



Oxfordshire Railfreight Ltd.

Oxfordshire Strategic Rail Freight Interchange

ARDLEY CUTTING & QUARRY SSSI BOTANICAL SURVEY

REPORT

WORKING DRAFT April 2022

FPCR Environment and Design Ltd

Registered Office: Lockington Hall, Lockington, Derby DE74 2RH

Company No. 07128076. [T] 01509 672772 [F] 01509 674565 [E] mail@fpcr.co.uk [W] www.fpcr.co.uk

This report is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without the written consent of FPCR Environment and Design Ltd.

Rev	Issue Status	Prepared / Date	Approved/Date
-	Internal Draft	NJL / 22.03.21	NJL / 22.03.21
	Issue copy	NJL / 27.04.22	NJL / 27.04.22

CONTENTS

1.0 INTRODUCTION 2

2.0 METHODOLOGY..... 2

3.0 RESULTS SUMMARY 3

4.0 RESULTS..... 5

5.0 APPENDIX A: NOMENCLATURE 22

FIGURES

8308-E-SSSI-04: Ardley Cutting & Quarry Botanical Survey 2020 - Habitats

DRAFT

1.0 INTRODUCTION

- 1.1 This report details the results of a walkover botanical survey of part of Ardley Cutting & Quarry SSSI. The object of the survey was to provide baseline information to inform the Environmental Statement for the proposed Oxfordshire Strategic Rail Freight Interchange.
- 1.2 This survey was undertaken in 2020, since then the Order Limits for the proposed development have expanded as the project proposal has evolved, so this report represents an interim assessment of the baseline conditions and additional survey work is planned for June 2022.

2.0 METHODOLOGY

- 2.1 The survey involved a general walkover of the survey area, the extent of which is shown on Figure 8308-E-SSSI-04.
- 2.2 Field notes and associated species lists with assessments of species abundance, were compiled to provide short descriptions of different areas of the vegetation. Habitats were classified and mapped using the JNCC Phase 1 habitats system and are shown on Fig. 8308-E-SSSI-04.
- 2.3 In a small number of areas where the grassland habitat was of particular interest a few sample 1m x 1m quadrats were recorded. The data from these samples was then compared with the National Vegetation Classification grasslands keys and community descriptions¹, supplemented with analysis of the data using the TABLEFIT V4 software programme².
- 2.4 The survey was undertaken by the author, Nick Law – Associate Ecologist on 24th and 26th August 2020.
- 2.5 The report structure is a summary overview of the area surveyed followed by the detailed field notes with species lists, quadrat data and photographs. Appendix A provides a list of the scientific names for the species referred to by their common names in the report. Nomenclature follows Stace 2019³ for vascular plants and Hill *et al* 2008⁴ for bryophytes.

¹ Rodwell, J.S, (Ed.), Pigott, C.D., Ratcliffe, D.A., Malloch, A.J.C., Birks, H.J.B., Proctor, M.C.F., Shimwell, D.W., Huntley, J.P., Radford, E., Wigginton, M.J., and Wilkins, P. (1992). *British Plant Communities Volume 3 Grasslands and Montane Communities*. Cambridge: Cambridge University Press.

² Marrs, R.H., Smart, S.M., Jones, M., & Hill, M.O. (2016). *TABLEFIT v. 3.0 & v.4, programs for the identification of vegetation types according to the British National Vegetation Classification*. Wallingford: Centre for Ecology & Hydrology.

³ Stace, C. (2019). *New Flora of the British Isles – Fourth Edition*. Middlewood Green: C & M Floristics.

⁴ Hill, M.O., Blackstock, T.H., Long, D.G., & Rothero, G.P.(2008). *A Checklist and Census Catalogue of British and Irish Bryophytes – Updated 2008*. Middlewich: British Bryological Society.

3.0 RESULTS SUMMARY

Background

- 3.1 The SSSI has been notified for its geological and biological interest. The SSSI citation⁵ notes that the main biological interest is the limestone grassland on the steep railway embankments and in the adjacent quarry. The grassland is noted as being tall-sward grassland dominated by Upright Brome or a mixture of brome and Tor-grass, which supports a range of calcareous forbs. Reference is also made to the woodland habitat that is also present.

Overview Description

- 3.2 Whilst open grassland formed a large proportion of the surveyed area, extensive tracts of dense and continuous scrub and early secondary semi-natural broadleaved woodland were also present. The specific grassland communities noted in the citation were absent, but in areas the sward was dominated by tor-grass and indicative of the National Vegetation Classification (NVC) CG4 Tor-grass *Brachypodium pinnatum* grassland. In many areas the sward was formed by a mesotrophic grassland community rather than a calcicolous type, but specifically stands highly indicative of the National Vegetation Classification (NVC) MG1d False Oat-grass (*Arrhenatherum elatius*) grassland, Wild Parsnip (*Pastinaca sativa* ssp. *sylvestris*) sub-community, and MG1e False Oat-grass grassland, Common Knapweed (*Centaurea nigra*) sub-community. These are the more species-rich sub-communities of false oat-grass grassland, particularly MG1e. MG1d characteristically occurs on calcareous soils over calcareous bedrock, and whilst MG1e occurs over a range of bedrock types, these include calcareous. These are all grassland communities that are tall and tussocky in stature and structure. In a very small number of locations a short tight sward was present and here species-richness was very high with 25-27 species/m² noted in some areas, with many species indicative of the calcareous conditions. Whilst none of these areas had any correlation with published NVC communities, they still represent exceptionally species-rich limestone grassland, and are of considerable significance.
- 3.3 Whilst many of the species forming the scrub and woodland elements occur on a range of soil type, the calcareous conditions were marked by the presence of species such as whitebeam, buckthorn and traveller's-joy.
- 3.4 Whilst the scrub and early secondary semi-natural woodland habitats are only of Local (Site) level importance the CG4, MG1d and MG1e grasslands, are grasslands of high botanical nature conservation value with CG4 corresponding to 'Lowland Calcareous Grassland' Habitat of Principal Importance, and MG1d/e corresponding to 'Lowland Meadows' Habitat of Principal Importance⁶ and are considered to be of **National level importance**.

⁵ English Nature. (1999). *Ardley Cutting and Quarry SSSI Citation*. <https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000903.pdf>

⁶ Jefferson, R.G., Smith, S.L.N., & MacKintosh, E.J. (2019). *Guidelines for the Selection of Biological SSSIs Part 2: Detailed Guidelines for Habitats and Species Groups Chapter 3 Lowland Grasslands*. Peterborough: Joint Nature Conservation Committee. <https://data.jncc.gov.uk/data/cf50f420-1b38-4253-89f8-1cb7ba010f27/SSSI-Guidelines-3-LowlandGrasslands-2019.pdf>

Current Condition and Management

- 3.5 Succession to scrub and secondary semi-natural woodland represents the main threat to the priority grassland habitats within the surveyed section of the SSSI. There was clear evidence that management was ongoing with recent cut and chipped scrub. However, it was noted that the chipped material had been left in situ, and this dense layer of chippings would be, (in the author's opinion) as detrimental as the un-managed scrub. This is because this will effectively prevent any potential re-generation of calcareous grassland. This situation most likely reflects the difficulty of managing these areas of the SSSI effectively, given the steep nature of the embankment and difficulties with accessing the area.
- 3.6 Short, species-rich calcareous grassland is not noted within the SSSI citation, so the small areas recorded during the survey are of particular note, as these were the most species-rich areas recorded during the survey. These areas appeared to be kept open by rabbit grazing and are potentially an indication of how at least parts of the grassland in the surveyed area could be enhanced to transition towards a shorter sward, and more diverse calcareous grassland through management.

DRAFT

4.0 RESULTS

4.1 Between TN1 & TN2 scrub had been coppiced and chipped, with the level of re-growth suggesting that this had been done during the previous winter (i.e., 2019/20). The chippings had been left on the ground.



4.2 Between TN2 & TN4 conditions were more open with abundant hawthorn and dogwood re-growth from previous coppicing. The steep embankment falling to the rail track supported dense scrub with abundant guelder-rose, hawthorn and dogwood, and a large patch of dense bramble at TN3. Where the ground was not covered with chippings tor-grass was abundant with a few other associated species as listed below:



Species	Abundance
Tor-grass	Abundant
Spear Thistle	Frequent
Cock's-foot	Occasional
False Oat-grass	Occasional
Field Scabious	Occasional
Hairy Violet	Occasional
Oxeye Daisy	Occasional
Bittersweet	Rare
Black Bryony	Rare
Common Knapweed	Rare
Common Ragwort	Rare
Creeping Cinquefoil	Rare
Greater Knapweed	Rare
Herb Robert	Rare
Nipplewort	Rare
Salad Burnet	Rare

4.3 Where the embankment is free of scrub the grassland is formed by abundant to locally dominant tor-grass with a thin scattering of the herbs listed above on the plateau at the top of the slope but with some meadow vetchling and wild basil also noted

4.4 Conditions then open out into more of a grassy sward dominated by tor-grass with a small number of forbs including small amounts of hoary ragwort and greater knapweed and locally there are stands of traveller's-joy.



4.5 At the start of the section between TN4 to TN5 there is a run of frequent woolly thistle with occasional patches of other forbs throughout including frequent hoary ragwort, locally frequent germander speedwell and creeping thistle, occasional common knapweed and more rarely burnet-saxifrage.

4.6 TN5 marks the start of run of dense and impenetrable blackthorn regrowth, broken only by a single gap in the middle with some bramble, common nettle and more rarely bittersweet, spear thistle and great willowherb. Very rarely small amounts of willow, elder and hawthorn are amongst the blackthorn. This run of scrub ends at TN7 where there is an open brick chamber connected to a field ditch. In the margin of the adjacent field there is partially collapsed badger sett (TN6), and more holes could be present within the dense blackthorn.



4.7 Between TN7 and TN8 there is a large patch of traveller's-joy with small amounts of rosebay willowherb.

4.8 From TN9 to TN11 there is a significant change in the vegetation as it changes to open grassland with the following composition, listed below. The steep embankment alongside this section continues to be formed by tor-grass grassland with scattered field scabious and hairy St John's-wort with a patch of hemp-agrimony noted at the base of the slope.



Species	Abundance
False Oat-grass	Abundant
Ground Ivy	Abundant
Dog's Mercury	Locally frequent
Field Bindweed	Locally frequent
Creeping Cinquefoil	Occasional to Locally frequent
Lady's Bedstraw	Occasional to Locally frequent
Woolly Thistle	Occasional to Locally frequent
Common Knapweed	Occasional
Common Toadflax	Occasional
Creeping Thistle	Occasional
Field Scabious	Occasional
Hairy Violet	Occasional
Meadow Vetchling	Occasional
Bittersweet	Rare
Bramble	Rare
Colt's-foot	Rare
Common Sorrel	Rare
Dove's-foot Crane's-bill	Rare
Greater Knapweed	Rare
Oxeye Daisy	Rare
Rosebay Willowherb	Rare
Wild Basil	Rare
Yarrow	Rare
Yorkshire-fog	Rare
Zigzag Clover	Rare

4.9 Then after TN10 the vegetation grades into tor-grass grassland and thereafter seemed to ebb and flow between neutral and calcareous conditions with the following composition. The embankment along this section is mostly hawthorn scrub with small amounts of ash, elder and more rarely wild privet

Species	Abundance
Lady's Bedstraw	Frequent
Oxeye Daisy	Frequent
Field Bindweed	Locally frequent
Germander Speedwell	Occasional to Locally frequent
Hairy Violet	Occasional to Locally frequent

Species	Abundance
Salad Burnet	Occasional to Locally frequent
Wild Basil	Occasional to Locally frequent
Burnet-saxifrage	Occasional
Creeping Thistle	Occasional
False Oat-grass	Occasional
Field Scabious	Occasional
Greater Knapweed	Occasional
Ground Ivy	Occasional
Hoary Plantain	Occasional
Neat Feather-moss	Occasional
Black Medick	Rare
Common Bird's-foot-trefoil	Rare
Common Gromwell	Rare
Cowslip	Rare
Fairy Flax	Rare
Hairy St John's-wort	Rare
Ribwort Plantain	Rare
Sweet Vernal-grass	Rare
Yarrow	Rare

4.10 The vegetation at TN12 is formed by a mix of scrub/woodland and tall ruderal herbs with the following composition;

Species	Abundance
Wild Parsnip	Frequent to locally abundant
Bramble	Frequent
Ground Ivy	Locally frequent to abundant
Bittersweet	Locally frequent to abundant
Lesser Burdock	Locally frequent
Germander Speedwell	Locally frequent
Upright Brome	Occasional
Hairy St John's-wort	Occasional
Common Gromwell	Occasional
Elder	Occasional
False Oat-grass	Rare
Woolly Thistle	Rare



Species	Abundance
Cock's-foot	Rare
Wood Avens	Rare
Field Scabious	Rare
Dog-rose	Rare
Perennial Sow-thistle	Rare
Dandelion	rare

4.11 There is then a relatively narrow band of clear embankment (TN13) before it starts to go to scrub. This is relatively species-rich with the following species all present; salad burnet, wild strawberry, fairy flax, red clover, field scabious, germander speedwell, common ragwort, hairy violet, oxeye daisy, common mouse-ear, neat feather-moss, common gromwell, ribwort plantain, common knapweed, and agrimony.

4.12 This then opens out into a larger area of open and short, species-rich calcareous grassland. TN14 represents one of the more diverse areas, possibly being kept short by rabbit grazing. A 1mx 1m quadrat sample (Q1) was taken here.



Common Name	DOMIN
Salad Burnet	7
Neat Feather-moss	5
Wild Strawberry	5
Ribwort Plantain	4
Oxeye Daisy	4
Agrimony	4
Wild Basil	4
Perforate St John's-wort	4
a violet	4
Rough Hawkbit	4
Common Knapweed	4
Germander Speedwell	4
Mouse-eared-hawkweed	3
Black Medick	3
Yorkshire-fog	1
Fairy Flax	1
Dandelion	1
Red Fescue	1
Cock's-foot	1
Common Mouse-ear	1

4.13 Comparison with the published community descriptions and using the key did not identify a distinct NVC community and the top 5 possibilities generated by the TABLEFIT V4 analysis were all very

poor goodness of fit, but the sward is clearly calcareous and species-rich with 21 species in the 1m² sample:

NVC_Community	Mean_GoF	NVC_Comm_Name	NVC_Sub_Name
CG6a	35	Avenula_pubescens	Dac_glo-Bri_med
CG7e	33	Fest_ovi-Hier_pil-Thym	Med_lup-Rum_ace
CG6	31	Avenula_pubescens	
MG1e	31	Arrhenatherum_elatius	Centaurea_nigra
CG3	30	Bromus_erectus	

- 4.14 After a short length of scrub/woodland, conditions open out again to a species-rich bank, but here the embankment becomes stepped. On the plateau there is mixed scrub and bramble scrub with tall ruderal herbs with abundant wild parsnip and spear thistle and some tor-grass and false oat-grass but also some calcareous indicators like wild basil and greater knapweed. This then falls to a slope, at the base of which is a shelf, the slope and shelf are species-rich with a 1m x 1m sample Q2 (TN15) taken from the most species-rich area. Below this a steep scrub/woodland area falls to the rail track. This is formed by mixed scrub/early woodland but mainly hawthorn but with some whitebeam, willow, ash and dog-rose with traveller's-joy scrambling through many areas.



- 4.15 Similar to sample quadrat 1, comparison with the published community descriptions and using the key did not identify a distinct NVC community and the top 5 possibilities generated by the TABLEFIT V4 analysis were all very poor goodness of fit, but again the vegetation was clearly calcareous and here this included autumn gentian:



NVC_Community	Mean_GoF	NVC_Comm_Name	NVC_Sub_Name
CG7e	42	Fest_ovi-Hier_pil-Thym	Med_lup-Rum_ace
CG3a	41	Bromus_erectus	Typical
CG3	37	Bromus_erectus	
CG2	33	Fest_ovina-Avenula_prat	
CG7	33	Fest_ovi-Hier_pil-Thym	

The next section (TN16 to TN17) supports tall ruderal herbs/grassland/scrub mosaic, with the following composition.

4.16

Species	Abundance
Perforate St John's-wort	Frequent to locally abundant
Bramble	Frequent to locally abundant
Ground Ivy	Locally frequent to abundant
Wild Parsnip	Locally frequent to abundant
Wild Basil	Frequent
Traveller's-joy	Locally frequent
Germander Speedwell	Locally frequent
Hairy Violet	Locally frequent
Common Nettle	Occasional to locally frequent
False Oat-grass	Occasional
Greater Knapweed	Occasional
Creeping Thistle	Occasional
Woolly Thistle	Occasional
Hawthorn *	Occasional
Cock's-foot	Occasional
Wood Avens	Occasional
Hairy St John's-wort	Occasional
Salad Burnet	Occasional
Common Bent	Rare
Upright Brome	Rare
Ploughman's-spikenard	Rare
Stinking Iris	Rare
Field Scabious	Rare
Common Toadflax	Rare
Common Gromwell	Rare
Tall Melilot	Rare
Dog-rose *	Rare
Perennial Sow-thistle	Rare

- 4.17 At TN18 woodland is more clearly defined and this part of the embankment is secondary, semi-mature woodland with a mixed canopy of ash, goat willow, hazel, whitebeam and hawthorn, with the shrub species indicative of a late scrub/early successional woodland. The shrub species then often form a thick and impenetrable layer (this sample area was more open and accessible) and includes the non-canopy forming species elder and dogwood. Wild clematis is frequent, forming large areas in some places. The field layer was very sparse but with locally abundant dog's-mercury with small amounts of wild strawberry, wood avens and bramble, with frequent common feather-moss. Other bryophytes were infrequent, just small amounts of lesser pocket-moss and *Pellia* sp. (indet. as non-fruiting) and hart's-tongue thyme-moss.



Species	Abundance
Common Whitebeam	Frequent
Goat Willow	Frequent
Hazel	Frequent
Hawthorn	Frequent
Elder	Occasional
Dogwood	Occasional
Traveller's-joy	Locally frequent
Dog's Mercury	Locally abundant
Wild Strawberry	Occasional
Wood Avens	Occasional
Bramble	Occasional
Common Feather-moss	Frequent
Lesser Pocket-moss	Rare
Hart's-tongue Thyme-moss	Rare

- 4.18 There is a short length of scrub and tall ruderal herbs before this length opens out to open grassland that then spills down the embankment.

Species	Abundance
Perforate St John's-wort	Frequent to locally abundant
Lesser Burdock	Locally frequent to abundant
Spear Thistle	Locally frequent to abundant
Wild Strawberry	Locally frequent to abundant
Ground Ivy	Locally frequent to abundant
Blackthorn	Locally frequent to abundant
Bramble	Locally frequent to abundant
Germander Speedwell	Locally frequent to abundant
False Oat-grass	Occasional to locally frequent
Common Ragwort	Occasional to locally frequent
Wild Parsnip	Occasional to locally frequent
Creeping Thistle	Occasional
Wild Basil	Occasional

Species	Abundance
Ash (seedlings)	Occasional
Lady's Bedstraw	Occasional
Hairy St John's-wort	Occasional
Stinking Iris	Occasional
Field Scabious	Occasional
Selfheal	Occasional
Dog-rose	Occasional
Elder	Occasional
Common Nettle	Occasional
Upright Brome	Rare
Common Centaury	Rare
Rosebay Willowherb	Rare
Canadian Fleabane	Rare
Teasel	Rare
Great Willowherb	Rare
Common Toadflax	Rare
A mullein	Rare
Common Sorrel	Rare
Common Figwort	Rare
Bittersweet	Rare

- 4.19 The middle section (TN19) of the embankment (TN20-21) supports short species-rich calcareous grassland and two sample quadrats were recorded here.

Species	Q3	Q4	Av. DOMIN	Frequency.
Wild Thyme	8	7	7	2
Neat Feather-moss	6	7	6	2
Hairy Violet	4	5	4	2
Glaucous Sedge	4	4	4	2
Wild Strawberry	2	4	3	2
Lady's Bedstraw	3	*	3	2
Oxeye Daisy	1	4	3	2
Mouse-eared-hawkweed	4	3	3	2
Selfheal	3	3	3	2
Fairy Flax	2	3	2	2
Dwarf Thistle	2	3	2	2
Autumn Gentian	2	3	2	2
Perforate St John's-wort	2	3	2	2
Field Scabious	1	1	1	2
Cock's-foot	1	*	1	2
a Cladonia lichen	5	*	5	1
Greater Knapweed	*	4	4	1
Hoary Plantain	*	4	4	1
Upright Brome	*	4	4	1
Autumn Hawkbit	*	3	3	1
Rough Hawkbit	2	*	2	1
Germander Speedwell	2	*	2	1

Species	Q3	Q4	Av. DOMIN	Frequency.
Burnet-saxifrage	2	*	2	1
Common Centaury	2	*	2	1
Common Ragwort	2	*	2	1
Common Bent	2	*	2	1
Wild Basil	*	2	2	1
Ribwort Plantain	*	2	2	1
Common Bird's-foot-trefoil	*	2	2	1
Agrimony	1	*	1	1
Salad Burnet	1	*	1	1
an eyebright	1	*	1	1
Dragon's-teeth	1	*	1	1
Black Medick	1	*	1	1
Common Mouse-ear	*	1	1	1
Hairy St John's-wort	*	1	1	1
Red Clover	*	1	1	1
Dandelion	*	1	1	1
Common Knapweed	*	1	1	1

- 4.20 Comparison with the published community descriptions and using the key did not identify a distinct NVC community and the top 5 possibilities generated by the TABLEFIT V4 analysis were all very poor goodness of fit:

NVC_Community	Mean_GoF	NVC_Comm_Name	NVC_Sub_Name
CG3c	36	Bromus_erectus	Kna_arv-Bel_per
CG7e	35	Fest_ovi-Hier_pil-Thym	Med_lup-Rum_ace
CG3a	34	Bromus_erectus	Typical
CG3	33	Bromus_erectus	
CG7a	33	Fest_ovi-Hier_pil-Thym	Koeleria_macr

- 4.21 There is a more accessible area of the wood between TN22-23 which confirms that this continues much the same as previously noted, but wild strawberry, common dog-violet and ash seedlings are locally frequent and the moss *Ctenidium molluscum* is occasional to locally frequent.

- 4.22 The end of this section is marked by a stand of rose-of-Sharon (TN24) which extends for c.20m. After this there is a more open area (TN25), particularly on the bank which no longer has shelves, it just goes from the top of the plateau down to the track edge. Some of this vegetation spills out onto the plateau.



Species	Abundance
Neat Feather-moss	Abundant
Salad Burnet	Abundant
Wild Strawberry	Abundant
Black Medick	Frequent
Glaucous Sedge	Frequent
Hairy Violet	Frequent
Hawthorn (v. short)	Frequent
Hoary Plantain	Frequent
Lady's Bedstraw	Frequent
Rough Hawkbit	Frequent
Dog's Mercury	Locally frequent
Common Bent	Occasional
Common Sorrel	Occasional
Cowslip	Occasional
Creeping Cinquefoil	Occasional
Dogwood (v. short)	Occasional
Dwarf Thistle	Occasional
Fairy Flax	Occasional
Field Scabious	Occasional
Field Wood-rush	Occasional
Hairy St John's-wort	Occasional
Meadow Vetchling	Occasional
Red Fescue	Occasional
Ribwort Plantain	Occasional
a hawkweed	Rare
Common Bird's-foot-trefoil	Rare
Common Mouse-ear	Rare
Common Whitebeam (saplings)	Rare
Red Clover	Rare
Yarrow	Rare

- 4.23 The woodland/scrub continues eastwards until TN26 where there is an area of open, short calcareous grassland running down the embankment which was sampled via Quadrat 5.

Common Name	DOMIN
Rough Hawkbit	7
Neat Feather-moss	6
Lady's Bedstraw	5
Dwarf Thistle	4
Wild Basil	4
Wild Strawberry	4
Oxeye Daisy	4
Mouse-eared-hawkweed	4
Ribwort Plantain	4
Salad Burnet	4
Germander Speedwell	4
Hawthorn *	3
Fairy Flax	3



Burnet-saxifrage	3
Common Bent	2
Greater Knapweed	2
Autumn Gentian	2
Cowslip	2
Red Clover	1

- 4.24 Comparison with the published community descriptions and NVC key did not identify a distinct NVC community and the top 5 possibilities generated by the TABLEFIT V4 analysis were all very poor goodness of fit and three of the top 5 possibilities were scrub communities:

NVC_Community	Mean_GoF	NVC_Comm_Name	NVC_Sub_Name
W21c	15	Crat_mono-Hedera_scrub	Brach_sylvatic
CG7d	14	Fest_ovi-Hier_pil-Thym	Fra_ves-Eri_ace
CG7e	13	Fest_ovi-Hier_pil-Thym	Med_lup-Rum_ace
W21	12	Crat_mono-Hedera_scrub	
W24	11	Rub_fr-Hol_la_underscb	

- 4.25 To the east of the Q5 area (from TN27-28) the grassland continues with a similar species composition but with a few additional species like lady's bedstraw, common bird's-foot trefoil and salad burnet, before progressing to a taller and grassier sward with frequent false oat-grass, but still with a good range of the more robust calcareous indicator species like field scabious, hairy St John's-wort and greater knapweed, with others like burnet saxifrage, and towards the end



dragon's-teeth, becomes locally frequent. Then from TN29 the plateau and top of the slope change to a more rank grassland type with some buckthorn in the associated scrub element, which also includes elder and hawthorn. Where this spills down the embankment the grassland becomes more forb dominated and rough hawkbit is frequent. This then continues until the road bridge.

Species	Abundance
False Oat-grass	Abundant
Perforate St John's-wort	Frequent
Bramble	Frequent to locally dominant
Hairy Violet	Locally frequent
Rough Hawkbit	Locally frequent
Field Scabious	Occasional to locally frequent
Wild Basil	Occasional to locally frequent
Cock's-foot	Occasional
Common Knapweed	Occasional
Common Toadflax	Occasional

Species	Abundance
Greater Knapweed	Occasional
Oxeye Daisy	Occasional
Woolly Thistle	Occasional
Yarrow	Occasional
Hairy St John's-wort	Rare
Hoary Ragwort	Rare
Hawthorn	Present
Buckthorn	Present
Elder	Present

- 4.26 To the east of the road bridge dense mixed scrub dominates formed by abundant field maple, hawthorn and blackthorn, with frequent bramble and more rarely some spindle, buckthorn and wayfaring-tree. Then at TN30 the area opens to false oat-grass grassland with a species composition indicative of the NVC community MG1d *Arrhenatherum elatius* grassland *Pastinaca sativa* sub-community.
- 4.27 After this relatively small open area, conditions revert to dense and impenetrable mixed scrub formed by hawthorn, blackthorn, bramble, buckthorn, spindle, elder and dog rose and this continues up to TN31 where for a short section there is grassland and tall ruderal herbs up to point TN32 after which the grassland grades to abundant tor-grass with a scattering of other forbs
- 4.28 At TN32 conditions revert back to dense and impenetrable scrub with sycamore, dogwood, hawthorn, buckthorn, bramble, elder and common whitebeam all present.
- 4.29 At TN34 the scrub thins and alongside the southern boundary conditions change to grassland with tall herbs and scattered scrub.



Species	Abundance
Yarrow	Frequent
Agrimony	Frequent
Burnet-saxifrage	Frequent
Common Knapweed	Occasional to locally frequent
Lady's Bedstraw	Occasional to locally frequent
Common Toadflax	Occasional to locally frequent
Greater Knapweed	Occasional
Common Mouse-ear	Occasional
Hawthorn*	Occasional
Red Fescue	Occasional
Hoary Ragwort	Occasional

Field Scabious	Occasional
Wild Parsnip	Occasional
Ribwort Plantain	Occasional
Dog-rose*	Occasional
Bramble	Occasional
Hairy Violet	Occasional
Dragon's-teeth	Rare
Salad Burnet	Rare

4.30 Along the northern part of this area (TN35) there is a relatively narrow band of firstly bare ground with sparse vegetation and then short species-rich grassland similar to that present in parts of the western section of the survey area this was sampled via Quadrat 6.



Common Name	DOMIN
Mouse-eared-hawkweed	7
Red Fescue	6
Rough Hawkbit	5
Eyebright sp.	4
Greater Knapweed	4
Red Clover	4
Ribwort Plantain	4
Bramble	3
Burnet-saxifrage	3
Fairy Flax	3
Oxeye Daisy	3
Yellow Oat-grass	3
Cock's-foot	2
Common Mouse-ear	2
Perforate St John's-wort	2
Autumn Hawkbit	1

4.1 Again, comparison with the published community descriptions and using the key did not identify a distinct NVC community and the top 5 possibilities generated by the TABLEFIT V4 analysis were all very poor goodness of fit; however, the analysis did pick out the calcareous nature of the stand.

NVC_Community	Mean_GoF	NVC_Comm_Name	NVC_Sub_Name
CG7e	28	Fest_ovi-Hier_pil-Thym	Med_lup-Rum_ace
CG7d	25	Fest_ovi-Hier_pil-Thym	Fra_ves-Eri_ace
CG7	25	Fest_ovi-Hier_pil-Thym	
CG6a	23	Avenula_pubescens	Dac_glo-Bri_med
MG4a	22	Alopec_pra-Sangui_offi	Dact_glom

- 4.2 To the east of this there is the grassland reverts to tall and relatively species-rich False Oat-grass grassland where three quadrat samples were recorded:

Species	Q7	Q8	Q9	Av. DOMIN	Frequency.
False Oat-grass	8	8	7	8	100%
Cock's-foot	5	5	4	5	100%
Yarrow	5	4	4	4	100%
Agrimony	5	*	5	3	67%
Common Knapweed	*	5	4	3	67%
Greater Knapweed	*	1	5	2	67%
Red Fescue	2	*	4	2	67%
Lady's Bedstraw	3	*	3	2	67%
Hawthorn*	1	*	4	2	67%
Sweet Vernal-grass	*	*	2	1	33%
Perforate St John's-wort	*	2	*	1	33%
Oxeye Daisy	*	2	*	1	33%
Ribwort Plantain	*	2	*	1	33%
Yellow Oat-grass	*	*	2	1	33%
Hairy Violet	*	*	2	1	33%
Common Mouse-ear	*	*	1	0	33%
Field Bindweed	1	*	*	0	33%
Hoary Ragwort	*	*	1	0	33%
Wild Parsnip	*	1	*	0	33%

- 4.3 The TABLEFIT V4 analysis picks out the presence of MG1 False Oat-grass grassland and comparison with the published community descriptions indicate that stand has a good correlation with the MG1 False Oat-grass grassland, Wild Parsnip sub-community.

NVC_ Community	Mean_ GoF	NVC_Comm_Name	NVC_Sub_Name
MG1	80	Arrhenatherum elatius	
MG1a	76	Arrhenatherum elatius	Festuca rubra
MG1d	70	Arrhenatherum elatius	Pastin sativa
MG1e	56	Arrhenatherum elatius	Centaurea nigra
OV23d	51	Loli-Dactyl weedy grass	Arr ela-Med lup

- 4.4 Dense continuous scrub continues further east from point 41 but then eventually opens out at point 42 to relatively species diverse False Oat-grass grassland with scattered scrub. The species composition once again picks out the underlying calcareous conditions and the grassland has elements of both the Wild Parsnip and Common Knapweed sub-communities of MG1 False Oat-grass grassland.



Species	Abundance
False Oat-grass	Abundant
Blackthorn	Frequent
Yarrow	Frequent
Agrimony	Locally frequent
Cock's-foot	Locally frequent
Ribwort Plantain	Locally frequent
Black-bindweed	Occasional
Blue Fleabane	Occasional
Bramble	Occasional
Common Knapweed	Occasional
Fairy Flax	Occasional
Field Scabious	Occasional
Greater Knapweed	Occasional
Hawthorn	Occasional
Hoary Ragwort	Occasional
Hypericum perforatum	Occasional
Neat Feather-moss	Occasional
Red Fescue	Occasional
Wild Carrot	Occasional
Autumn Hawkbit	Rare
Common Bird's-foot-trefoil	Rare
Common Centaury	Rare
Creeping Buttercup	Rare
Hart's-tongue Thyme-moss	Rare
Ivy	Rare
Salad Burnet	Rare
Smaller Cat's-tail	Rare

- 4.5 The final section of the survey area (point 43) is an exposed geological feature. At the base of the exposure there is a large depression which at the time of the survey was dominated by Common Spike-rush with small amounts of Redshank with a few fragments of water crowfoot (indeterminate to species level). To the south of this feature there is a fenced enclosure formed by species-poor False Oat-grass grassland.



Species	Abundance
Common Couch	Abundant
False Oat-grass	Abundant
Smaller Cat's-tail	Frequent
Creeping Bent	Frequent
Red Fescue	Locally frequent

Cock's-foot	Locally frequent
Common Nettle	Occasional
Spear Thistle	Occasional
Creeping Buttercup	Rare
Cleavers	Rare
Wild Parsnip	Rare
Dandelion	Rare
Perennial Rye-grass	Rare
Creeping Thistle	Rare
Dove's-foot Crane's-bill	Rare
Broad-leaved Dock	Rare

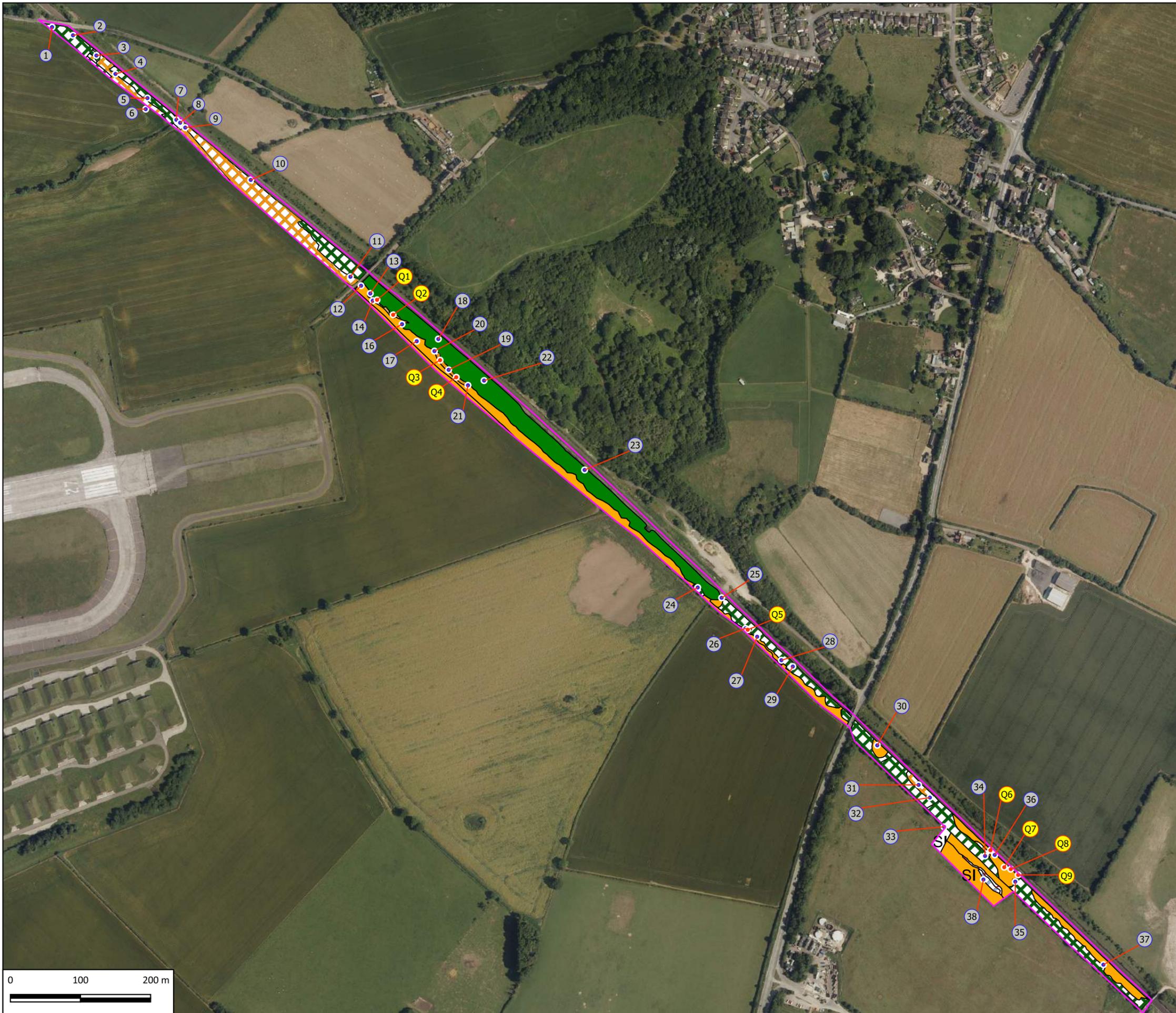
DRAFT

5.0 APPENDIX A: NOMENCLATURE

Common Name	Taxon
a cladonia lichen	<i>Cladonia sp.</i>
a hawkweed	<i>Hieracium sp.</i>
a mullein	<i>Mullein sp.</i>
Agrimony	<i>Agrimonia eupatoria</i>
an eyebright	<i>Euphrasia sp.</i>
Ash (seedlings)	<i>Fraxinus excelsior</i>
Autumn Gentian	<i>Gentianella amarella</i>
Autumn Hawkbit	<i>Scorzoneroides autumnalis</i>
Bittersweet	<i>Solanum dulcamara</i>
Black Bryony	<i>Bryonia dioica</i>
Black Medick	<i>Medicago lupulina</i>
Black-bindweed	<i>Fallopia convolvulus</i>
Blackthorn	<i>Prunus spinosa</i>
Blue Fleabane	<i>Erigeron acris</i>
Bramble	<i>Rubus fruticosus agg.</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Buckthorn	<i>Rhamnus cathartica</i>
Burnet-saxifrage	<i>Pimpinella saxifraga</i>
Canadian Fleabane	<i>Conyza canadensis</i>
Cleavers	<i>Galium aparine</i>
Cock's-foot	<i>Dactylis glomerata</i>
Colt's-foot	<i>Tussilago farfara</i>
Common Bent	<i>Agrostis capillaris</i>
Common Bird's-foot-trefoil	<i>Lotus corniculatus</i>
Common Centaury	<i>Centaureum erythraea</i>
Common Couch	<i>Elymus repens</i>
Common Feather-moss	<i>Kindbergia praelonga</i>
Common Figwort	<i>Scrophularia nodosa</i>
Common Gromwell	<i>Lithospermum officinale</i>
Common Knapweed	<i>Centaurea nigra</i>
Common Mouse-ear	<i>Cerastium fontanum</i>
Common Nettle	<i>Urtica dioica</i>
Common Ragwort	<i>Jacobaea vulgaris</i>
Common Sorrel	<i>Rumex acetosa</i>
Common Tamarisk-moss	<i>Thuidium tamariscinum</i>
Common Toadflax	<i>Linaria vulgaris</i>
Common Whitebeam	<i>Sorbus aria agg.</i>
Cowslip	<i>Primula veris</i>
Creeping Bent	<i>Agrostis stolonifera</i>
Creeping Buttercup	<i>Ranunculus repens</i>
Creeping Cinquefoil	<i>Potentilla reptans</i>
Creeping Thistle	<i>Cirsium arvense</i>
Dandelion	<i>Taraxacum officinale agg.</i>
Dog-rose	<i>Rosa canina agg.</i>

Common Name	Taxon
Dog's Mercury	<i>Mercurialis perennis</i>
Dogwood	<i>Cornus sanguinea</i>
Dove's-foot Crane's-bill	<i>Geranium molle</i>
Dragon's-teeth	<i>Lotus maritimus</i>
Dwarf Thistle	<i>Cirsium acaule</i>
Elder	<i>Sambucus nigra</i>
Fairy Flax	<i>Linum catharticum</i>
False Oat-grass	<i>Arrhenatherum elatius</i>
Field Bindweed	<i>Convolvulus arvensis</i>
Field Maple	<i>Acer campestre</i>
Field Scabious	<i>Knautia arvensis</i>
Field Wood-rush	<i>Luzula campestris</i>
Germander Speedwell	<i>Veronica chamaedrys</i>
Glaucous Sedge	<i>Carex flacca</i>
Goat Willow	<i>Salix caprea</i>
Great Willowherb	<i>Epilobium hirsutum</i>
Greater Knapweed	<i>Centaurea scabiosa</i>
Ground Ivy	<i>Glechoma hederacea</i>
Guelder-rose	<i>Viburnum opulus</i>
Hairy St John's-wort	<i>Hypericum hirsutum</i>
Hairy Violet	<i>Viola hirta</i>
Hart's-tongue Thyme-moss	<i>Plagiomnium undulatum</i>
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Hemp-agrimony	<i>Eupatorium cannabinum</i>
Herb Robert	<i>Geranium robertianum</i>
Hoary Plantain	<i>Plantago media</i>
Hoary Ragwort	<i>Jacobaea erucifolia</i>
Ivy	<i>Hedera helix</i>
Lady's Bedstraw	<i>Galium verum</i>
Lesser Burdock	<i>Arctium minus</i>
Lesser Pocket-moss	<i>Fissidens bryoides</i>
Meadow Vetchling	<i>Lathyrus pratensis</i>
Mouse-eared-hawkweed	<i>Pilosella officinarum</i>
Neat Feather-moss	<i>Pseudoscleropodium purum</i>
Nipplewort	<i>Lapsana communis</i>
Oxeye Daisy	<i>Leucanthemum vulgare</i>
Perennial Rye-grass	<i>Lolium perenne</i>
Perennial Sow-thistle	<i>Sonchus arvensis</i>
Perforate St John's-wort	<i>Hypericum perforatum</i>
Ploughman's-spikenard	<i>Inula conyzae</i>
Pointed Spear-moss	<i>Calliergonella cuspidata</i>
Red Clover	<i>Trifolium pratense</i>
Red Fescue	<i>Festuca rubra</i>
Ribwort Plantain	<i>Plantago lanceolata</i>

Common Name	Taxon
Rosebay Willowherb	<i>Chamerion angustifolium</i>
Rough Hawkbit	<i>Leontodon hispidus</i>
Salad Burnet	<i>Poterium sanguisorba</i>
Salad Burnet	<i>Poterium sanguisorba subsp. sanguisorba</i>
Selfheal	<i>Prunella vulgaris</i>
Smaller Cat's-tail	<i>Phleum bertolonii</i>
Spear Thistle	<i>Cirsium vulgare</i>
Spindle	<i>Euonymus europaeus</i>
Stinking Iris	<i>Iris foetidissima</i>
Sweet Vernal-grass	<i>Anthoxanthum odoratum</i>
Sycamore	<i>Acer pseudoplatanus</i>
Tall Melilot	<i>Melilotus altissimus</i>
Teasel	<i>Dipsacus fullonum</i>
Tor-grass	<i>Brachypodium rupestre</i>
Traveller's-joy	<i>Clematis vitalba</i>
Upright Brome	<i>Bromopsis erecta</i>
Wayfaring-tree	<i>Viburnum lantana</i>
Wild Basil	<i>Clinopodium vulgare</i>
Wild Carrot	<i>Daucus carota</i>
Wild Parsnip	<i>Pastinaca sativa ssp. sylvestris</i>
Wild Privet	<i>Ligustrum vulgare</i>
Wild Strawberry	<i>Fragaria vesca</i>
Wild Thyme	<i>Thymus drucei</i>
Wood Avens	<i>Geum urbanum</i>
Woolly Thistle	<i>Cirsium eriophorum</i>
Yarrow	<i>Achillea millefolium</i>
Yellow Oat-grass	<i>Trisetum flavescens</i>
Yorkshire-fog	<i>Holcus lanatus</i>
Zigzag Clover	<i>Trifolium medium</i>



This drawing is the property of FPCR Environment and Design Ltd and is issued on the condition it is not reproduced, retained or disclosed to any unauthorised person, either wholly or in part without written consent of FPCR Environment and Design Ltd.

Imagery © Getmapping plc, Intoferra Ltd & Bluesky, Maxar Technologies, Map data ©2022

Survey Area

- 2020 SSSI Survey Target Notes
- 2020 SSSI Survey Quadrat Locations

Habitats

- Broadleaved woodland - semi-natural
- Calcareous grassland - unimproved
- Marginal and inundation - inundation vegetation
- Neutral grassland - semi-improved
- Neutral grassland - unimproved
- Poor semi-improved grassland
- Quarry
- Scrub - dense/continuous
- Scrub - scattered

B	27.04.22	final issue copy	NJL/NJL
A	04.11.20	initial copy	NJL/NJL
rev	date	comment	drn/chk

fpcr client: Oxfordshire Railfreight Ltd.
 project: Oxfordshire Strategic Rail Freight Interchange
 drawing title: ARDLEY CUTTING & QUARRY SSSI BOTANICAL SURVEY 2020 - HABITATS
 drawing / figure number: **8308-E-SSSI-04** Rev. **B** Date printed: 27/4/2022