Christchurch District Plan
Site of Ecological Significance

Site Significance Statement

Site name: Okana Valley

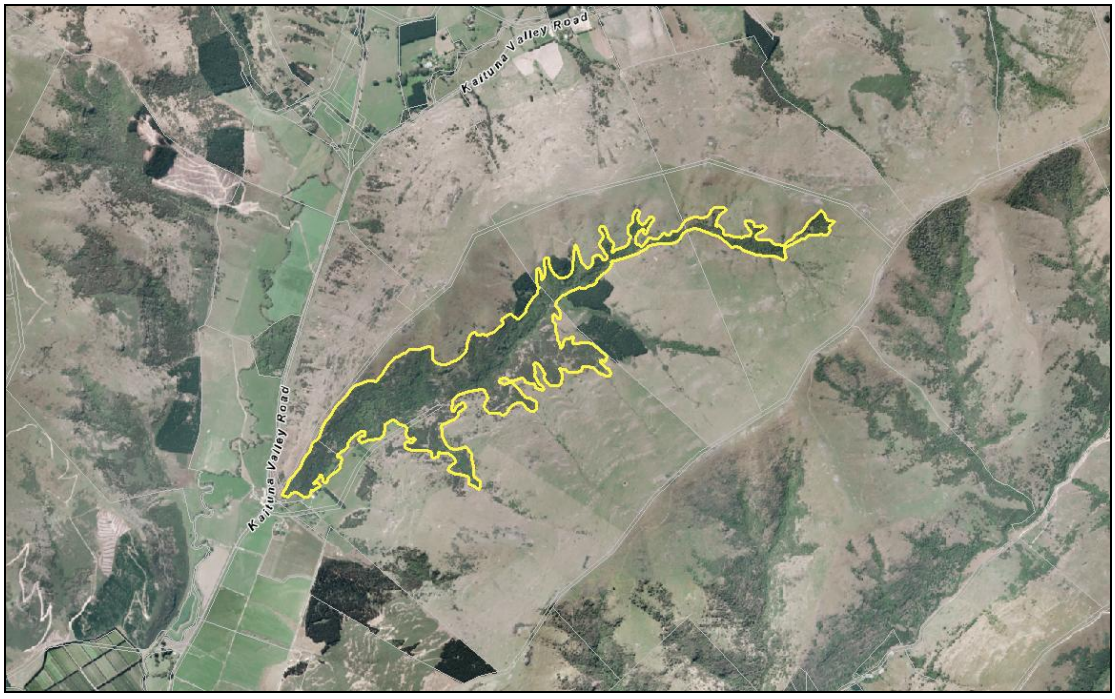
Site number: SES/H/23

Physical address of site: Okana Valley, Kaituna Valley, Little River

Summary of Significance:

This site is significant because it contains a relatively large area of representative and rare indigenous forest and a diverse range of indigenous vegetation communities on Acutely and Chronically Threatened land environments. These communities support nationally Threatened and At Risk plant, fish and aquatic invertebrates, several plant species that are uncommon within the ecological region or ecological district and four plant species at their distributional limits on Banks Peninsula. The site provides an important linkage between other areas of high ecological value in the surrounding area.

Site Map



Additional Site Information

Ecological District: Herbert

Area of SES (ha): 162.4

Central point (NZTM): E1576288, N5156576

Site Description

This site is located within a small valley on the eastern side of the Kaituna Valley. The valley faces in a generally south-western direction. The altitudinal range of the site is from approximately 20 to 520 m above sea level.

The riparian margins of Okana Stream and lower slopes of the catchment support indigenous forest. The main indigenous vegetation communities, as described by (Wildland Consultants unpubl. data 2012) are:

- Totara-matai-kahikatea/mixed hardwood forest
- Matai/mixed hardwood forest
- Narrow-leaved lacebark treeland with scattered kowhai and kanuka trees at the bottom of the valley alongside Okana Stream
- Secondary hardwood forest with a mixed canopy of kanuka and native hardwoods, and a subcanopy of small-leaved shrubs
- Secondary kanuka-kowhai forest on dry, north-facing slopes
- Kanuka forest on south facing slopes with an understorey of niniao and other small-leaved shrubs
- Kanuka/*Coprosma crassifolia-Coprosma virescens*-lowland flax shrubland on south-facing slopes and rock outcrops
- Secondary riparian mixed hardwood forest

Extent of Site of Ecological Significance

The site includes the indigenous forest along the riparian margins of the Okana Stream and on the south-eastern and north-western faces of the Okana Valley. Areas of exotic pine plantations on the margins of the site are excluded.

Assessment Summary

The Okana Valley Site has been evaluated against the criteria for determining significant indigenous vegetation and significant habitats of indigenous fauna listed in Appendix 3 of the Canterbury Regional Policy Statement (Environment Canterbury, 2013) (see below). Under these criteria the site is ecologically significant because it meets the representativeness (criteria 1 and 2), rarity/distinctiveness (criteria 3, 4, 5 and 6), diversity and pattern (criterion 7) and ecological context criteria (criteria 8).

Assessment against Significance Criteria

Representativeness

1. ***Indigenous vegetation or habitat of indigenous fauna that is representative, typical or characteristic of the natural diversity of the relevant ecological district. This can include degraded examples where they are some of the best remaining examples of their type, or represent all that remains of indigenous biodiversity in some areas.***

   The site is significant under this criterion.

   The areas of forest that contain emergent podocarps and areas of secondary hardwood forest within the site are representative of the natural diversity of the Herbert Ecological District.

   The totara-matai-kahikatea/mixed hardwood is representative of the pre-1840 plant community structure and diversity of the Herbert Ecological District. There are a number of large (remnant) emergent podocarps near the bottom of the valley with good regeneration of all three species. It also has a diverse range of native hardwood tree species. The forest is particularly diverse and dense at the bottom of the valley around the stream where there is permanent moisture (Wildland Consultants unpubl. data 2012).

   The patch of matai/mixed hardwood forest in the upper catchment also meets the threshold for significance under this criterion. Although the forest understorey has been modified by stock and is relatively bare, a number of remnant matai and totara have persisted here and are emergent over a mixed canopy of mahoe, kaikomako, broadleaf and five-finger (Wildland Consultants unpubl. data 2012).

   Other areas of forest with kanuka and native hardwoods within the site contain a wide variety of native species and are typical of regenerating forest occurring at lower elevations on Banks Peninsula.

   The secondary kanuka-kowhai forest on the dry, north-facing slopes of the site does not meet the threshold for significance under this criteria. It largely consists of kanuka forest over exotic grassland. The understorey below the kanuka is open and heavily grazed, with very few palatable species (Wildland Consultants unpubl. data 2012).

   Okana Stream contains an assemblage of aquatic invertebrates that is characteristic of less modified catchments with continuous riparian vegetation. QMCI values for Okana Stream indicate that water quality is 'excellent', while MCI values for this stream indicate that water quality is 'good'. This stream supports an invertebrate community that includes sensitive mayfly, stonefly and caddisfly (EPT: Ephemeroptera, Plecoptera, Trichoptera) species, with an average of 49% of taxa being EPT and the abundance of EPT individuals an average of 61% (EOS unpubl. data 2014).

2. ***Indigenous vegetation or habitat of indigenous fauna that is a relatively large example of its type within the relevant ecological district.***

   The site is significant under this criterion.

It is a large example of indigenous lowland forest in the context of the Herbert Ecological District.

Rarity/Distinctiveness

3. Indigenous vegetation or habitat of indigenous fauna that has been reduced to less than 20% of its former extent in the Region, or relevant land environment, ecological district, or freshwater environment.

The indigenous forest within the site is significant under this criterion.

Indigenous forest has been reduced to less than 20% of its former extent in the ecological district. Banks Peninsula, including the Herbert Ecological District, was almost entirely forested prior to the arrival of humans (Harding 2009, Wilson 2013). The present extent of all indigenous forest in the ED is estimated to be 10.9% including manuka and/or kanuka (New Zealand Landcover Database (Version 4)).

This site also meets this criterion at the Level IV land environment scale. The site supports indigenous forest that is entirely on Acutely and Chronically Threatened land environments (F3.1a and F3.1b) where 9.9 and 12.1% indigenous vegetation is left on these land environments respectively on a national scale (Walker et al. 2007).

4. Indigenous vegetation or habitat of indigenous fauna that supports an indigenous species that is threatened, at risk, or uncommon, nationally or within the relevant ecological district.

The site is significant under this criterion.

It supports nationally Threatened and At Risk plant, fish and aquatic invertebrates and several plant species that are uncommon within the ecological region or ecological district.

Plants

Nationally At Risk plant species (de Lange et al. 2013) recorded from the site (Wildland Consultants unpubl. data 2012) are:

- *Coprosma virescens* (At Risk - Declining) - frequent throughout the site
- *Tupeia antarctica* (At Risk - Declining) - rare in mixed canopy hardwood forest with emergent podocarps
- *Pseudopanax ferox* (At Risk – Naturally Uncommon) - rare in secondary forest
- *Teucridium parvifolium* (At Risk - Declining) - (Boot 1998) recorded several isolated plants, a population of six plants, and a population of >15 plants

Plant species recorded from the site (Wildland Consultants unpubl. data 2012) that are “uncommon to rare or very local” on Banks Peninsula (Wilson 2013) are:

- *Blechnum novae-zelandiae*
- *Carex secta*

- *Carex virgata*
- *Euchiton sphaericus*
- *Hydrocotyle novae-zeelandiae*
- *Microlaena avenacea*
- *Pyrrosia eleagnifolia*
- *Rumex flexuosus*
- *Uncinia banksii*

Fish

The Okana Stream, which flows through the site supports one nationally Threatened and two nationally At Risk (Goodman et al. 2014) fish species (Aquatic Ecology Ltd unpubl. data 2012):

- Lamprey (Threatened - Nationally Vulnerable)
- Longfin eel (At Risk – Declining)
- Inanga (At Risk – Declining)

Aquatic Invertebrates

Okana Stream provides habitat for a Threatened - Nationally Vulnerable (Grainger et al. 2014) mayfly *Nesameletus vulcanus* (EOS unpubl. data 2014) that is also endemic to Banks Peninsula.

5. ***The site contains indigenous vegetation or an indigenous species at its distribution limit within Canterbury Region or nationally.***

The site is significant under this criterion.

There are four species that are at their southern national or regional distributional limits on Banks Peninsula (Wilson 2013). These species are (Wildland Consultants unpubl. data 2012):

- Titoki (*Alectryon excelsus*) (southern national limit)
- Pigeonwood (*Hedycarya arborea*) (southern regional limit)
- Native passion vine (*Passiflora tetrandra*) (southern national limit)
- Kawakawa (*Piper excelsum*) (southern national limit)

6. ***Indigenous vegetation or an association of indigenous species that is distinctive, of restricted occurrence, occurs within an originally rare ecosystem, or has developed as a result of an unusual environmental factor or combinations of factors.***

The site is significant under this criterion.

There are basic igneous bluffs, scarps and rock outcrops within the site that support indigenous vegetation (Wildland Consultants unpubl. data 2012). These features are an originally rare ecosystem at a national scale (Williams et al. 2007).

Diversity and Pattern

7. ***Indigenous vegetation or habitat of indigenous fauna that contains a high diversity of indigenous ecosystem or habitat types, indigenous taxa, or has***

changes in species composition reflecting the existence of diverse natural features or ecological gradients.

The site is significant under this criterion.

It contains a high diversity of indigenous ecosystem types. The pattern of these vegetation communities across the site is driven by several factors including (but not limited to) aspect, moisture availability, slope and historic human disturbance. The site also has an almost continuous, but modified sequence of indigenous forest from the Kaituna Valley floor at approximately 20 m above sea level to the head of Okana Valley at 520 m above sea level. Some of the less modified communities such as the totara-matai-kahikatea/mixed hardwood forest and secondary hardwood forest have a high diversity of indigenous plant taxa. In total, 111 indigenous plant species were recorded at the site during a brief botanical survey (Wildland Consultants unpubl. data 2012).

Ecological Context

8. ***Vegetation or habitat of indigenous fauna that provides or contributes to an important ecological linkage or network, or provides an important buffering function.***

   The site is significant under this criterion.

   The site provides an important linkage between other areas of high ecological value in the surrounding area, particularly between the old growth lowland podocarp forest in Kaituna Valley Scenic Reserve and the extensive areas of regenerating secondary forest and scrub with podocarp hardwood forest in Prices Valley. Remant podocarp trees (kaihikatea, lowland totara and matai) within the site provide an important seed source for dispersal into other forest remnants. The forest within the site also provides continuous riparian cover to Okana Stream from its headwaters to where it meets the Kaituna Valley.

   Okana Stream is an important ecological corridor for at least three species of migratory freshwater fish; longfin eel, lamprey, and inanga (Aquatic Ecology Ltd unpubl. data 2012). The ecological linkage between the coast and the catchment is essential for these fish.

9. ***A wetland which plays an important hydrological, biological or ecological role in the natural functioning of a river or coastal system.***

   The site is not significant under this criterion. There are no wetlands within the site.

10. ***Indigenous vegetation or habitat of indigenous fauna that provides important habitat (including refuges from predation, or key habitat for feeding, breeding, or resting) for indigenous species, either seasonally or permanently.***

    There is insufficient information to assess the site against this criterion.

Existing Protection Status

The site is not legally protected.

Threats and risks	Management recommendations	Support package options
• Biodiversity pest plants: Old mans beard, wilding pines, cherry plum, elderberry, english ivy, *Cotoneaster simonsii* and *Gunnera tinctoria* all occur within the site (Wildland Consultants unpubl. data 2012).	• Consider controlling biodiversity pest plants using appropriate control methods that will minimise damage to indigenous vegetation. The highest priority species for control is old man's beard. There are extensive and dense infestations of this species throughout the lower part of the site. Other priority species are wilding pines, ivy and cotoneaster. • Consider ongoing weed surveillance for biodiversity pest plants such as Darwin's barberry.	• Advice and guidance for landowners about the benefits to biodiversity of pest plant monitoring and control. • Assistance available where appropriate.
• Domestic stock. The lower end of the valley has been retired from grazing, however much of the remaining area that was surveyed is grazed by sheep (Wildland Consultants unpubl. data 2012).	• Consider fencing the site to keep stock out and promote recovery of the understorey.	• Discussion with landowners about benefits to biodiversity of stock management options. • Assistance where appropriate.
• Pine plantations on the margins of the site. o Spread of wilding pines into the site. o Damage to indigenous vegetation within the site during harvesting operations.	• Consider ongoing surveillance for and control of wilding pines. • Ensure forestry contractors are aware of the significant ecological site adjoining the pine plantations and use harvesting methods that minimise any potential adverse effects associated with harvesting.	• Advice and guidance for landowner(s)/ forestry contractor(s) prior to harvesting of plantation forestry about protection of biodiversity values associated with forestry operations.

References

Aquatic Ecology Ltd. (2012). 2010 Aquatic Survey: Fish survey data. Unpublished data collected by Aquatic Ecology Ltd for Christchurch City Council. (Trim 13/219416).

Boot, T. (1998). *The conservation ecology of Teucridium parvifolium (Hook f.) on Banks Peninsula, New Zealand*. A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Applied Science at Lincoln University, Lincoln University. (Trim: 13/1303110)

de Lange, P. J., Rolfe, J. R., Champion, P. D., Courtney, S. P., Heenan, P. B., Barkla, J. W., Cameron, E.K., Norton, D.A., Hitchmough, R. A. (2013). *Conservation status of New Zealand indigenous vascular plants, 2012* (New Zealand Threat Classification Series No. 3). Department of Conservation, Wellington.

EOS Ecology Ltd. (2014). Aquatic Ecology Survey Data. Unpublished data collected for Christchurch City Council. (Trim: 14/534218).

Environment Canterbury. (2013). *Canterbury Regional Policy Statement 2013*. Environment Canterbury.

Goodman, J.M.; Dunn, N.R.; Ravenscroft, P.J.; Allibone, R.M.; Boubee, J.A.T.; David, B.O.; Griffiths, M.; Ling, N.; Hitchmough, R.A.; Rolfe, J.R. (2014) Conservation status of New Zealand freshwater fish, 2013. *New Zealand Threat Classification Series 7.* Department of Conservation, Wellington. 12 p.

Grainger, N.; Collier, K.; Hitchmough, R.; Harding, J.; Smith, B.; Sutherland, D. (2014): Conservation status of New Zealand freshwater invertebrates, 2013. *New Zealand Threat Classification Series 8.* Department of Conservation, Wellington. 28 p.

Harding, M. A. (2009). *Canterbury Land Protection Strategy: A Report to the Nature Heritage Fund Committee.* Wellington: Nature Heritage Fund. 125 pp.

New Zealand Landcover Database (Version 4). http://www.lcdb.scinfo.org.nz/. Retrieved 24/11/2014.

Walker, S., Cieraad, E., Grove, P., Lloyd, K., Myers, S., Park, T., & Porteous, T. (2007). *Guide for users of the threatened environment classification* (Ver 1.1.).

Wildland Consultants Ltd. (2012). *Botanical survey results - Okana Valley*. Unpublished data collected for Christchurch City Council. (Trim: 13/217992).

Williams, P. A., Wiser, S., Clarkson, B. R., & Stanley, M. C. (2007). New Zealand's historically rare terrestrial ecosystems set in a physical and physiognomic framework. *New Zealand Journal of Ecology* 31(2), 119–128.

Wilson, H.D. (2013). *Plant Life on Banks Peninsula.* Manuka Press, Cromwell. 412 pp.

Assessment completed by: Scott Hooson
Date: 18 February 2015

Statement completed by: Scott Hooson
Date: 18 February 2015

Statement updated by: XXX
Date: XXX

PLEASE NOTE THIS STATEMENT IS BASED ON INFORMATION AVAILABLE AT THE TIME OF WRITING. DUE TO THE DYNAMIC NATURE OF ECOSYSTEMS, FUTURE REASSESSMENT OF THE SITE MAY BE NECESSARY TO REFLECT ANY CHANGES IN KNOWLEDGE OF ITS ECOLOGICAL SIGNIFICANCE.

Appendix 1: Plant Species List

Sourced from Wildland Consultants unpubl. data (2012).

Scientific Name	**Common Name(s)**
Indigenous species	
Acaena juvenca	bidibidi, piripiri
Alectryon excelsus	titoki
Arthropodium candidum	grass lily, repehinapapa
Asplenium appendiculatum	ground spleenwort
Asplenium flaccidum	hanging spleenwort, raukatauri
Asplenium flabellifolium	necklace fern
Asplenium gracillimum	
Asplenium hookerianum	Hooker's spleenwort
Astelia fragrans	kakaha, bush lily
Blechnum chambersii	lance fern
Blechnum novae-zealandiae	kiokio
Blechnum procerum	small kiokio
Calystegia tuguriorum	NZ bindweed
Carmichaelia australis	native broom, common broom
Carex forsteri	cutty grass
Carex secta	niggerhead, pukio
Carpodetus serratus	marbleleaf, putaputaweta
Carex virgata	swamp sedge
Cheilanthes sieberi	rock fern
Clematis foetida	yellow clematis
Clematis paniculata	puawananga
Coprosma areolata	mingimingi, mikimiki
Coprosma crassifolia	thick-leaved coprosma, mikimiki
Coprosma dumosa	mikimiki
Coprosma lucida	karamu
Coprosma propinqua	mingimingi, mikimiki
Coprosma rhamnoides	mingimingi, mikimiki
Coprosma robusta	karamu
Coprosma rotundifolia	round-leaved coprosma, mikimiki
Coprosma virescens	mikimiki
Coriaria arborea	tree tutu
Cordyline australis	cabbage tree, ti kouka
Cyathea dealbata	silver fern, ponga
Dacrycarpus dacrydioides	kahikatea, white pine
Dichelachne crinita	plume grass
Dichondra repens	Mercury Bay weed, dichondra
Dicksonia squarrosa	wheki, rough tree fern
Discaria toumatou	matagouri, wild irishman
Echinopogon ovatus	hedgehog grass
Epilobium species	willow herb
Euchiton sphaericus	
Fuchsia excorticata	tree fuchsia, kotukutuku
Fuchsia excorticata X perscandens	shrubby fuchsia
Griselinia littoralis	broadleaf, kapuka

Haloragis erecta	toatoa
Hebe salicifolia	koromiko
Hedycarya arborea	pigeonwood, porokaiwhiri
Helichrysum lanceolatum	niniao
Hoheria angustifolia	narrow-leaved lacebark, houhere
Hydrocotyle moschata	pennywort
Hydrocotyle novae-zeelandiae	pennywort
Hypolepis ambigua	pig fern
Hypolepis rufobarbata	sticky pig fern
Ileostylus micranthus	green mistletoe
Juncus edgariae	leafless rush, wi
Kunzea ericoides	kanuka
Leptinella dioica	button daisy
Leptopteris hymenophylloides	crepe fern, heruheru
Libertia ixioides	mikoikoi, native iris
Lophomyrtus obcordata	rohutu, NZ myrtle
Luzula banksiana	woodrush
Macropiper excelsum	kawakawa
Melicytus ramiflorus	mahoe, whiteywood
Melicope simplex	poataniwha
Metrosideros diffusa	white climbing rata
Microlaena avenacea	bush rice grass
Microsorum pustulatum	hounds tongue, kowaowao
Microtis unifolia	onion orchid, maikaika
Muehlenbeckia australis	large-leaved muehlenbeckia, pohuehue
Myrsine australis	red mapou, red matipo
Olearia paniculata	akiraho
Oxalis exilis	native oxalis
Parietaria debilis	NZ pellitory
Parsonsia heterophylla	native jasmine, akakaikiore
Passiflora tetrandra	native passion vine
Pellaea rotundifolia	round-leaved fern, tarawera
Pennantia corymbosa	kaikomako, ducks foot
Phormium tenax	flax, harakeke
Pittosporum eugenioides	lemonwood, tarata
Pittosporum tenuifolium	kohukohu, black matipo
Pneumatopteris pennigera	gully fern, pakau
Poa imbecilla	weak poa
Poa matthewsii	
Podocarpus totara	lowland totara
Polystichum neozelandicum	shield fern
Polystichum oculatum	shield fern
Polystichum vestitum	prickly shield fern, puniu
Prumnopitys taxifolia	matai
Pseudopanax arboreus	five-finger, whauwhaupaku
Pseudowintera colorata	horopito, peppertree
Pseudopanax crassifolius	lancewood, horoeka
Pseudopanax ferox	fierce lancewood
Pterostylis species	green-hooded orchid
Pyrrosia eleagnifolia	leatherleaf fern
Ranunculus reflexus	hairy buttercup, maruru
Raoulia glabra	mat daisy
Ripogonum scandens	supplejack, kareao

Rubus cissoides	bush lawyer, tataramoa
Rubus schmidelioides	bush lawyer, tataramoa
Rubus squarrosus	leafless bush lawyer, tataramoa
Rumex flexuosus	Maori dock, NZ dock, runa
Rytidosperma clavatum	danthonia, bristle grass
Schefflera digitata	pate, seven-finger
Senecio minimus	native fireweed
Solanum laciniatum	poroporo
Sophora microphylla	kowhai, small-leaved kowhai
Streblus heterophyllus	small-leaved milk tree, turepo
Tupeia antarctica	green mistletoe
Uncinia banksii	hook grass
Urtica ferox	ongaonga, tree nettle
Urtica incisa	bush nettle
Exotic Species	
Agrostis capillaris	brown top
Anthoxanthum odoratum	sweet vernal
Arctium minus	burdock
Bromus diandrus	ripgut brome
Bromus hordeaceus	soft brome
Carex ? muricata	coastal tree broom
Cerastium glomeratum	chickweed
Cirsium arvense	Californian thistle
Cirsium vulgare	Scotch thistle
Clematis vitalba	old man's beard
Cotoneaster simonsii	cotoneaster, khasia berry
Cynosurus cristatus	crested dogstail
Cynosurus echinatus	rough dogstail
Dactylis glomerata	cocksfoot
Digitalis purpurea	foxglove
Dryopteris filix-mas	male fern
Elymus scaber	blue wheatgrass, patiti
Erodium cicutarium	storksbill
Foeniculum vulgare	fennel
Galium aparine	cleavers
Geranium molle	dovesfoot cranesbill
Gunnera tinctoria	Chilean rhubarb
Hedera helix	ivy
Holcus lanatus	Yorkshire fog
Hypochoeris radicata	catsear
Iris foetidissima	stinking iris, roast beef plant
Juncus acuminatus	sharp-fruited rush
Linum bienne	pale flax
Lolium perenne	ryegrass
Mimulus guttatus	monkey musk
Mycelis muralis	wall lettuce
Pilosella officinarum	mouse-ear hawkweed
Pinus radiata	radiata pine, Monterey pine
Plantago lanceolata	narrow-leaved plantain
Polycarpon tetraphyllum	allseed
Prunus cerasifera	cherry plum

Prunella vulgaris	selfheal
Ranunculus repens	creeping buttercup
Rosa rubiginosa	sweet briar, briar rose
Rytidosperma racemosum	danthonia
Sambucus nigra	elderberry
Silybum marianum	variegated thistle
Solanum chenopodioides	velvety nightshade
Stellaria media	chickweed
Trifolium repens	white clover
Ulex europaeus	gorse
Verbascum thapsus	woolly mullein
Vittadinia gracilis	purple fuzzweed