

A10 Urban Biodiversity Mapped Area Values {Confirmed for addition - NatEnv 900.31}

The **urban biodiversity mapped areas** (UBMAs) are derived from the Urban Landscape Conservation Areas of the first generation Dunedin City District Plan, and include those with the highest conservation values. The boundaries of the UBMA have been refined from the Urban Landscape Conservation Area boundaries to exclude areas considered low in biodiversity value (e.g. playing fields in some instances). The UBMA form an extensive network of biodiversity areas over the Dunedin city environs. For each UBMA description to follow, the Threatened Environment Classification (so-called 'LENZ level 5 classifications'), is provided.

A10.1 Town Belt {Confirmed for addition - NatEnv 900.31}

A10.1.1 Description of the area {NatEnv 900.31}

The Dunedin Town Belt is an important asset to the city and fulfils an important amenity role within Dunedin. It is a significant landscape feature, provides areas for recreation, and is an important ecological resource. As a high profile public reserve, its management and maintenance is important to the Dunedin community and the area is subject to the 'Town Belt Management Plan'. The Town Belt has an important network of vegetation across the city, creating potential corridors for indigenous animals, and habitat for indigenous plant and animal species. While several sections of the Town Belt may be of relatively low indigenous biodiversity value (i.e. playing fields), they still warrant inclusion in the UBMA as their associated shelter belts and amenity plantings provide habitat and food resources for indigenous flora and fauna, and help to maintain the overall connectivity of the Town Belt.

A10.1.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:
 - a. An extensive survey of vegetation and associated biodiversity was undertaken as part of the development of the Town Belt Management Plan. The predominant vegetation types of the Town Belt are kanuka forest, moist broadleaved forest, exotic coniferous-deciduous forest, and mown grassland. Alluvial forest, dry broadleaved forest, swamp forest, cliff vegetation, rough grassland, and heathland vegetation occur locally throughout. Stuart Street marks a major change in the overall composition and structure of the Town Belt, with native-dominant forest the predominant cover north of Stuart Street, and exotic-dominated forest and mown grassland the main vegetation south of Stuart Street. This change is also reflected in understory composition with several native trees, shrubs, lianes, and monocot herbs being more common in the north of the Town Belt, while native dicot herbs are more common in the southern areas of the Town Belt.
2. Rare and notable species, habitats or communities:
 - a. The Town Belt Management Plan reports extensively on the biodiversity values of the Town Belt. Three plant species recorded within the UBMA are classified as nationally threatened, uncommon, or data deficient, nationally. The tree *Raukaua edgerleyi* is notable and has been recorded at two sites within the UBMA; only three individuals are known, all mature trees. Another small tree, fierce lancewood (*Pseudopanax ferox*), which is classified as 'At Risk-Naturally Uncommon', has also been recorded at the UBMA. A single sub adult tree is known here. The sedge *Carex raoulii*, which was previously classified as 'Data Deficient' has been recorded on steep slopes of the UBMA, where at least 20 plants are present. Fifty six native plant species present in the Town Belt, occur naturally at six or fewer sites. Seventeen of these have been recorded from only one site.
 - b. Most of the vegetation in the Town Belt is "At Risk" based on the Threatened Environment Classification having between 20-30 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation. *Peripatus* occurs in Woodhaugh Gardens: this area has always been

in lowland native forest and the surviving invertebrates persisting there are important locally and nationally.

3. Species diversity and Naturalness:

- a. Much detail on both plant and animals species diversity, is provided in the Town Belt Management Plan.

A10.1.3 Principal threats to biodiversity values {*NatEnv 900.31*}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Wilding seedlings of woody tree species such as sycamore may spread within reserves either from a seed source within the reserve or from adjacent properties. Sycamore spread in some reserves has the potential to result in this species replacing the native canopy.</u> b. <u>Native plant species that do not naturally occur in Dunedin city, such as <i>Coprosma grandifolia</i>, <i>C. robusta</i> and <i>Brachyglottis repanda</i> may smother other significant native plant species.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge.</u>

A10.1.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Prevent sycamore spread into new areas where sycamores have not yet established.</u> b. <u>Where weedy species may restrict the growth of local native species, therefore compromising the viability of the UBMA, control and removal of these species is appropriate (see the Town Belt Management Plan).</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Consideration could be given to extending the Town Belt UBMA to include the southeast facing bush slopes above Logan Park High School, and the bush-clad gully running North West and parallel to Warden Street. The forested gully has a relatively intact canopy of mixed native and exotic species, and a diverse understory of ferns. The creek within is often flowing, and is habitat for southern koura (<i>Paranephrops zealandicus</i>). These two areas represent important buffer zones which would help to reduce external impacts on the UBMA by minimising edge and improving connectivity.</u>

A10.2 Port Chalmers Town Belt {Confirmed for addition - NatEnv 900.31}

A10.2.1 Description of the area {NatEnv 900.31}

The forest of this UBMA contains many large trees, with patches of both native and exotic species. Due to its largely undisturbed canopy, coupled with large amounts of decaying woody material and dense understory, the forested area is likely to be important habitat for indigenous plant and animal species. The Port Chalmers Town Belt represents an important part of an urban green corridor network.

A10.2.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 5 and 7 Macandrew Road Careys Bay; 1 William Street Careys Bay. {NatEnv cl.16}

A10.2.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The native canopy is primarily composed of tree fuchsia, whiteywood and broadleaf, and to a lesser extent, kanuka. The main exotic canopy species are sycamore and hawthorn, with an understory of rangiora. A large component of the more peripheral shorter scrubby vegetation is exotic - mainly gorse and Scottish broom. While the biodiversity values of this exotic-dominated vegetation type are relatively low, it does act as a buffer which can protect the values of the more intact adjacent indigenous-dominated vegetation.

2. Rare and notable species, habitats or communities:

- a. The Port Chalmers Town Belt is ecologically significant in that it represents one of the few remaining areas of remnant coastal ngaio/totara forest within the Dunedin city area, and is relatively large in size (c.7.0ha). This coastal forest is a lowland vegetation type classified as "Acutely Threatened" in the Threatened Environment Classification scheme, having less than 10 percent of the original vegetation cover remaining nationally.

3. Species diversity and Naturalness:

- a. It is estimated that 69 percent of plant species over the UBMA are indigenous.

A10.2.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Invasive plant pests pose the greatest threat to the conservation values of this UBMA, but threats from animal pests such as possum, rats/mice and stoats are also likely. The most significant plant pests are sycamore, rangiora and hawthorn.</u> b. <u>Other weedy exotic species that could be problematic in the future include Darwin's barberry, cotoneaster, ivy and buddleja (buddleia).</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge.</u>

A10.2.4 Key management actions to be required or encouraged **{NatEnv 900.31}**

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Many large sycamore trees are present within the Port Chalmers Town Belt, and seedlings and suckers are sprouting vigorously along the bush margins, including road verges and train tracks. This species is out-competing the native species that would have historically dominated the UBMA. Control of the weedy exotic species, particularly sycamore, to preserve indigenous biodiversity values, is desirable.</u> b. <u>Amenity plantings around the lookout are native species that are inappropriate for coastal Otago; these include purple akeake, Chatham Island tree daisy and Chatham Island astelia. Replacing these species with more appropriate species would help with weed-management of the wider area, and improve the usefulness of these plantings as a vegetation buffer.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>To help protect the long-term viability of this UBMA, a boundary extension to include the adjacent gully system and vegetation contiguous with the UBMA (areas likely to support similar and complimentary species), would provide buffering from future disturbance and minimise edge effects.</u>

A10.3 Back Beach, Port Chalmers {Confirmed for addition - NatEnv 900.31}

A10.3.1 Description of the area {NatEnv 900.31}

The Back Beach reserve is a mixture of vegetation types along a predominantly steep and unstable coastal margin. The western and eastern sides of the reserve are comprised largely of exotic plant species, while most of the native biodiversity is concentrated around the southern point of the reserve.

A10.3.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:
 - a. The west side of the reserve is dominated by large Monterey pines, and indigenous biodiversity values along this stretch of the UBMA are low. The southernmost point retains the greatest proportion of indigenous vegetation cover - notably ngaio, broadleaf, whiteywood, *Helichrysum lanceolatum*, *Hebe elliptica* and lowland flax. *Eucalyptus* species occurs in patches along the eastern side of the reserve, interspersed with occasional ngaio and whiteywood. Exotic, *Eucalyptus* species can provide good forage for native bird species. The eastern side of the reserve is weedy with *Muehlenbeckia australis*, ivy and banana passion fruit growing over woody vegetation such as Scottish broom, rangiora, elderberry, and sycamore.
2. Rare and notable species, habitats or communities:
 - a. The elongated shape of the UBMA makes it vulnerable to disturbance and pest weeds, and this feature reduces its overall value as habitat. Nevertheless, the coastal vegetation that persists at the site is "At Risk" based on the Threatened Environment Classification (having between 20-30 percent of the original vegetation cover remaining nationally and a high degree of habitat fragmentation). A small beetle, *Microsiphia litorea*, Family Staphylinidae, subfamily Microsilphinae, occurs at low tide level on the beach at Port Chalmers and is possibly not widely distributed elsewhere in Dunedin city.
3. Species diversity and Naturalness:
 - a. It is estimated that 61 percent of plant species over the UBMA are indigenous.

A10.3.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Exotic plant pests include sycamore, hawthorn, gorse, Scottish broom, banana passion fruit, boxthorn and crack willow.</u> b. <u>Animal pests have not been fully assessed; no animal sign was noted at the UBMA during a field survey.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge.</u>

A10.3.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>The indigenous biodiversity values of the Back Beach UBMA could be greatly enhanced by pest weed control, particularly at the southern point where the highest proportions of native plants occur. On the north side of the road several mature hawthorns could be removed in order to reduce their spread, while potential pest plants along the harbour side of the road include gorse and <i>Echium pininana</i>.</u> b. <u>Sycamore and alder form extensive stands over 10m tall around the marina and boat sheds, and the control of these plants could help ensure the long-term viability of the UBMA.</u> c. <u>At the eastern most edge of the reserve there is a well-established population of boxthorn. This is a particularly noxious pest which could be removed and replaced with more appropriate native plantings.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>The current UBMA could be extended to include the coastal margin of Watson Park, to provide a corridor of protected habitat which could be further improved with native plantings. In recognition of areas of important habitat, and to recognise potential habitat connections, consideration could be given to including the adjacent Rakiriri (Goat) and Kamau Taurua (Quarantine) Islands into this UBMA.</u>

A10.4 Kaikorai Estuary {Confirmed for addition - NatEnv 900.31}

A10.4.1 Description of the area {NatEnv 900.31}

This UBMA is composed of a mixture of riparian margin and wetland/estuarine habitat, some of which has been drained, that extends across the Southern Motorway. To the north of the motorway, the UBMA comprises a generous riparian strip alongside Abbott's Creek, and to the south, there is a wetland area that takes in Kaikorai Stream and continues to the east of Brighton Road.

A10.4.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. Abbott's Creek itself has no indigenous riparian vegetation and is choked with weedy exotic grasses. The UBMA also contains a small part of drained wetland on the true right of Abbott's Creek which contains some patches of indigenous wetland vegetation, including several patches of sedges, rushes and flax. To the south of the motorway the UBMA comprises a contiguous strip of estuary on the true right of Kaikorai Stream extending to the east as far as Brighton road; this area has estuarine vegetation and rank grass with flax and toetoe on the higher points along the road edge. Some *Pittosporum tenuifolium* have been planted along the bund created by straightening the mouth of Abbott's Creek. The indigenous estuary vegetation is largely saltmarsh ribbonwood, *Carex secta* and jointed wire rush. Much of the indigenous vegetation has been replaced by weedy exotic species, particularly cocksfoot, gorse and crack willow, which is now the dominant cover along this stretch of Kaikorai Stream. The riparian strip along a bend of Kaikorai Stream on the east side Brighton Road is a mown area with some landscape plantings of natives.

2. Rare and notable species, habitats or communities:

- a. On the northern side of the motorway the indigenous vegetation has been mostly lost, apart from a few scattered patches within the drained wetland on the true right of Abbott's Creek. On the immediate southern side of the motorway, significant indigenous vegetation remains, although in a degraded state. The habitat supports indigenous fauna; for example spotted shag (*Phalacrocorax punctatus*). The wetland vegetation that persists at the site is "At Risk" based on the Threatened Environment Classification having between 20-30 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation; no field assessment of the wetland has been conducted.

3. Species diversity and Naturalness:

- a. Vegetation of the wetland and riparian margins is estimated at having between 25-55 percent indigenous plant species.

A10.4.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Pest plant species are predominantly crack willow, gorse and blackberry.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>The northern portion of the mapped area provides an important freshwater corridor and associated biodiversity linkages. To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge effects in both terrestrial and freshwater/estuarine systems.</u>

A10.4.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Not assessed.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Indigenous vegetation, primarily lowland flax, has persisted along the highway margin and biodiversity gains could be made here and along both Abbott's Creek and the adjacent wetland, through road-side, riparian and wetland indigenous plantings.</u> b. <u>Consideration could be given to extending the mapped UBMA, as opportunities arise, to the south of the motorway to include the estuary and the littoral areas. The Kaikorai Estuary is important habitat for indigenous animals. The UBMA could conceivably extend from the motorway and connect the estuary to the Island Park reserve, which contains indigenous terrestrial and wetland biodiversity values.</u>

A10.5 Frasers Gully {Confirmed for addition - NatEnv 900.31}

A10.5.1 Description of the area {NatEnv 900.31}

Frasers Gully UBMA falls entirely within the Frasers Gully Recreation Reserve and is subject to the 'Hills Reserves Management Plan'. Frasers Gully Recreation Reserve is an important area of vegetation in the suburbs surrounding Dunedin city, providing a tree-dominated landscape in an otherwise urban setting. The UBMA encompasses steep gully slopes and ridges surrounding the upper reaches of the Kaikorai Stream and tributaries. Vegetation is a mix of mature secondary native forest, regenerating forest and planted exotic species.

A10.5.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: **{NatEnv cl.16}**

- 62 and 78 Frasers Road; 8 Helensburgh Road. **{NatEnv cl.16}**

A10.5.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The UBMA contains six vegetation and habitat types, and 'The Hills Reserves Management Plan' contains much information on the vegetation of the area. The UBMA has a remnant podocarp/broadleaved forest at the top of a planted slope, at the head of a gully; this area is composed of largely intact indigenous podocarp forest. There is a grassed picnic area and playing fields in Ellis Park, which are comprised of a managed playing turf with native and exotic specimen trees. The south-west facing slopes of the UBMA are steep and have small pockets of remnant indigenous cover (i.e. tree fuchsia and whiteywood with a semi-intact understory) largely overtopped by sycamores and *Muehlenbeckia australis*, with other weedy species also present, including Darwin's barberry. There is a c. 300m² patch of this habitat which has been cleared, and is now composed almost entirely of Scottish broom.

A 50-60m² patch of silver beech has been planted on the lower slopes over the last 20 years. The lower reaches of Fraser's Creek have a fairly complete canopy cover, including some large remnant patches of tall (>8m) kanuka, complemented with a range of c. 10-20 year old native plantings. The native trees are interspersed with occasional large sycamore, alder, willow and laurel. The south-east facing slope (exforestry) has a c. 3ha area of 2 -3 year old re-vegetation plantings; these plantings grow amongst stumps of cleared exotic forestry. This area extends to the foot of the slope and along the flats. Many of the plants are well established but are competing with the densely regenerating Himalayan honeysuckle and Scottish broom. The UBMA also has patches of unimproved pasture, which covers most of the true right of Fraser's Creek.

2. Rare and notable species, habitats or communities:

- a. The podocarp/broadleaved forests in the upper parts of the gully are classified as "Chronically Threatened" under the Threatened Environments Classification. They represent a highly fragmented habitat type with only 10-20 percent of indigenous cover left, nationally. The native dwarf mistletoe *Korthalsella salicornioides* (classified as 'At Risk-Naturally Uncommon') is known from the site. The most significant threats to further losses of biodiversity in these habitats are further fragmentation, and invasive plant and animal species.

3. Species diversity and Naturalness:

- a. The vegetation of Frasers Gully is estimated to be between 41-86 percent indigenous.

A10.5.3 Principal threats to biodiversity values {*NatEnv 900.31*}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Pest plant species include sycamore, elderberry, gorse, Scottish broom, blackberry, crack willow, convolvulus, buddleja (buddleia) and hawthorn. Animal pests have not been assessed but no feral animal sign was noted at the site during a field inspection.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge.</u>

A10.5.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>The major threats to biodiversity in this UBMA are the sycamores, elderberry and hawthorn. These species are all relatively shade tolerant, and are all establishing under the canopy of the native bush. The sycamores are a particular issue in the lower reaches of the stream where they are clearly outcompeting natives and could be removed. The elderberries and hawthorns could be removed to improve the long-term viability of the UBMA.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>The entire area contained within Frasers Gully UBMA has very high biodiversity and habitat values, and constitutes an important ecological corridor between urban and rural areas. Consideration could be made to extending the boundaries to cover the private land and gullies to the north of the current mapped UBMA, and to the west, to include the vegetated area around the nearby water reservoir. These areas represent important buffer zones which can reduce external impacts by minimising edge effects.</u>

A10.6 Wakari Reserve and Transmission line easement {Confirmed for addition - NatEnv 900.31}

A10.6.1 Description of the area {NatEnv 900.31}

This UBMA contains a significant area of bush adjacent to the Halfway Bush substation, which comprises a remnant podocarp/broadleaved forest on southeast facing banks. The designated dog walking area to the north has areas of well-established mixed amenity plantings of several exotic and native species. Well established 10-20 year old exotic trees create a parkland landscape in the northern part of the UBMA. Some of these planted species are inappropriate in that they are not found naturally in the area; e.g. *Sophora longicarinata*.

A10.6.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 4, 5 and 6 Kereru Close; 48 Wakari Road. {NatEnv cl.16}

A10.6.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The UBMA is composed of three spatially distinct habitat/vegetation types: a remnant podocarp/broadleaved forest on the southeast facing banks adjacent to the substation; a well-established mixed amenity planting of several exotic and native species around the designated dog walking area to the north; and native plantings in and around the drainage channel along the southwest boundary near Taieri Road. The remnant vegetation is dominated by tree fuchsia and whiteywood, with occasional totara and other woody trees and shrubs. The understory is disturbed, with large areas of exposed soil. Plants in the understory include occasional hen and chicken fern, *Blechnum chambersii* and some epiphytic *Asplenium flaccidum*. Scattered patches of prickly shield fern have survived outside of the bush cover, and extend under the exotic tree plantings. Well established 10-20 year old exotic trees create a parkland landscape in the northern part of the area, primarily composed of silver birch, fir, oak, and cypress. The native plantings around the drainage gully are well established and provide some cohesive vegetation cover, and protect the banks from erosion.

2. Rare and notable species, habitats or communities:

- a. The podocarp/broadleaved forest on the steep southeast facing banks is classified as "At Risk" under the Threatened Environments Classification. It represents a habitat type with only 20-30 percent of indigenous cover left nationally. The most significant threats to further losses of biodiversity in these habitats are further fragmentation and invasive plant and animal species.

3. Species diversity and Naturalness:

- a. The vegetation of the UBMA is estimated to be 64 percent indigenous.

A10.6.3 Principal threats to biodiversity values {*NatEnv 900.31*}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Pest plant species include sycamore, elderberry, gorse, Scottish broom, blackberry and ragwort.</u> b. <u>Animal pests have not been assessed but no feral animal sign was noted at the site during a field inspection.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Minimal buffer to guard against adverse effects of fragmentation and edge effects.</u>

A10.6.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>The major threats to biodiversity in this UBMA are the sycamores, Scottish broom and blackberry. The shade tolerant sycamores are establishing under the canopy of the native bush, and threaten to out-compete them. Removal of sycamores is therefore a priority for this UBMA.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Consideration could be given to an extending the UBMA to include the adjacent steep vegetated slopes to the east. Although the increase in total biodiversity resulting from these inclusions is likely to be small, it has the advantage of creating a green corridor between Wakari and the Balmacewen Golf Course. These areas represent important buffer zones which could reduce external impacts by minimising edge effects.</u>

A10.7 Brockville slopes, Kaikorai Stream (Confirmed for addition - NatEnv 900.31}

A10.7.1 Description of the area {NatEnv 900.31}

The UBMA is composed of two spatially disjunct areas: the vegetated southern slopes of Brockville and the grassed open spaces adjacent to Kaikorai Stream, including Kaikorai Valley High School playing fields.

A10.7.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 133 Brockville Road; 34 Ettrick Street. {NatEnv cl.16}

A10.7.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- The remnant vegetation on the southern slopes of Brockville is highly diverse, with a canopy dominated by kanuka and whiteywood, with emergent totara and rimu. The understory is largely intact, with many species of small trees and shrubs, sedges and ferns throughout. Exotic species are uncommon under the intact canopy, and where they are present, they occur mostly in the lower and upper bush margins. The area around Kaikorai Stream and Kaikorai Valley High School has not been assessed (this land is managed by the Ministry of Education) but aerial photographs indicate very little indigenous vegetation remains here. Vegetation on the true right of the stream, within the boundary of the UBMA, appears to be plantation forestry some of which has been cleared.

2. Rare and notable species, habitats or communities:

- The podocarp/broadleaved forest on the steep south facing slopes of Brockville is classified as "Acutely Threatened" under the Threatened Environments Classification. It represents a habitat type that has less than 10 percent of indigenous cover left, nationally.

3. Species diversity and Naturalness:

- The vegetation of the UBMA is estimated to be 80 percent indigenous.

A10.7.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Pest plant species within the Brockville slopes include sycamore, elderberry, Chilean flame creeper, gorse, Scottish broom, blackberry, holly, cotoneaster and cherry laurel. Animal pests have not been assessed but no feral animal sign was noted at the site during a field inspection.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge.</u>

A10.7.4 Key management actions to be required or encouraged **{NatEnv 900.31}**

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>The major threats to biodiversity in this reserve are the sycamores and cherry laurel, which are growing prolifically along the roadside, and encroaching on the native bush; these could be removed as a priority.</u> b. <u>Several shade tolerant species are present under the intact indigenous forest canopy, predominantly elderberry and hawthorn. These species could be actively managed to prevent future weed problems.</u> c. <u>Cotoneaster, holly, and Chilean flame creeper are all currently at low density, but have the potential to become serious plant pests.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>The Brockville slopes retain high indigenous biodiversity values and consideration could be made to extend the boundary of the mapped UBMA to include the adjacent and contiguous bush. This boundary extension would result in the inclusion of several hundred square meters of intact indigenous vegetation, including several mature podocarp trees. Bush habitat adjacent to the UBMA represents an important buffer zone which could help to reduce external impacts by minimising edge effects and improving connectivity.</u> b. <u>Apart from some relatively recent plantings (c. 5 years old) on the banks of Kaikorai Stream, the area within the mapped UBMA, but outside of the Brockville slopes, contains little terrestrial biodiversity value. The stream itself, however, and the values associated with the riparian habitat are important in forming linkages. The area needs substantive assessment, along with the indigenous biodiversity values of the exotic plantation on the true right of the stream, to determine the appropriate management of any threats present.</u>

A10.8 Caversham Valley {Confirmed for addition - NatEnv 900.31}

A10.8.1 Description of the area {NatEnv 900.31}

This UBMA is composed of the south facing slopes of Caversham valley, including the following Reserves: Caversham, Lookout Point, Elgin, Caversham Valley Forest, Caversham Station, Forfar Street and Sidey Park. A high voltage transmission line runs through the UBMA parallel with the valley. Vegetation clearance along this easement has created a corridor of disturbed vegetation that is highly weedy.

A10.8.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: **{NatEnv cl.16}**

- 9 and 11 Robinson Street; 123 Mornington Road; 146 Caversham Valley Road; 15, 18, 21, 22 and 26 Lancefield Street; 179 and 183 Mornington Road; 20 and 32 Thomson Street; 22 and 24 Wills Street; 27 Bridge Street; 43, 49 and 51 Lindsay Road; 49 Forfar Street; 8 McCracken Street; 84 Barnes Drive. **{NatEnv cl.16}**

A10.8.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:
 - a. The dominant vegetation cover of the south facing slopes of the Caversham valley is sycamore, with scattered patches of larger trees such as *Eucalyptus*, particularly on the steeper slopes, and pine. Under the exotic canopy, secondary growth whiteywood and remnant tree fuchsia are thriving. The vegetation of the high voltage transmission line is dominated by *Muehlenbeckia australis* and exotic woody weeds such as gorse and Scottish broom.
2. Rare and notable species, habitats or communities:
 - a. The vegetation that persists on the lower slopes of the UBMA is "Acutely Threatened" based on the Threatened Environment Classification, having less than 10 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation. The upper slopes are "At Risk" having between 20-30 percent of the original vegetation cover remaining nationally. Caversham Valley Forest Reserve has been identified as an area with important conservation values due to its population of the endemic velvet worm (*Peripatus species*).
3. Species diversity and Naturalness:
 - a. The vegetation of the UBMA is estimated to be 39-41 percent indigenous.

A10.8.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. The most serious plant pest in the UBMA is sycamore; it forms extensive stands covering most of the area. Other pest trees include holly, hawthorn, cherry laurel and elderberry. Other woody weeds include gorse, Scottish broom and Darwin's barberry. Herbaceous weeds include aluminium weed, blackberry and Himalayan honeysuckle. b. Animal pests have not been assessed but no feral animal sign was noted at the site during a field inspection.
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. To ensure the long-term viability of the UBMA, a vegetation buffer is desirable to guard against adverse effects of fragmentation and edge.

A10.8.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>The highest biodiversity values of the UBMA are contained within the Caversham Bush Reserve, and management within this reserve could include control of sycamore and hawthorn within the bush remnant. Control of gorse, Himalayan honeysuckle and other plant pests that are competing with native plantings, is also desirable.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Reserves to the east of Caversham Bush Reserve all have relatively low biodiversity values, with canopies largely dominated by exotic species, and a large proportion of exotic pest plants in the understory. These areas do, however, perform an important buffering function and provide a green corridor for indigenous fauna between Caversham Bush Reserve and the Town Belt UBMA.</u> b. <u>The entire UBMA is likely to provide habitat for <i>Peripatus</i> species.</u>

A10.9 Ross Creek/Balmacewen {Confirmed for addition - NatEnv 900.31}

A10.9.1 Description of the area {NatEnv 900.31}

This UBMA is composed of two disconnected parts; to the north is Balmacewen Golf Course (both sides of Balmacewen Road) with Ross Creek and its generous riparian margins forming the northern boundary. The UBMA then extends in a south west direction, skipping over the 706 playing fields of Nairn Street Reserve, Bishopscourt and Balmacewen Intermediate, to continue along the Kaikorai Common.

A10.9.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 10, 12 and 14 Polwarth Road; 125 Balmacewen Road; 36 Shetland Street. {NatEnv cl.16}

A10.9.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The Kaikorai Common contains a re-vegetated riparian strip and a constructed wetland. The constructed wetland may provide some habitat for indigenous fauna, and may possibly be performing some ecological services in terms of improving water quality (based on a cursory field assessment). The Balmacewen Golf Course has two parts - a mown area of exotic grass interspersed with native and exotic shelter belt (based on aerial photos) and an extensive patch of remnant podocarp/broadleaved forest adjacent to Ross Creek itself. Further information on the vegetation of Ross Creek is contained within the 'Hills Reserves Management Plan'.

2. Rare and notable species, habitats or communities:

- a. Kaikorai Commons Reserve and the adjacent planted area around Shetland Street Organic Garden contain low level indigenous biodiversity values, and those that are there have resulted from community planting efforts. Two species listed on the protected indigenous species list are present here - wind grass (*Anemanthele lessoniana*) and narrow-leaved tree daisy (*Olearia lineata*), but both species have been planted (i.e. are not remnants of the original vegetation cover). As a large, intact green space, the Balmacewen Golf Course is likely to be an important habitat for indigenous fauna; the extent of the contribution, however, has not been fully assessed. Ross Creek Reserve and the adjoining Craigieburn Reserve have areas of remnant podocarp/broadleaved forest and regenerating kanuka scrub, with some exotics.
The vegetation within the UBMA is "At Risk" based on the Threatened Environment Classification having between 20-30 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation. The northern parts of the UBMA are likely to provide habitat for Peripatus species, and Peripatus are known to occur at Ross Creek under the native forest canopy.

3. Species diversity and Naturalness:

- a. The vegetation of the UBMA is estimated to be 49-60 percent indigenous.

A10.9.3 Principal threats to biodiversity values {*NatEnv 900.31*}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>No pest species of any significance have been found in the UBMA, based on a single cursory field survey. There is likely to be some plant pests, however, in the Balmacewen Golf Course - especially in the forest area on the northern boundary adjacent to Ross Creek.</u> b. <u>Pest species in the Ross Creek Reserve include sycamore, elderberry, Chilean flame creeper, gorse, Scottish broom, blackberry, holly, cotoneaster and cherry laurel.</u> c. <u>Animal pests have not been assessed but no feral animal sign was noted at the site during a field inspection.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Minimal buffer to guard against adverse effects of fragmentation and edge in both terrestrial and freshwater/estuarine systems.</u>

A10.9.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Although there are no pest species known that could pose a significant threat to indigenous biodiversity, management of sycamore is the highest priority within the Ross Creek Reserve.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Kaikorai Commons could be removed from the UBMA without significantly compromising the overall biodiversity values of the area. The biodiversity values associated with the planted area in Kaikorai Commons are small, despite plantings of locally threatened species. Biodiversity values of this area are probably sufficiently protected by interests of the community groups responsible for the plantings.</u> b. <u>The biodiversity values of parts of the Balmacewen golf course are likely to be small, but a more detailed field assessment is required to confirm this view.</u> c. <u>Consideration could be given to extending the UBMA boundary to include the entire Ross Creek Reserve and Craigieburn Reserves. These areas contain significant indigenous vegetation and are important habitat for indigenous fauna, including <i>Peripatus</i>. The addition of these areas to the UBMA would help to secure the connections between this UBMA and the Leith Valley.</u>

A10.10 Ocean Grove {Confirmed for addition - NatEnv 900.31}

A10.10.1 Description of the area {NatEnv 900.31}

This UBMA is composed of a coastal strip of varying width from St Clair beach to the gun emplacements at the north end of Tomahawk beach, and extends inland to Victoria Road including several playing fields, the Chisholm Links Golf Course and Andersons Bay Cemetery. The majority of the vegetation in the UBMA is grassed playing fields, with occasional amenity plantings and windbreaks.

A10.10.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The coastal vegetation on the fore dune is almost entirely exotic (i.e. marram, lupins). The back dune and cliff vegetation is largely composed of native species not found naturally in Dunedin city (i.e. *Coprosma repens*, *Olearia traversiorum*). Weedy *C. repens* forms large areas of intact scrub, particularly around John Wilson Drive and the old Lawyers Head Car Park, and further along the coast around to the Tomahawk gun emplacements. Aerial photography indicates that there are no areas of intact indigenous vegetation remaining within the golf course or cemetery. The notable exception, to this pattern of weedy vegetation cover, is the turf communities; the steep areas of the cliff are covered with patches of *Hebe elliptica* with a ground cover of *Leptinella dioica*, *Samolus repens*, *Sellieria radicans*, *Juncus antarcticus* and other turf species. There are also patches of glasswort and native ice plant throughout the UBMA. Sporadic patches of ngaio and *Hebe elliptica* also occur along the entire span of the UBMA.

2. Rare and notable species, habitats or communities:

- a. The turf communities on Lawyers Head may provide habitat for the "At Risk-Declining" species *Lepidium tenuicaule*, and although there is little indigenous vegetation present along this stretch of coastline, there is significant habitat for indigenous fauna, particularly gulls, oystercatchers and penguins. Lawyers Head is also habitat for the spotted shag (*Strictocarbo punctatus*), while the variable oystercatcher (*Haematopus unicolor*) and red-billed gulls (*Larus novaehollandia*) are present in the grassed playing fields.
The vegetation within the UBMA is mostly "At Risk" based on the Threatened Environment Classification having between 20-30 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation. The vegetation towards the eastern half of the site is "Acutely Threatened" based on the Threatened Environment Classification, having less than 10 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation.

3. Species diversity and Naturalness:

- a. The vegetation of the UBMA is estimated to be 63 percent indigenous.

A10.10.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Animal pests have not been assessed; hare sign was found along the cliff tops at Lawyer's Head during a field survey.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Minimal buffer to guard against adverse effects of fragmentation and edge effects.</u>

A10.10.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>While the majority of the vegetation in the UBMA is not indigenous, there are very few pest plants present, and those that are present appear to be adequately controlled by the current management regime.</u> b. <u>A small, stunted population of the exotic ngaio <i>Myoporum insulare</i> is used as a dune stabilisation species on the coastal side of Kettle Park. This is a Tasmanian species which hybridises freely with the native ngaio <i>M. laetum</i>. Ideally these few plants could be replaced over time with another species.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Consideration could be given to extending the boundary of the UBMA to take in adjacent areas of coastal vegetation towards Smalls Beach. At Smalls beach there is a viable population of a stiletto fly <i>Anabarhynchus fuscofemoratus</i> (Diptera, family Therevidae); this species occurs on sand from the fore dune to the back dunes. The habitat for this fly is exposed sand surrounded by low native grasses and vegetation. This is the only place in the world that this insect is currently known to occur, and therefore the habitat warrants protection. Vehicles driving on dunes pose a risk to this species.</u> b. <u>Many exotic-vegetation dominated areas of the UBMA, including playing fields, the golf course and cemetery, are likely to contain important habitat for coastal bird species. In terms of increasing habitat connectivity, consideration could be given to including Tomahawk Lagoon into this UBMA. This area represents an important buffer zone which could help reduce external impacts by minimising edge effects.</u>

A10.11 Chingford Park {Confirmed for addition - NatEnv 900.31}

A10.11.1 Description of the area {NatEnv 900.31}

The boundaries of this UBMA are aligned with the Chingford Park Recreation Reserve. The vegetation cover of the reserve/UBMA is made up of a wide range of exotic species, planted in dense belts around playing fields. The area forms part of a biodiversity corridor along with an area of adjacent kanuka scrub, which links the residential areas of north east valley with indigenous habitat further along the valley towards Bethune's Gully. A tributary of Lindsay Creek running through a gully in the forested area is largely surrounded by native ferns and shrubs, and this gully extends uphill beyond the boundary of the UBMA into a contiguous area of native bush, with primarily kanuka and tree fuchsia as canopy species. This gully has not been the subject of a field assessment, but is important in the context of contributing to a corridor of habitat joining northeast valley with Bethune's Gully.

A10.11.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:
 - a. Two major habitats exist: European beech forest with indigenous understory, and kanuka scrub. The south facing slopes at the northern boundary of the reserve have a large area of c.50 year old European beech trees. The beech canopy has provided cover for a range of native species, particularly ferns, which are establishing a relatively diverse understory. This forested area contains a gully with a running claybottomed creek, a small tributary of Lindsay Creek. The gully to the east appears to contain similar kanuka scrub, as does the large area of vegetation on the privately owned south facing slopes further up Norwood Street. The native understory and riparian communities developing beneath the beech forest are of relatively high indigenous diversity.
2. Rare and notable species, habitats or communities:
 - a. The native understory and riparian communities developing beneath the European beech are of relatively high indigenous diversity with a low prevalence of weedy exotic species. The kanuka scrub is notable in that it is fairly large and contiguous with Chingford Park. It has a relatively intact canopy, provides good protection of the creek, and has low numbers of weedy species. This UBMA is "At Risk" based on the Threatened Environment Classification having between 20-30 percent of the original vegetation cover remaining nationally.
3. Species diversity and Naturalness:
 - a. The vegetation of the UBMA is estimated to be 81-84 percent indigenous.

A10.11.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>In Chingford Park sporadic incidences of Darwin's barberry, holly and cotoneaster have been reported. Towards the western boundary of the park, c.10-20 year old sycamores are becoming increasingly prolific.</u> b. <u>In the kanuka scrub there are a few large trees of holly and hawthorn growing on the margins.</u> c. <u>Animal pests have not been assessed but no animal sign was seen during a field assessment.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Minimal buffer to guard against adverse effects of fragmentation and edge effects.</u>

A10.11.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Consideration could be given to gradually and progressively removing sycamores that are growing within the western area of Chingford Park; this will help to slow down the invasion of sycamore seedlings into the bush margin. The tree weeds around the margin of the kanuka scrub to the north of the reserve could be removed fairly easily and in doing so would remove these as potential seed sources.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>The long-term viability of the Chingford Park UBMA could be improved if the boundary were extended to include the adjacent kanuka scrub. The structure of the intact mature European beech canopy of Chingford Park is complementary to the regenerating kanuka scrub, and both areas are relatively free of noxious plant pests. These areas, together, form a biodiversity corridor which links the residential areas of North East Valley with indigenous habitat further up the valley. They could together, also form parts of a future corridor linking Chingford Park to Bethune's Gully via Campbells Road.</u> b. <u>The neighbouring gully and faces, adjacent to the mapped Chingford Park UBMA, contain some high quality kanuka scrub. These areas represent important buffer zones which can help reduce external impacts by minimising edge effects.</u>

A10.12 Buccleugh Street, North East Valley {Confirmed for addition - NatEnv 900.31}

A10.12.1 Description of the area {NatEnv 900.31}

This UBMA is composed of two components: a large gully area including Buccleugh Street Reserve and adjacent private property, and a smaller area including Dalmore Street Reserve and the adjacent private property.

A10.12.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 1 – 73, 38, 42, 46, 48, 110 and 114 Buccleugh Street; 19 and 36 Barclay Street. {NatEnv cl.16}

A10.12.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The large gully area including Buccleugh Street Reserve and adjacent private property has a south facing gully of tall vegetation dominated by exotic species, primarily wilding sycamore with peripheral plantings of *Eucalyptus* species and crack willow. There is also an area of kanuka scrub in the centre the reserve. The vegetation is mostly between 5-10m tall, and forms a fairly complete cover, aided in places by a sprawling cover of *Muehlenbeckia australis*. The understory has a large native component, primarily ferns, but also *Astelia*, *Coprosma* species and red mapou. Light levels in the understory are likely to be too low for sycamore seed to germinate. Larger trees of regenerating whiteywood and remnant tree fuchsia are present throughout. A clay-bottomed creek runs the length of the UBMA, and there is a fairly continuous native riparian margin along its length. At the northern end, some forestry species have been recently felled. The small area of the UBMA that includes Dalmore Street Reserve and adjacent private property is surrounded by a south-facing patch of sycamore, with patches of kanuka spread throughout. The bush margin is dominated by weedy species.

2. Rare and notable species, habitats or communities:

- a. The vegetation within the UBMA is mostly "At Risk" based on the Threatened Environment Classification having between 20-30 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation.

3. Species diversity and Naturalness:

- a. The vegetation of the UBMA is estimated to be 62-74 percent indigenous.

A10.12.3 Principal threats to biodiversity values *{NatEnv 900.31}*

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>The major plant pest found in both areas of the UBMA is sycamore; this species comprises most of the biomass of the UBMA. Weeds are present in the understory where there are gaps in the canopy; notably ivy, male fern and rangiora.</u> b. <u>Other major pests include hawthorn, Himalayan honeysuckle and old man's beard. Lesser pests are blackberry, gorse and crack willow.</u> c. <u>Animal pests have not been assessed; possum sign was found in the Buccleugh Street reserve during a field survey.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Not assessed.</u>

A10.12.4 Key management actions to be required or encouraged *{NatEnv 900.31}*

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>There are no immediate threats to indigenous biodiversity at this UBMA from plant or animal pests - the limited indigenous biodiversity values that do exist are improved by the habitat created by the exotic plants, particularly the sycamore canopy.</u> b. <u>Any disturbance of the canopy would likely cause a proliferation of weedy species. There is, however, little evidence of succession of woody species in these areas, possibly because of predation and/or grazing of seeds and young plants by exotic animals, and possibly compounded by the lack of habitat in the canopy for native avifauna.</u> c. <u>Unless future management includes under-planting with shade tolerant native tree species, succession to a native canopy is likely to be a very long-term prospect within this UBMA.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Not assessed.</u>

A10.13 Somerville Street {Confirmed for addition - NatEnv 900.31}

A10.13.1 Description of the area {NatEnv 900.31}

This UBMA is made up of three areas: steep vegetated faces above Marne Street and following Larnach Road as far as the roundabout; the Southeast facing slopes from Dunrobin Street to Andersons Bay Inlet running parallel to Somerville Street; and the continuation of the same southeast facing slopes from above Dunrobin Street to Highcliff Road.

A10.13.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 1 Larnach Road; 11 Belford Street; 11 Glendevon Place; 114, 116, 118, 120, 121 and 122 Dunrobin Street; 47, 55, 57, 59, 65, 69, 73, 75, 79, 81, 83, 87, 89, 95, 129, 131, 133, 135, 159, 195, 197, 197A, 199, and 201 Somerville Street; 14 and 16 Tower Avenue; 7, 9, 15, 17, 19, 21, 23, 39, 41, 43, 45, 47, 49, 51 and 57 Glendevon Place; 16 Murano Street; 24A, 24B, 24C, 24D, 24E, 24F, 24G, 24H, 24I, 24J and 24K Archibald Street; 3, 5, 7 and 9 Belford Street; 8 Marne Street. {NatEnv cl.16}

A10.13.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:

- a. The almost sheer faces above Marne Street contain patches of relatively diverse and intact vegetation, with patches of broadleaf, tree fuchsia, whiteywood, *Coprosma* species, kowhai, and totara. Several fern species are growing at the base of the cliffs, as well as perching in rock crevices above. On areas above Larnach Road there is a more typical mix of secondary growth whiteywood and tree fuchsia, interspersed with weeds, and largely smothered by *Muehlenbeckia australis*. The slopes above Somerville Street are composed of exotic tree species and weedy vegetation (assessed from aerial photographs). The area above the Dunrobin Street/Somerville Street intersection may also contain a sparse patch of kanuka (assessed from aerial photographs). The vegetation in the southern part of this UBMA has also been assessed by aerial photography and comprises second growth indigenous vegetation. The northern part of the UBMA, opposite Portland Place, has c.10 year old planted natives with further 2-3 year old planting in the gorse area above it. The older plantings are fairly well established in places, but overall the area supports poor diversity and no natural regeneration is occurring.

2. Rare and notable species, habitats or communities:

- a. The indigenous vegetation that persists in this UBMA is "Acutely Threatened" based on the Threatened Environment Classification having less than 10 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation. Of all the areas contained in this UBMA, the steep faces above Marne Street have the most indigenous diversity and the fewest weeds.

3. Species diversity and Naturalness:

- a. The vegetation of the UBMA is estimated to be 71 percent indigenous.

A10.13.3 Principal threats to biodiversity values *{NatEnv 900.31}*

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Several plant pests are present throughout the UBMA, notably banana passion fruit, gorse, Scottish broom, hawthorn, and Darwin's barberry.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Minimal buffer to guard against adverse effects of fragmentation and edge effects in both terrestrial and freshwater/estuarine systems.</u>

A10.13.4 Key management actions to be required or encouraged *{NatEnv 900.31}*

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Some weed control would benefit the conservation values of this UBMA - particularly the control of Darwin's barberry which is in the initial stages of colonisation. While the contiguous area of vegetation on Larnach Road has relatively low biodiversity value, there is a large buddleja (buddleia) population on Larnach Road which could be removed to prevent spread of seeds into the nearby UBMA.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Consideration could be made to extending the UBMA to include the steep faces above Portobello Road. The area below Dunrobin Road is of lesser value as no obvious indigenous vegetation remains in this area; however a more thorough assessment is required to substantiate this. The area above Dunrobin Road has some indigenous vegetation which is also contained within the "Acutely Threatened" land environment classification, and the kanuka scrub further up Dunrobin Road could be added as an extension of the UBMA. There is an area of vegetation on private land on Every Street which could be assessed for biodiversity values, and for inclusion into the UBMA.</u> b. <u>Including these areas into the UBMA could provide buffering from disturbance and minimise edge effects.</u>

A10.14 Upper St Clair {Confirmed for addition - NatEnv 900.31}

A10.14.1 Description of the area {NatEnv 900.31}

This UBMA has two distinct habitat types: the coastal vegetation landward of the Beaches, and the cliff vegetation. The UBMA takes in a popular walking track. There has been significant residential development within this UBMA, and this may have had cumulative negative impacts on the biodiversity values.

A10.14.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 77, 101, 101A, 109, 111, 111A, 111B, 111C, 111D and 111G, Cliffs Road; 5, 7, 9, 11, 13, 15, 17, 19, 19A, 19B, 19C, 19D, 21, 25, 27, 29, 31, 43 and 45 Highgrove; 2E, 2F, 2G, 2H, 2J, 2K, 2L, 3 – 2, 4 – 2, 5 – 2; 6 – 2 Clayton Street. {NatEnv cl.16}

A10.14.2 Biodiversity values to be protected {NatEnv 900.31}

1. Vegetation/Habitat types:
 - a. The coastal vegetation around Second Beach is a mixture of remnant indigenous and naturalised exotic species. The vegetation on the coastal side of the walking track is largely made up of *Hebe elliptica*, while the hillside vegetation is a mixture of *H. elliptica*, ngaio and *Coprosma repens*, other exotics and a relatively diverse understory of coastal fern species in places. The vegetation on the cliff top areas is similar to that of Lawyer's Head, but on a larger scale. Low *H. elliptica* occurs here, with patches of turf plants, native ice plant and glasswort interspersed with exotic grasses. Fairly large patches of ngaio are visible, particularly higher on the cliffs and in the gullies.
2. Rare and notable species, habitats or communities:
 - a. The remaining indigenous vegetation that persists in these areas is "Acutely Threatened" based on the Threatened Environment Classification having less than 10 percent of the original vegetation cover remaining nationally, and a high degree of habitat fragmentation. This coastal habitat, being less frequently used by humans, is probably more valuable habitat for indigenous animals than the adjacent sandy beach of St Clair. During a brief field assessment, New Zealand fur seals (*Arctocephalus forsteri*), a white-faced heron (*Egretta novaehollandiae*) and a "Threatened-Nationally Critical" black-billed gull (*Larus bulleri*) were observed. The cliff vegetation is also potential habitat for rare and threatened plant species, such as *Lepidium tenuicaule* "At Risk-Declining".
3. Species diversity and Naturalness:
 - a. The vegetation of the UBMA is estimated to be 61 percent indigenous.

A10.14.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. There are several plant pests present at the UBMA, including gorse, convolvulus, <i>Coprosma repens</i>, ivy and blackberry. b. Animal pests have not been assessed; no animal sign was noted at the site during a field visit.
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. Minimal buffer to guard against adverse effects of fragmentation and edge effects in both terrestrial and freshwater/estuarine systems.

A10.14.4 Key management actions to be required or encouraged {*NatEnv 900.31*}

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>None of the pest plants found at the site pose a specific risk to indigenous biodiversity values. <i>Echium pininana</i>, which is present at the site, has the potential to become a more widespread pest plant as it has elsewhere in the city and its removal is desirable. Future re-vegetation projects at the site may consider removing the <i>Coprosma repens</i> and replacing it with more suitable species i.e. indigenous ngaio.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>The indigenous vegetation remaining in this UBMA is "Acutely Threatened", and retains some relatively high quality vegetation. There are areas of vegetation adjacent to the current mapped UBMA that could be included. These areas represent important buffer zones which could reduce external impacts by minimising edge effects.</u>

A10.15 Leith Valley {Confirmed for addition - NatEnv 900.31}

A10.15.1 Description of the area {NatEnv 900.31}

Leith Valley is an important green corridor connecting the urban environment and town belt to the rural environment. The majority of the land within the mapped area is privately owned, and consists of the slopes of the Leith Valley which contain several patches of high quality indigenous vegetation, including a large stand of rimu and kahikatea, and several patches of South Island kowhai. Most of the area is made up of secondary growth vegetation – primarily mahoe, tree fuchsia and kanuka. As the majority of the land within the Leith Valley UBMA is on private land, this assessment has been made primarily on the basis of aerial photographs.

A10.15.1.1 Description of urban environment allotments {NatEnv cl.16}

The following properties, which are located either entirely or partly within this UBMA, may contain land which qualifies as an urban environment allotment as defined in s76(4C) of the Resource Management Act 1991: {NatEnv cl.16}

- 1 and 5 Clarewood Avenue; 1, 7, 9, 10, 11, 11A, 15, 17, 19 and 21 Fred Hollows Way; 1, PT SEC 2, 11, 15, 17A, 154, 156, 227, 279, 285, 289, 295, 299, 305, 321A, 321B, 367, 381A, 383 and 387 Malvern Street; 10, 14 and 33 Leithton Close; 15 and 17 Dunedin-Waitati Road; 2 Glenholm Street; 5A, 22, 24, 25, 27 and 37 Rockside Road; 9, 24 and 70 Tanner Road; 36 Braeview Crescent; 39, 41, 43, 53, 57 and 59 Garden Place; PT SEC 1, 4 and 6 Harden Street; 5 and 7 Fulton Road; 5 Patmos Avenue. {NatEnv cl.16}

A10.15.2 Biodiversity values to be protected {NatEnv 900.31}

1. **Vegetation/Habitat types:**
 - a. The vegetation of the UBMA is highly variable; there are several patches of high quality indigenous vegetation, including a large stand of rimu and kahikatea, and several patches of kowhai. Most of the UBMA is made up of secondary growth vegetation - primarily whiteywood, tree fuchsia and kanuka. The balance is made up of various exotic species, particularly sycamore and willow.
2. **Rare and notable species, habitats or communities:**
 - a. The Land Environments contained within the Leith Valley UBMA are a combination of "Acutely Threatened", having less than 10 percent indigenous vegetation remaining, and "At Risk" having between 20-30 percent indigenous vegetation remaining (based in the Threatened Environments Classification). Peripatus species occurs on the sides of the track down into the Leith Valley.
3. **Species diversity and Naturalness:**
 - a. Not assessed.

A10.15.3 Principal threats to biodiversity values {NatEnv 900.31}

Threat	Description
1. <u>Plant and animal pests</u>	a. <u>Not assessed.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Minimal buffer to guard against adverse effects of fragmentation and edge.</u>

A10.15.4 Key management actions to be required or encouraged **{NatEnv 900.31}**

Threat	Key management actions
1. <u>Plant and animal pests</u>	a. <u>Not assessed.</u>
2. <u>Fragmentation/loss of continuity/edge effects</u>	a. <u>Consideration could be given to extending the boundary of this UBMA to include adjacent vegetated areas. Some of the adjacent vegetated areas have variable biodiversity values in themselves, but represent important buffer zones which could reduce external impacts by minimising edge effects.</u>