Poa annua</i>						1				I
<i>Phleum bertolonii</i>									2	I
<i>Taraxacum officinale agg</i>							1			I
<i>Lolium perenne</i>							2			I
<i>Cynosurus cristatus</i>									1	I
<i>Hordeum secalinum</i>									2	I
Bare rock/hardstanding		0		0		0		0	0	
Bare soil		0		4		0		0	0	
Leaf litter/ thatch		4		5		5		5	7	
Permanent open water		0		0		0		0	0	

Further information required, see back of sheet

Domin scale	1: few individuals, 2: several individuals, 3: many individuals, 4: 4-10%, 5: 11-25%, 6: 26-33%, 7: 34-50%, 8: 51-75%, 9: 76-90%, 10: 91-100%
Quadrat sizes	Short herbaceous 2x2m; tall and more open herb communities 4x4m; species poor, very tall herbaceous 10x10m; linear features such as streams, ditches, verges can use strips e.g. 1x4m, 2x8m.
Frequency	Number of quadrats which the species occurs in, use Roman numerals I to V, where I=20% of quadrats and V=100%.

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations

MG1a Arrhenatherum elatius grassland – Festuca rubra subcommunity. Comprising approximately 10% of the horse grazed fields on slightly raised ground to the north. 10 to 15% thistles/nettles, 5% scrub. Grassland transitions to **G4** in lower areas and into tall ruderal herb dominated areas (**G2**).



Photo 1. Overview



Photo 2. Close up of grassland

Other flora in wider habitat area- accurate typing of vegetation may require information on other flora present but missed by the quadrats
Other species include <i>Rubus fruticosus</i> agg and <i>Crataegus monogyna</i> scrub (5%). Localised patches of tall ruderal herbs, <i>Cirsium arvense</i> and <i>Urtica dioica</i> (10 to 15%). <i>Lotus corniculatus</i> (R) present outside quadrats.

Project Name	TKRE	Date	21/8/23	Recorders	MP	Area	Gravesend – G4	Photo ref.	See below	Sheet no.
--------------	------	------	---------	-----------	----	------	----------------	------------	-----------	-----------

Broad vegetation type	Swamp	Grassland				X	Substrate	Acid			Condition	Improved			
	Mire	Tall-herb fen						Calcareous				Semi-improved			
	Heath	Open habitat						Neutral				X			
	Maritime							Not known				Unimproved			
Hydrology	Wet	Transitional				Age/ origin	Sown/recent origin			□	Aspect n/a	Slope	n/a	Water Depth	n/a
	Dry	X					Semi-natural								
Layers Mean Height		0.7	m	0.2	m		cm			Habitat Area			m x		m
Layers Cover		50	%	60	%		%			Quadrat/sample size		2	m x	2	m

Quadrat	1		2		3		4		5		6	Frequency (I-VI)
Quadrat Grid Reference	TQ6744774188		TQ6741874060		TQ6746274149		TQ6744574183		TQ6745574216		TQ6746874184	
Species List	%	Domin	%	Domin	%	Domin	%	Domin	%	Domin	Domin	
<i>Hordeum secalinum</i>		6		4		4		3		4	3	VI
<i>Agrostis stolonifera</i>		7		6		7		3		5	5	VI
<i>Phleum bertolonii</i>		3		2						2	2	IV
<i>Elymus repens</i>		4		5		4						III
<i>Lepidium draba</i>		2		4		5				3		IV
<i>Leontodon autumnalis</i>		1						3			4	III
<i>Hypochaeris radicata</i>		1										I
<i>Beta vulgaris ssp maritima</i>				2		2						II
<i>Malva sylvestris</i>				1								I
<i>Dactylis glomerata</i>		2		3		2				2		IV
<i>Trifolium repens</i>				2				3		2	2	IV
<i>Arrhenatherum elatius</i>						2						I
<i>Cynosurus cristatus</i>				3				4		2	2	IV
<i>Plantago lanceolata</i>								4		1		II
<i>Helminthotheca echioides</i>								1		1		II
<i>Lolium perenne</i>								6		5	4	III
<i>Achillea millefolium</i>								2				I
<i>Ranunculus repens</i>								3		3		II
<i>Daucus carota</i>										1		I
<i>Potentilla reptans</i>										4		I
<i>Cirsium arvense</i>											2	I
<i>Jacobaea vulgaris</i>											1	I
Bare rock/hardstanding		0		0		0		0		0	0	
Bare soil		4		4		4		5		5	0	
Leaf litter/ thatch		4		5		5		5		7	5	
Permanent open water		0		0		0		0		0	0	

Further information required, see back of sheet

Domin scale	1: few individuals, 2: several individuals, 3: many individuals, 4: 4-10%, 5: 11-25%, 6: 26-33%, 7: 34-50%, 8: 51-75%, 9: 76-90%, 10: 91-100%
-------------	---

Quadrat sizes	Short herbaceous 2x2m; tall and more open herb communities 4x4m; species poor, very tall herbaceous 10x10m; linear features such as streams, ditches, verges can use strips e.g. 1x4m, 2x8m.	
Frequency	Number of quadrats which the species occurs in, use Roman numerals I to V, where I=20% of quadrats and V=100%.	

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations

MG6 *Lolium perenne* – *Cynosurus cristatus* grassland. Comprising approximately 90% of the horse grazed fields. Localised patches of tall ruderal herbs (10 to 15%), 5% scrub. Some bare ground indicating winter flooding/disturbance with brackish indicator species. Grassland transitions to grassland **G3** on higher ground and into tall ruderal herb dominated areas (**G2**).



Photo 1. Overview from south



Photo 2. Overview from north

Other flora in wider habitat area- accurate typing of vegetation may require information on other flora present but missed by the quadrats

Other species include *Rubus fruticosus* agg and *Crataegus monogyna* scrub (5%). Localised patches of tall ruderal herbs, *Cirsium arvense*, *Conium maculatum* and *Urtica dioica* (10 to 15%) mapped as G2. Brackish/previously flooded ground indicator species include creeping bent (*Agrostis stolonifera*), sea beet (*Beta vulgaris* subsp. *maritima*), hoary cress (*Lepidium draba*) and spear-leaved orache (*Atriplex prostrata*).

Project Name	TKRE	Date	21/8/23	Recorders	MP	Area	Gravesend – W1	Photo ref.	See below	Sheet no.	
--------------	------	------	---------	-----------	----	------	----------------	------------	-----------	-----------	--

Broad vegetation type	Swamp	X	Grassland				Substrate	Acid			Condition		Improved					
	Mire		Tall-herb fen					Calcareous					Semi-improved					
	Heath		Open habitat					Neutral					X					
	Maritime							Not known					Unimproved					
														Not relevant				
Hydrology	Wet	X	Transitional				Age/ origin		Sown/recent origin			☐	Aspect	n/a	Slope	n/a	Water Depth	n/a
	Dry								Semi-natural			X						
Layers Mean Height		1.5	m	1.0	m	0.1	cm		mm	Habitat Area				m x		m		
Layers Cover		80	%	50	%	2	%		%	Quadrat/sample size			10	m x	10	m		

Quadrat	1		2		3		4		5		Frequency (I-V)
Quadrat Grid Reference	TQ6766274016		TQ6766874014		TQ6769474012		TQ6770774007		TQ6772474003		
Species List	%	Domin	%	Domin	%	Domin	%	Domin	%	Domin	
<i>Phragmites australis</i>		8		8		9		9		8	V
<i>Elymus repens</i>		4		5		4		3		5	V
<i>Arrhenatherum elatius</i>		5		4		4		6		4	V
<i>Urtica dioica</i>		4		2				4		5	IV

<i>Cirsium arvense</i>				5							I
<i>Galium aparine</i>		3		3				2		2	IV
<i>Sambucus nigra</i>						1				1	II
<i>Epilobium hirsutum</i>						1					I
<i>Crataegus monogyna</i>										1	I
Bare rock/hardstanding		0		0		0		0		0	
Bare soil		0		0		0		0		0	
Leaf litter/ thatch		10		10		10		10		10	
Permanent open water		0		0		0		0		0	

Further information required, see back of sheet

Domin scale	1: few individuals, 2: several individuals, 3: many individuals, 4: 4-10%, 5: 11-25%, 6: 26-33%, 7: 34-50%, 8: 51-75%, 9: 76-90%, 10: 91-100%
Quadrat sizes	Short herbaceous 2x2m; tall and more open herb communities 4x4m; species poor, very tall herbaceous 10x10m; linear features such as streams, ditches, verges can use strips e.g. 1x4m, 2x8m.
Frequency	Number of quadrats which the species occurs in, use Roman numerals I to V, where I=20% of quadrats and V=100%.

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations

S4 *Phragmites australis* swamp and reedbeds. Unmanaged reedbed alongside ditch, no standing water and merges into grassland G1.



Photo 1. Overview

Other flora in wider habitat area- accurate typing of vegetation may require information on other flora present but missed by the quadrats

Other species include *Crataegus monogyna*, *Sambucus nigra* and *Rubus fruticosus* agg scrub (<5%). Adjacent ditch D1 with *Phragmites australis* (A) and *Typha latifolia* (O). No visible submerged or floating aquatic macrophytes.

Project Name	TKRE	Date	22/8/23	Recorders	MP	Area	Tilbury – G5	Photo ref.	See below	Sheet no.	
--------------	------	------	---------	-----------	----	------	--------------	------------	-----------	-----------	--

Broad vegetation type	Swamp	Grassland				X	Substrate	Acid			Condition		Improved				
	Mire	Tall-herb fen						Calcareous					Semi-improved				
	Heath	Open habitat						Neutral					X				
	Maritime							Not known					Unimproved				
														Not relevant			
Hydrology	Wet	Transitional					Age/ origin	Sown/recent origin		□	Aspect	n/a	Slope	n/a	Water Depth	n/a	
	Dry	X						Semi-natural									X
Layers Mean Height		1.0	m	0.4	m		cm		mm	Habitat Area			m x		m		
Layers Cover		25	%	75	%		%		%	Quadrat/sample size		4	m x	4	m		

Quadrat	1		2		3		4		5		Frequency (I-V)
Quadrat Grid Reference	TQ6639275769		TQ6636675754		TQ6636575715		TQ6638775692		TQ6639075719		
Species List	%	Domin	%	Domin	%	Domin	%	Domin	%	Domin	
<i>Arrhenatherum elatius</i>		6		7		6		8		6	V
<i>Helminthotheca echiioides</i>		2		1							II
<i>Galega officinalis</i>		4		2		2		1		4	V
<i>Poa trivialis</i>		3				1		1		2	IV
<i>Potentilla reptans</i>		5						1			II
<i>Medicago lupulina</i>		4									I
<i>Foeniculum vulgare</i>		1									I
<i>Daucus carota</i>		1									I
<i>Artemisia vulgaris</i>		1									I
<i>Elymus repens</i>		7		6		6		5		5	V
<i>Plantago lanceolata</i>		3									I
<i>Allium vineale</i>		1									I
<i>Dactylis glomerata</i>		2		2		4		3		4	V
<i>Alopecurus pratensis</i>		1									I
<i>Anthriscus sylvestris</i>		1		3		1				1	IV
<i>Senecio erucifolius</i>		1								1	II
<i>Heracleum sphondylium</i>		1				1		2		2	IV
<i>Cirsium arvense</i>		1				3				3	III
<i>Urtica dioica</i>				2							I
<i>Lepidium draba</i>				1		2		2			III
<i>Fraxinus ornus</i>				1							I
<i>Rubus fruticosus agg</i>						4					I
<i>Achillea millefolium</i>						2					I
<i>Prunus spinosa</i>						1					I
<i>Crataegus monogyna</i>						1					I
<i>Vicia sativa subspecies segetalis</i>								1			I
<i>Schedonorus arundinaceus</i>		3								4	II
Bare rock/hardstanding		0		0		0		0		0	
Bare soil		4		0		0		0		0	
Leaf litter/ thatch		4		5		7		7		10	
Permanent open water		0		0		0		0		0	

Further information required, see back of sheet	
Domin scale	1: few individuals, 2: several individuals, 3: many individuals, 4: 4-10%, 5: 11-25%, 6: 26-33%, 7: 34-50%, 8: 51-75%, 9: 76-90%, 10: 91-100%
Quadrat sizes	Short herbaceous 2x2m; tall and more open herb communities 4x4m; species poor, very tall herbaceous 10x10m; linear features such as streams, ditches, verges can use strips e.g. 1x4m, 2x8m.
Frequency	Number of quadrats which the species occurs in, use Roman numerals I to V, where I=20% of quadrats and V=100%.

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations	
MG1b Arrhenatherum elatius grassland – Urtica dioica subcommunity. Unmanaged grassland with 10 to 15% scattered mixed scrub and localised patches of tall ruderal herbs. Scrub will dominate grassland if left unmanaged.	
 	
Photo 1. Overview	Photo 2. Close up of grassland

Other flora in wider habitat area- accurate typing of vegetation may require information on other flora present but missed by the quadrats	
Scrub species include <i>Rubus fruticosus</i> agg, <i>Crataegus monogyna</i>, <i>Prunus spinosa</i>, <i>Malus pumila</i>, <i>Rosa</i> species scrub (10 to 15%) mapped as S5 with more dense larger areas of scrub to the south. Localised patches and larger stands of tall ruderal herbs (R2) with <i>Conium maculatum</i>, <i>Cirsium arvense</i>, <i>Calystegia sepium</i>, <i>Rumex cristatus</i>, <i>Beta vulgaris</i> ssp <i>maritima</i>, <i>Artemisia vulgaris</i> and <i>Urtica dioica</i> (10 to 15%). Reed fringed drain present at D1.	

Project Name	TKRE	Date	22/8/23	Recorders	MP	Area	Tilbury – G6	Photo ref.	See below	Sheet no.	
--------------	------	------	---------	-----------	----	------	--------------	------------	-----------	-----------	--

Broad vegetation type	Swamp	Grassland				Substrate	Acid			Condition	Improved					
	Mire	Tall-herb fen					Calcareous				Semi-improved					
	Heath	Open habitat					Neutral				Unimproved					
	Maritime						Not known				Not relevant					
Hydrology	Wet	Transitional				Age/ origin		Sown/recent origin			Aspect	n/a	Slope	n/a	Water Depth	n/a
	Dry	X						Semi-natural								
Layers Mean Height		1.2	m	0.4	m		cm		mm	Habitat Area			m x		m	
Layers Cover		80	%	5	%		%		%	Quadrat/sample size		4	m x	4	m	

Quadrat	1		2		3		4		5		Frequency (I-IV)
Quadrat Grid Reference	TQ6627875948		TQ6628776000		TQ6637276066		TQ6629776039				
Species List	%	Domin	%	Domin	%	Domin	%	Domin	%	Domin	
<i>Arrhenatherum elatius</i>		5		7		5		5			

<i>Helminthotheca echinoides</i>		6		4		2		4			IV
<i>Galega officinalis</i>		1				2		1			III
<i>Picris hieracioides</i>		1						2			II
<i>Potentilla reptans</i>		2		2				3			III
<i>Poa trivialis</i>		2		1		1		1			IV
<i>Schedonorus arundinaceus</i>		6		5		5		7			IV
<i>Rubus fruticosus agg</i>		1									I
<i>Linaria vulgaris</i>		1									I
<i>Elymus repens</i>				3		6					II
<i>Cirsium arvense</i>				4				3			II
<i>Galium aparine</i>				2							I
<i>Prunus spinosa</i>				1							I
<i>Holcus lanatus</i>						2					I
<i>Daucus carota</i>								1			I
Bare rock/hardstanding		0		0		0		0			
Bare soil		4		0		0		0			
Leaf litter/ thatch		8		9		8		8			
Permanent open water		0		0		0		0			

Further information required, see back of sheet

Domin scale	1: few individuals, 2: several individuals, 3: many individuals, 4: 4-10%, 5: 11-25%, 6: 26-33%, 7: 34-50%, 8: 51-75%, 9: 76-90%, 10: 91-100%
Quadrat sizes	Short herbaceous 2x2m; tall and more open herb communities 4x4m; species poor, very tall herbaceous 10x10m; linear features such as streams, ditches, verges can use strips e.g. 1x4m, 2x8m.
Frequency	Number of quadrats which the species occurs in, use Roman numerals I to V, where I=20% of quadrats and V=100%.

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations

MG1 Arrhenatherum elatius grassland. Species poor, unmanaged grassland with 20% scrub encroaching.



Photo 1. Overview



Photo 2. Close up of grassland

Other flora in wider habitat area- accurate typing of vegetation may require information on other flora present but missed by the quadrats

Scrub species surrounding the grassland include *Elaeagnus angustifolia*, *Rubus fruticosus agg*, *Crataegus monogyna*, *Prunus spinosa*, *Prunus domestica* and *Buddleja davidii* mapped as S4.

Project Name	TKRE	Date	22/8/23	Recorders	MP	Area	Tilbury G7, W2, W3, R2	Photo ref.	See below	Sheet no.	
--------------	------	------	---------	-----------	----	------	---------------------------	------------	-----------	-----------	--

Broad vegetation type	Swamp	X	Grassland	X	Substrate	Acid	Condition	Improved					
	Mire		Tall-herb fen			Calcareous		Semi-improved X					
	Heath		Open habitat			Neutral		X	Unimproved				
	Maritime					Not known			Not relevant				
Hydrology	Wet	X	Transitional	X	Age/ origin	Sown/recent origin	Aspect	n/a	Slope	n/a	Water		
	Dry					Semi-natural					Depth		

Species List G7 - MG1 Arrhenatherum elatius grassland	DAFOR	Species List R2 – Recently disturbed area with ruderal/ephemeral vegetation to the south and adjacent to the eastern track	DAFOR		
<i>Arrhenatherum elatius</i>	F	<i>Conium maculatum</i>	O		
<i>Schedonorus arundinaceus</i>	O	<i>Cirsium arvense</i>	F		
<i>Elymus repens</i>	O	<i>Beta vulgaris ssp maritima</i>	R		
<i>Agrostis stolonifera</i>	O	<i>Artemisa vulgaris</i>	F		
<i>Galega officinalis</i>	R	<i>Urtica dioica</i>	F		
<i>Holcus lanatus</i>	O	<i>Daucus carota</i>	O		
<i>Cirsium arvense</i>	F	<i>Lotus tenuis</i>	R		
		<i>Galega officinalis</i>	F		
Species List W2 – S4 Phragmites australis swamp and reedbed	DAFOR	<i>Helminthotheca echinoides</i>	F		
<i>Phragmites australis</i>	D	<i>Arrhenatherum elatius</i>	F		
<i>Calystegia sepium</i>	R	<i>Hirschfeldia incana</i>	O		
		<i>Foeniculum vulgare</i>	O		
Species List W2 – S4 Phragmites australis swamp and reedbed	DAFOR	<i>Lactuca serriola</i>	R		
<i>Phragmites australis</i>	D	<i>Tripleurospermum inodorum</i>	R		
Open water	5%	<i>Cichorium intybus</i>	O		
		Bare ground	20%		

DAFOR

D= Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare

Descriptive notes: negative indicators species (weeds), shrub/tree cover, management regime, other impacts, limitations



Photo 1. R2 Overview of ruderal/ephemeral, previously disturbed/bare ground



Photo 2. R2 Close up



Photo 3. G7 and W3 Overview (limited access). Unmanaged, scrub encroachment



Photo 4. W2 reedbed alongside Drain

