

PLAN OF MANAGEMENT PART B SECTION FOUR



CASCADE RESERVE



2003

AS APPROVED BY THE NORFOLK ISLAND LEGISLATIVE ASSEMBLY ON 21 MAY 2003



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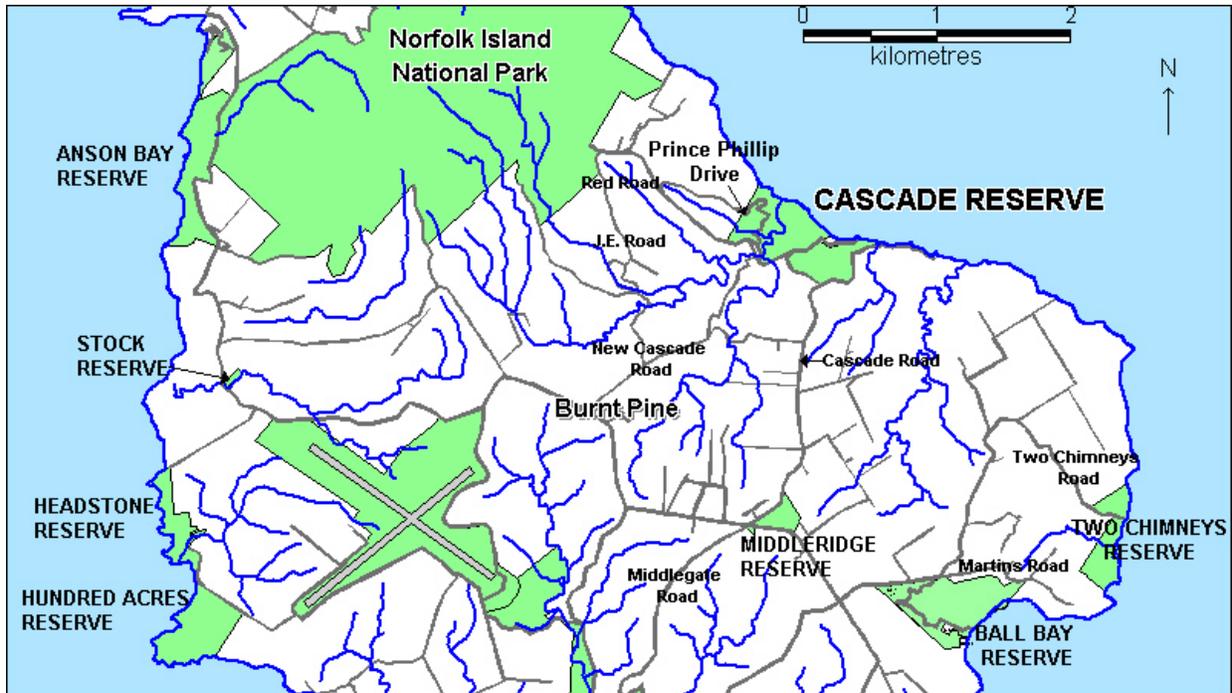
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Section 4: CASCADE RESERVE PLAN OF MANAGEMENT PART B

4.1. Introduction

This Part B Plan of Management applies to Cascade Reserve.

Cascade Reserve is located along the northern coast of Norfolk Island (29°02'S, 167°57'E) (Map 1). Cascade Reserve includes 10ha of Quarantine Reserve and has a total area of approximately 32.45 hectares. The reserve surrounds Cascade jetty, which is used to launch fishing boats and for loading and unloading cargo. The reserve has spectacular coastal views and pastoral landscapes.



Map 1: Cascade Reserve: Location and Boundaries

Cascade Reserve and the former Quarantine Reserve were proclaimed reserves under the *Commons and Public Reserves Act 1936* on 4 February 1937.

4.1.1. Previous Plans

This is the first Plan of Management for Cascade Reserve.

4.1.2. Boundaries

A number of boundary adjustments have been made to Cascade Reserve and Quarantine Reserve. The most important of these adjustments were to enable the Cascade whaling station to be established (whaling station site 24 November 1955 and Cascade Road re-alignment 15 March 1956).

Cascade and Quarantine reserves will be amalgamated.

The following adjustments will be made to the boundaries of the reserve during the life of this plan:

- Incorporation of:
 - Red Road between Harpers Road and the northern boundary of the reserve (now disused); and
 - Cascade whaling station site (Vacant Crown land portions 162 and 170);
- Excision of:
 - Prince Phillip Drive;
 - Cascade cliff and roadway east of Cascade jetty.

Cascade Road, Youngs Road, Harpers Road, and Cascade jetty are not part of Cascade Reserve.

The reserve's coastal boundary extends to high water mark.

4.1.3. Register of the National Estate

Cascade and Quarantine reserves were listed on the Register of the National Estate on 21 October 1980.

Cascade cliff, which in its natural state was one of the features in Cascade Reserve noted in the National Estate citation, was completely reshaped in 1999-2000 by major engineering work to make it safe.

4.1.4. IUCN Category

The major portion of this reserve fits IUCN Category V – Protected Landscape/seascape: protected area managed mainly for landscape/seascape conservation and recreation¹. The definition of this category is an area of land, with coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinctive character with significant aesthetic, ecological and/or cultural values, often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance, and evolution of such an area.

4.2. Conservation Significance

The waterfalls at Cockpit were named the “Cascades” by Captain Cook as he sailed along the coast after discovering Norfolk Island in October 1774. Cascade Creek is one of Norfolk's few permanent streams.

A rocky outcrop in Cascade Bay was used as a landing place from the beginning of the First European Settlement in 1788 and the hamlet of Phillipsburgh was laid out by Lt. King near Cascade creek in 1790. Phillipsburgh is the oldest European township site in Australasia that has not been substantially altered. During the next 200 years, the Cascade Reserve area became a centre for various agro-industrial activities, including flax dressing (to make canvas), timber milling, fish processing, and whaling.

One of the few remaining areas of mature remnant coastal mixed hardwood forest, and the only area of such forest within a public reserve, occurs in Cascade Reserve.

The cultural heritage values of the reserve document the history and development of this community and provide a link with a past way of life that continues to shape the Island's character. The cultural landscape, together with the remnants of native coastal forest, provide some insight into the nature of the Island before Cook's discovery. The cascades, creeks and coastline form one of the most valued landscapes on the Island.

¹ International Union for the Conservation of Nature (IUCN) Protected Area Categories as modified in IUCN (1994) *Guidelines for Protected Area Management Categories*, IUCN, Gland, Switzerland.

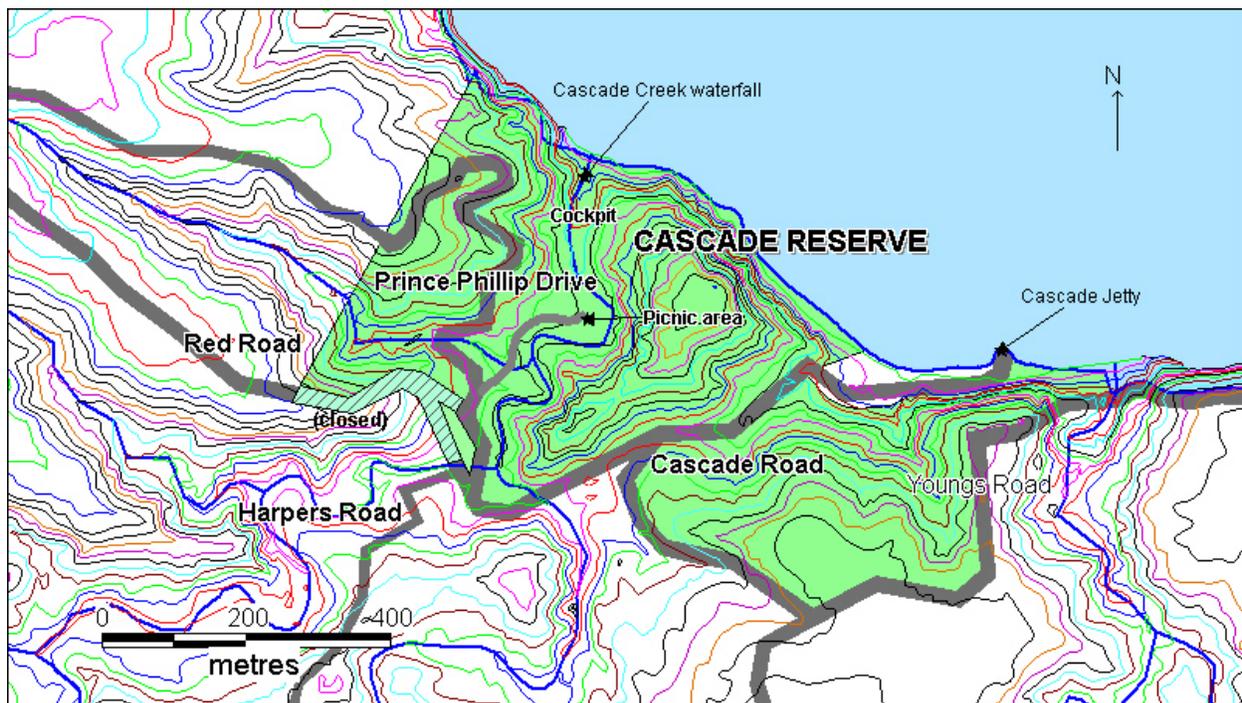
4.3. Description

4.3.1. Geology and Landform

The cliffs at Cascade are a fine example of the sequence of volcanic eruptions on Norfolk Island, commencing with flow foot breccia (hyloclastite) at sea level about 3 million years ago, overlain by inter-bedded basalt lava flows, and tuff (volcanic ash). The deep weathering of this volcanic material (to about 50m below ground surface) is reflected in the steeply rounded hillsides and valleys in the reserve.

Highly erodible red/brown ferrosols² are common in the Cascade/Cockpit area, with skeletal (thin) soils on steeper ridges and in places where bedrock is close to the surface. Increased soil erosion after clearing began in 1790 has resulted in the formation of small alluvial fans at the foot of steep gullies at Cockpit and the deposition of 2 – 3m depth of red/brown silt in the former dam site in Cascade Creek. Unsealed roads and log hauling have also contributed to soil movement.

At 650ha, the catchment of Cascade Creek and its tributaries is the largest on Norfolk, covering almost one-fifth of the entire island. The Cascade Creek catchment extends to Mt Pitt, Burnt Pine, and Middlegate, and is 45% larger than the 450ha Watermill/Town Creek catchment, the next biggest on Norfolk Island. Cascade Creek's main tributary, Broken Bridge Creek, rises at Mt Pitt and has eroded the southeastern side of the Island's main volcanic crater, the northern and western rim of which is today marked by Mt Pitt, Mt Bates, and Mt Cross. At Cockpit, some 100m from the sea, the creek cascades over a 10m high basalt cliff. At the coast, the creek flows over another 10m high massive basalt layer onto the rocky beach. Although other waterfalls form around the Island's coast during high intensity rainfall events, these two are virtually permanent and are the most significant.



Map 2: Cascade Reserve: Landform and Significant Features

The steep (in some places almost vertical) slopes of the ridge along the eastern side of Cascade Creek are the product of high creek flows and, together with the waterfalls, clearly illustrate the creek's erosive power.

² So called because of their high iron oxide content, which makes the soil red/brown.

A number of dams and weirs have been constructed on Cascade Creek. It is likely that the creek was first dammed soon after Phillipsburgh was established in 1790 to provide a water supply for domestic use and for the experimental flax dressing industry. A dam was constructed in the 1920's to provide a head of water to power a sawmill. However a major flood destroyed that dam in the 1930's. In 1955 a low concrete weir was constructed downstream from the site of the saw mill dam to enable water to be piped around the seaward side of Cascade Hill to the Cascade whaling station, which operated from 1956 to 1962.

Land clearing in the reserve and in the Cascade Creek catchment has altered significantly both the volume and the pattern of streamflow in the creek. Removal of groundwater through bores also affects streamflow, especially during extended dry periods.

Benching of Cascade cliff to make it safe and prevent further rockfalls onto Cascade Road and the jetty was completed during 2000. As a consequence, the Cascade cliff face is a series of near vertical engineered faces separated by horizontal benches, with little or no vegetation.

4.3.2. Vegetation

Patches of remnant native forest cover approximately 4ha (12%) of Cascade Reserve. Much of the reserve is open Kikuyu pasture with scattered mature native Norfolk Island Pine and White Oaks. Some pines were planted on the hillsides near Cascade Road by the Norfolk Island Flora and Fauna Society³ and by Wilfred Randall OBE in the 1960's and 1970's.

The majority of the reserve would originally have been covered by mixed native hardwood forest, dominated by emergent Norfolk Island Pines and White Oaks. Three separate areas of native mixed hardwood forest remain: in the small valley between Youngs Road and Cascade Road near the whaling station; along the eastern side of Cascade Creek; and in the valley between Prince Phillip Drive and the old Red Road in the west of the reserve.

4.3.2.1. Native Plant Communities

The fields of Native Flax and Moo-oo that would have dominated the coastal cliffs and slopes are no longer present, largely as a result of grazing. The small native coastal forest remnant in the eastern section of the reserve near Cascade cliff is moderately weed infested, but still contains a surprising diversity of native trees, such as Whitewood, Ironwood, Beech, Bloodwood, Cordyline, and Tree Fern.

At Cockpit, patches of remnant coastal forest clinging to the steeper more inaccessible slopes along the eastern side of Cascade Creek are moderately diverse in species composition, including a Birdcatcher and an Evergreen.

4.3.2.2. Significant Species

A 1998 vegetation survey found that although remnant forest in the reserve had been grazed for many decades, it still contained small numbers of at least three endemic species that are "particularly uncommon" outside the National Park: Rough Tree Fern, Popwood, and Sia's backbone⁴. Cattle were excluded from this native forest remnant in the mid-1990's.

Important native species in the remnant coastal forest include a single Birdcatcher, which is rare on Norfolk, and one endemic Evergreen, even though the area was being grazed by cattle.

4.3.2.3. Weeds

The small area of remnant coastal forest in the west of the reserve is moderately to heavily infested with African Olive. The remnant forest areas are heavily infested with African Olive, Hawaiian Holly,

³ Led by Owen Evans A.M.

⁴ Gillett, N., (1998), *Vegetation Survey of Cascade and Quarantine Reserves, Norfolk Island*. Unpublished report for the Norfolk Island Parks and Forestry Service.

Porpieh, and Lantana. Scattered Wild Tobacco and Lantana also occur in the more open parts of the reserve. Exotic water plants, including Taro and Water Hyacinth, are well established in Cascade Creek. Kikuyu grass holds the soil on the cliff slopes and can provide shelter for seedlings. However, dense swards of Kikuyu can suppress germination of native seedlings and obstruct seabird nesting burrows.

4.3.2.4. Rehabilitation Plantings

Prior to 1990, individual Norfolk Island Pines, with some White Oak, Bloodwoods, and Whitewoods, were planted in timber rail or pallet enclosures. In 1990, approximately 50 Norfolk Island Pines were planted in 4 rows on the lower section of the old Red Road. These pines are now about 4m tall and the surrounding stock fence has been removed to allow stock access to the shelter they provide.

In 1994 Norfolk Island Landcare fenced off the lower end of Broken Bridge Creek, upstream from Prince Phillip Drive, and planted over 700 native plants to initiate the re-establishment of native forest. These plantings have been largely successful, with supplementary planting and weeding by Green Corps⁵ in 2000 and Norfolk Island Parks and Forestry Service personnel in 2001.

Norfolk Island Landcare also commenced weeding and planting the hillside on the eastern side of Cascade Creek. However, intruding stock, and extended dry seasons then torrential rains and flooding that destroyed the fence near the creek, resulted in failure of these plantings.

4.3.3. Fauna

4.3.3.1. Freshwater aquatic ecosystems

Cascade Creek is an important habitat for native wetland flora and fauna⁶. Unfortunately very little is known or recorded about Norfolk Island's native freshwater ecosystems prior to the significant changes brought by European settlement.

Both the Short-finned Eel and the Long-finned Eel have been recorded entering the Cascade creek system via the falls at Cockpit. However, little is known of native freshwater invertebrates and fish in Cascade Creek.

4.3.3.2. Seabirds

During the summer months Wedge-tailed Shearwaters (Ghostbirds) breed in burrows along the cliff tops and under wind-pruned White Oaks and Norfolk Island Pines that cling to the cliff. Little Shearwaters nest in coastal burrows during winter. A small number of Red-tailed Tropicbirds can also be found nesting on or near the cliffs of the reserve and White Terns breed in the remaining coastal forest.

4.3.3.3. Terrestrial birds

There are thirty-three species of terrestrial birds resident on Norfolk Island. Of these, about 22 regularly occur, or are likely to occur in Cascade Reserve. Seventeen species of terrestrial birds were recorded at Cascade Reserve during the December 1978 bird census by members of the Royal Australasian Ornithologists Union⁷ and local naturalists⁸. Of these, only six were endemic or native species or sub-species, three were self-introduced in historic times, and eight were introduced.

The forest remnants provide valuable breeding habitat for native birds such as the Long-billed White-eye or Grinnel and the Grey Fantail. The Buff-banded Rail (perhaps recorded on the Island early in the First

⁵ Commonwealth funded youth environmental training scheme.

⁶ *Flora of Australia* Volume 49, Oceanic Islands 1, AGPS, Canberra (1994); Schodde, R., P. Fullagar and N. Hermes, 1983, *A Review of Norfolk Island Birds: Past and Present*. Australian National Parks and Wildlife Service: Special Publication No. 8; Turner, J. S., C. N. Smithers and R. D. Hoogland, 1968, *The Conservation of Norfolk Island*. Australian Conservation Foundation Inc., Special Publication No. 1.

⁷ Now named 'Birds Australia'.

⁸ Schodde, R., P. Fullagar and N. Hermes, 1983. *A Review of Norfolk Island Birds: Past and Present*. Australian National Parks and Wildlife Service: Special Publication No. 8.

European settlement) and the Spotless Crake (which was observed at Cascade Creek as recently as 1980) are likely to have occurred from time to time in swampy habitat along Cascade Creek.

Some waterbirds are attracted to the dam and small pools along Cascade Creek including the White-faced Heron and Tarler Bird or Purple Swamphen. The reserve provides suitable habitat for Pacific Black Duck, although this species now rarely occurs on Norfolk Island, as a result of competition with the introduced Mallard.

4.3.4. Cultural Heritage

No evidence of Polynesian habitation has been discovered in the Cascade area. The rocky promontory on which Cascade jetty has been built is an obvious landing point and may have been used by Polynesians as a landing and fishing place. The stream at Cascade may have provided food and other resources such as flax and Moo-oo fibres for weaving.

Captain Cook discovered and named Norfolk Island on 10 October 1774, during his second voyage of discovery. Cook noted and described the waterfall at Cockpit, which he named the “Cascades”, and remarked on the tall Pines, recommending that they might be useful for ship masts and spars, and “New Zealand flax” for producing sailcloth.

Fourteen years later, on 29 February 1788, only five weeks after the First Fleet sailed into Botany Bay, Lt. Philip Gidley King arrived at Norfolk Island with 23 others (mainly convicts) aboard *HMS Supply*, under orders to take possession of Norfolk Island and to investigate the usefulness of the pines and flax. The *Supply* anchored at Cascade, but unsuitable weather prevented landing until 5 March, when the party disembarked at Kingston.

Much of Norfolk Island was cleared and farmed early in the First Settlement. In May 1789, a track was cleared to Cascade from the landing place at Kingston. The route followed by the current Middlegate and Cascade Roads deviates only slightly from the road of King’s day. Clearing of the area now known as “Cockpit” and some of the land that is now within Cascade Reserve commenced in 1790.

Early in 1790 King marked out a small township situated between the Cascade landing place and Cascade Creek, near the present intersection of Harpers and Cascade roads. King named that settlement “Phillipsburg” after Governor Phillip on 30 April 1791. The map of settlers lots of 1791 – 1804⁹ shows much of the area from Cascade Creek at Cockpit east to Youngs Road as “Phillipsburg”. Following the wreck of the *Sirius* at Kingston in March 1790 many of the crew settled at Phillipsburgh, and by 1 July 1790, 24 settlers were residing at Phillipsburgh, with 8 acres cleared and under cultivation. In August 1791, the NSW Corps stationed at Norfolk were garrisoned at Phillipsburg. Leases and grants were issued to ex-convicts, ex-marines, and former members of the NSW Corp¹⁰.

By May 1792, Phillipsburg had developed into a relatively large settlement, growing a variety of produce and pig meat, and was the centre of the small flax dressing industry being developed by King. At its height, 24 workers were employed at Cascade dressing flax and manufacturing “No. 7” canvas. The extensive natural flax fields that covered the nearby coastal hillsides and cliff slopes provided the raw material for this experimental industry, while the permanent running water, rock pools and areas of flat rock at Cascade Creek suited flax processing.

Within a few years flax processing was abandoned on Norfolk Island because it was not able to compete with canvas manufacture in Sydney, but Phillipsburg remained an important settlement until its buildings

⁹ *Settlers Lots on Norfolk Island 1791 – 1804*.

¹⁰ *Settlers Lots on Norfolk Island 1791 – 1804*: Lot 42 (60 acres) – Zachariah Sponsford (“Late convict”); Lot 43 (60 acres) – Matthew Wood (“Late convict”); Lot 109 (19 acres) – John Brabyn (“Ensign, NSW Corps”); Lot 113 (9 acres) – William Chapman (“Storekeeper”).

were deliberately destroyed by fire when the Island was abandoned in 1814. There is some evidence that the settlement had its own small cemetery near Cascade Road, on a ridge overlooking Cascade Bay¹¹.

The Cascade Creek valley upstream from the cascades is known as ‘Cockpit’ (Map 2). This name is thought to have originated in either the First or Second Settlements and may relate to a cock fighting pit or the shape of the valley below the first cascade, which is similar to a ship’s cockpit.

On 6th June 1825, Captain Turton landed at Kingston with a party of soldiers, 6 women and children and 57 convicts. Large herds of goat and pigs were found roaming the Island; at Phillipsburgh a few old chimneys were found standing, and the orchards had run wild with grapevines, lemons, figs, and guavas. Sugar cane thickly bordered the Cascade stream.

During the Second Settlement, Cascade Station became an important agricultural centre providing vegetables and meat for the convicts at Kingston. Some of the stone ruins of this Station can be seen near the Cascade Road and New Cascade Road intersection. The 1840 ‘Arrowsmith’ map prepared by Major George Barney¹² shows a ‘Sheep Station’ in the vicinity of the yet to be developed Cascade Station, with the majority of land on both sides of Cascade Road north of about Mill Road and ‘Drummond’s Farm’ cleared. Much of the Cascade Reserve between Cascade Road, Youngs Road, and the Cascade landing place was also cleared. A track (later to be named Red Road), with bridges at Cascade Creek and at Broken Bridge Creek, is also shown. Surprisingly, the land north of the intersection of that track with Cascade Road, including Cascade Hill, Cascade Creek, and all of Cockpit is not shown as being cleared. The stone bridge at Cascade Creek constructed during this period is still in use today, however the stone bridge just upstream from the confluence of Cascade and Broken Bridge creeks was destroyed by a major flood in the 1930’s.

The 1860 “Diagram of Allotments”¹³ shows all of the land to the east of Cascade Creek, bounded on its south by Cascade Road and east by what is now Youngs Road, as “Government Reserve (not including road)”. The land to the west of Cascade Creek, north of Red Road is shown as Lot 107 (53 acres 3 roods 11 perch), apparently vacant Crown land. The lower waterfall at Cockpit is shown as “Watering Place”, presumably for ships, and the jetty is shown as “Landing Rock”. The 1887 map¹⁴ shows the same tenure, but with the area of Lot 107 recalculated to 52 acres 0 roods 18 perch. The trigonometric station (survey point) on the hill between Cascade Creek and Cascade Road is marked “Cascade 313 ft”. By the time the 1904 map¹⁵ was produced, Lot 107 had been subdivided, with Lot 107a (27 acres on the western side of Cascade Creek) being marked “Quarantine Reserve 27ac Cockpit”¹⁶. The previously unnamed reserve to the east of Cascade Creek is named Cascade Reserve (59 acres 2 rood 26 perch).

Following the settlement of the Pitcairners on Norfolk Island in 1856, stock were allowed to graze freely on ‘reserves’ (commons) and vacant Crown land. As more land was granted, common grazing became restricted to public reserves and roadsides. Stock grazed all of Cascade and Quarantine reserves, including the steep slopes along the eastern side of Cascade Creek.

A sawmill was built at Cockpit straddling the upper waterfall on Cascade Creek. This mill was driven by an overshot wheel fed by water from a dam constructed at the bend in Cascade Creek upstream from the present weir. Two large sections of the stone and concrete dam wall that were washed away in the major

¹¹ Burial sites discovered after bones unearthed during power pole placement in 1984.

¹² *Plan of Norfolk Island Shewing the General Nature of the Ground*. Often referred to as the “Arrowsmith” map, 1840. However John Arrowsmith was the lithographer who copied the map prepared or drawn by Major Barney, Royal Engineers Corp. The map accompanied a letter dated 20 February 1840 from Major Barney to the Colonial Secretary and was printed by James and Luke J. Hansard on an order of the House of Commons dated 15 June 1841.

¹³ *Norfolk Island Diagram of Allotments*. Surveyed and drawn by 2nd Corporal Thomas Kennedy, (Royal Engineers), Sapper George Jamieson (Survey Assistant). Lithographed and printed at the Topographical Department, War Office, under the direction of Major A.C. Cooke (Royal Engineers). 1860.

¹⁴ *Plan of Norfolk Island Shewing Grants and Subdivisions*. Signed by Walter Harper, Licensed Surveyor, and sent by him to the Surveyor General on 20 October 1887. Printed at the Surveyor General’s Office, Sydney, April 1888.

¹⁵ *Map of Norfolk Island Shewing Grants and Subdivisions* 1904. Signed by Murphy, Government Surveyor, 8 February 1904.

¹⁶ The Quarantine Reserve was set aside for quarantine however there is no record of it being used for this purpose.

flood in the 1930's can be seen lying about 10m downstream from the dam site. The sawmill was built by Eddie Yeaman and operated by him and his sons. Logs cut in the forest on the slopes of Mt Bates were dragged down Red Road by horses. A deep groove in the ridge west of Cockpit is the remains of the last stretch of 'log slide' from the forest to the mill.

The expertise from visiting whaling vessels together with the Pitcairner's skilful seamanship led to the development of a locally owned and operated whaling company on Norfolk Island in 1858. This export industry made a major contribution to the Island's cash economy in the latter half of the nineteenth century¹⁷. Despite the risks, or because of the lack of financial alternatives, whaling employed more than half the community's adult males and contributed up to 70% of the community's earnings. This income enabled the community to pay for imported consumer goods such as sugar, flour, tea, and clothing¹⁸. As competition from other whaling companies and the fledgling petroleum industry increased, the viability of whaling on Norfolk Island declined. A violent storm that destroyed the shore facilities at Cascade in 1897 delivered the industry's deathblow.

Whaling was revived in 1954, when the Byron Bay Whaling Company showed interest in operating a whaling station at Cascade. Trading as the Norfolk Island Whaling Company with an annual quota of 150 whales it commenced its first successful whaling season in 1956, exporting whale meal fertiliser, and whale oil to Sydney by tanker. The company enjoyed bountiful seasons with quotas ranging from 120 whales in 1957-8 to 170 in 1960-61 but due to declining whale numbers, the station closed in 1962. Today only a few relics remain, most notably the concrete steps and terraces with the flensing deck, the base of the separator tanks, some parts from the winch used to haul whales ashore, and the digester or steam cooker. The concrete weir on Cascade Creek at Cockpit that was constructed in 1955 to supply water to the Station via a system of pipes around the cliff face also remains.

His Royal Highness Prince Phillip, Duke of Edinburgh, unveiled a plaque at Prince Phillip Lookout and named the recently constructed Prince Phillip Drive on 20 May 1968¹⁹.

A small fish factory was constructed at Cockpit area in 1970. The factory was burned down in 1972 and the company went into liquidation soon after the fire. The owner did not comply with directions from the Administrator to remove the building and other fabric and restore the reserve to its original condition. A patchwork of concrete slabs in varying states of disrepair remains.

The Pitcairners periodically utilised flax and other plant fibres such as Moo-oo and Drain Flags from the Cascade, as their descendants do today for weaving hats and other craft items.

¹⁷ Treadgold, M.L., (1988), *Bounteous bestowal: The economic history of Norfolk Island*. The Australian National University National Centre for Development Studies, Pacific Research Monograph no. 18, Canberra.

¹⁸ Ibid.

¹⁹ "The Norfolk Islander" Vol.3 No.35, 10 May 1968.

4.4. Issues

4.4.1. Public Use

The most significant public uses of Cascade Reserve are grazing, watering stock, picnicking, and sightseeing. In addition, the Norfolk Island Volunteer Rescue Squad occasionally conducts training exercises in the reserve.

4.4.2. Access and Facilities

Cascade Reserve may be accessed by a number of public roads and is bounded on its southern and eastern sides by Harpers, Cascade, and Youngs Roads. Cascade Road continues through the reserve to Cascade jetty and Prince Phillip Drive runs through the western part of the reserve from Harpers Road to Red Road. Youngs Road and Prince Phillip Drive are unsealed. Youngs Road leads to a cliff top lookout above Cascade jetty, known as 'Fredick's Edge'²⁰.

Youngs Road is an all weather road with a good gravel surface, however Prince Phillip Drive is impassible when wet. Cars and buses park on the grass at Cockpit as there is no defined parking area. There are informal walking tracks to the bottom of the falls and the coast.

The Cockpit picnic area has one barbecue, a timber bench seat and three 44 gallon drum rubbish bins, but no toilet facilities. However, there is a public toilet at the Cascade whaling station site.

The concrete slabs at the old fish factory site are deteriorating with rusty steel reinforcing rods and mesh exposed in places. The uneven concrete slabs, nib walls, and channels do not provide a suitable surface for a public recreation area. The concrete slabs are unsightly and detract significantly from the area's landscape and heritage values. The small fish factory existed at this site for two years and its cultural heritage value is not nearly as significant as the First, Second, and early Third Settlement use of the area. Community views expressed at the public meeting held to consider Cascade Reserve management issues strongly supported the removal or covering of the fish factory remains and development of a sympathetically designed picnic area.

4.4.3. Cascade Whaling Station Site

Following the closure of the Island's only rock crushing plant at Ball Bay in 1999, a mobile rock crusher was established on the Cascade whaling station site for eight months in 2000. It was agreed between the Administrator and the Norfolk Island Government that after cessation of the rock crushing operation, the Cascade whaling station site would be incorporated into Cascade Reserve.

While the concrete terraces of the whaling station are reasonably intact, some undercutting has occurred on the seaward side of the lower terrace and the concrete steps between the middle and lower terraces are in danger of collapsing. The steel digester has been exposed to the elements for forty years. During that period, it has been sprayed with bitumen on a couple of occasions, but has deteriorated significantly during the past few years.

The Cascade whaling station would provide an excellent venue for a museum/interpretation centre. Such a building could incorporate the *in situ* preservation of the digester and other significant historic relics of the whaling era.

Public opinion expressed during the preliminary public consultation process indicated strong support for a museum/interpretive centre that linked the First Settlement use of the Cascade area with the agricultural, forestry, fishing, and whaling of the Pitcairn settlement. Such a museum could provide an important

²⁰ Named after George Martin Frederick Young, who received a freehold grant for nearby allotment No. 5, of 51 acres 2 roods 25 perches, on 14 September 1859

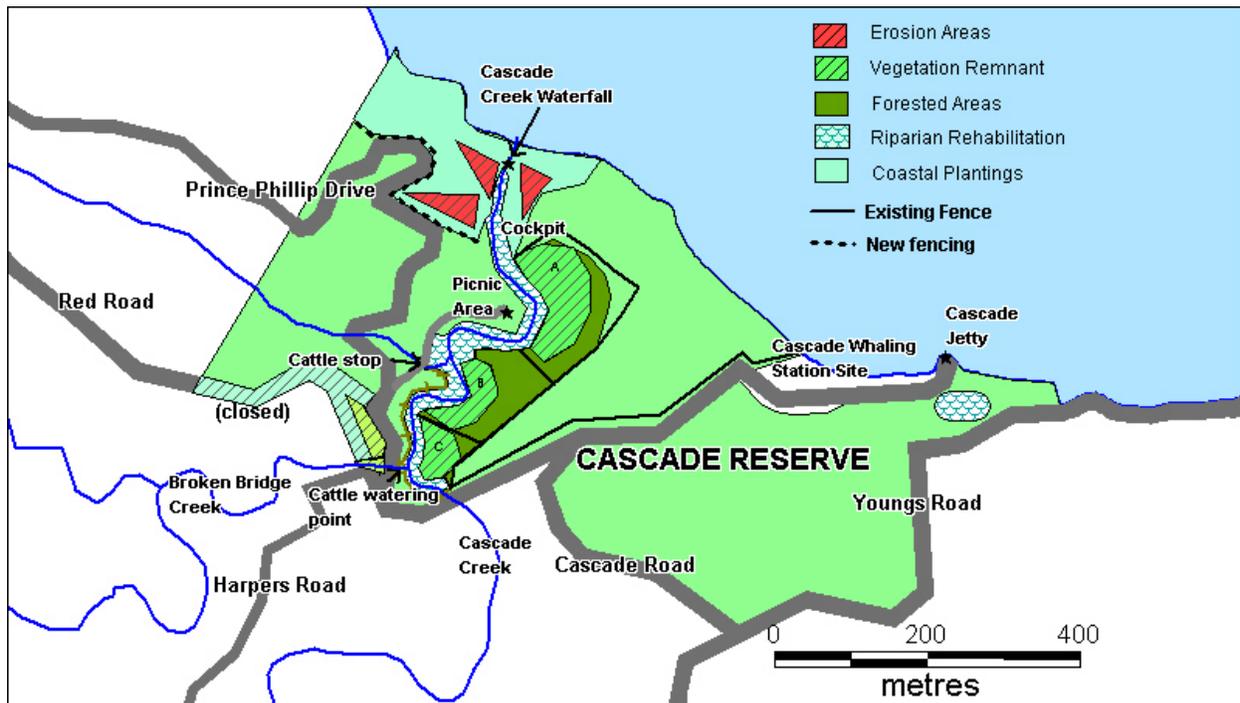
focus for Pitcairner culture, history, and language. The museum could highlight the Island community's strong links to the sea and use of agricultural and forestry resources. It would also provide a venue for observing today's ship loading and unloading. The natural history of Norfolk Island, the volcanic origins of the Island, coastal erosion, and landforms might also be important themes.

4.4.4. Habitat Rehabilitation and Development

Clearing and grazing has produced a grassland with scattered mature trees and isolated remnants of native vegetation on the steepest slopes. Rehabilitation planting by some individuals and community groups has been successful in some locations.

Steep coastal slopes are particularly vulnerable to erosion (Map 3). Excluding stock from these slopes and re-establishing native plant communities, including flax fields will stabilise areas that are actively eroding and eventually replace the now dominant introduced Kikuyu grass.

Stock have been excluded from the weed infested remnant forest in the valley to the north of Young's Road and the nearby hillsides. Electric fences have been erected around the remnant forest patches on the steep slopes on the eastern side of Cascade creek. However, stock have not yet been prevented from entering these fenced areas. The remnant native forest near the western boundary of the reserve is unfenced.



Map 3: Areas of Erosion and Vegetation Remnants in Cascade Reserve

4.4.5. Water Quality and Catchment Management

The Cascade Creek catchment is bounded on the southwest, south, and east by Grassy Road, Taylors Road, Queen Elizabeth Avenue, and Cascade Road. Its catchment includes over half of the Burnt Pine shopping centre, other commercial and semi-industrial premises, residential properties, and rural lands. Almost all of the catchment has been cleared and large areas are infested with woody weeds.

Within the reserve, road runoff (especially from the unsealed surface of Prince Phillip Drive) and cattle grazing in and along the creek are the main causes of reduced water quality in Cascade Creek.

The weir at Cockpit has been excavated periodically to remove silt and weed. In drought, water is pumped from the weir by individuals and transported to water stock and gardens.

4.4.6. Stock Management

Grazing in Cascade Reserve is a traditional use and the pastoral landscape is characteristic of the Island and its way of life. However, grazing needs to be managed to minimise erosion and damage to native vegetation. Stock are periodically excluded from pastures in the reserve to the east of Cascade Creek to manage stocking rates and prevent over-grazing. Stock access to Cascade Creek and the Cockpit picnic area and waterfall will need to be limited to improve water quality. Permanent exclusion of stock from more sensitive areas such as steep slopes and cliff edges is required to control accelerating rates of erosion. Significant native flora and fauna communities also require protection from grazing.

Unrestricted grazing results in the loss of many palatable native species such as ferns and seedlings, preventing the regeneration of native vegetation. It also facilitates the spread of a variety of weed species. Stock destabilise stream banks, increasing turbidity and nutrient levels.

4.4.7. Erosion

The largest areas of erosion within the reserve occur along the coastal cliffs, in particular between Cockpit and the whaling station (Map 3). Some, relatively small, steeply sloping areas of the reserve are showing signs of surface erosion due to overgrazing, and some of the steep, grassed slopes have been damaged by trail bike riders.

The steeper slopes above the bends of Cascade Creek are almost vertical in places and thus bare of vegetation.

4.4.8. Pest species

4.4.8.1. Weeds

The pastures in Cascade Reserve are moderately free of woody weeds, however there are small numbers of Wild Tobacco, Castor Oil, Lantana, and Poison Bush. The predominant woody weeds in remnant forest areas are African Olive, Porpieh, Hawaiian Holly, Wild Tobacco, and Lantana. William Taylor is a dominant ground cover in weedy areas. Some species currently present in small numbers have the potential to become major problems, including Morning Glory and two species of Asparagus Fern.

4.4.8.2. Rats

Both the Polynesian and Black Rat occur in the reserve. Rats feed on the seeds and fruits of a variety of native and introduced plants and predate a variety of terrestrial fauna, including snails and bird eggs and nestlings in bird nests. The post-war extinction of a number of fauna species, most notably birds and the native bats are likely to at least in part have been the result of predation by rats.

4.4.8.3. Cats

Feral cats are present and breed in the reserve. Cats mainly feed on vertebrate prey. Nesting birds are particularly vulnerable.

4.5. *Management Objectives*

Vision: To conserve and enhance the scenic quality and biodiversity of the reserve for the enjoyment of current and future generations of Norfolk Islanders and visitors and for the ongoing survival of its flora and fauna.

4.5.1. Cultural Heritage Management

Aim: To maintain the scenic quality and character of the reserve and protect important cultural heritage values.

Objectives:

- Preserve the landscape elements of Cascade Reserve.
- Conserve the landform and protect Phillipsburg and other First Settlement sites.
- Conserve the Cascade whaling station site.
- Conserve the weir and other historic relics associated with damming Cascade Creek.

4.5.2. Natural Heritage Management

Aim: To establish, improve and maintain native forest habitat in the reserve and to establish, enhance and protect native coastal cliff vegetation.

Objectives:

- Protect and rehabilitate native forest remnants.
- Protect wetland habitat in Cascade Creek.
- Protect and enhance native coastal cliff vegetation and breeding seabird habitat.
- Control invasive woody weeds in the reserve.
- Reduce rat and cat populations in the reserve.

4.5.3. Pest Species Management

Aim: To reduce the negative impacts of pest species in the reserve.

Objectives:

- Control invasive introduced weeds throughout the reserve.
- Reduce rat and cat populations in the reserve.

4.5.4. Recreation Management

Aim: To provide for appropriate public recreational and commercial use.

Objectives:

- Provide and maintain appropriate picnic facilities and amenities.
 - Provide and maintain safe public access in the reserve.
 - Manage impacts associated with public use of the reserve.
-
-

4.5.5. Education and Interpretation

Aim: To promote knowledge and understanding of Norfolk Island's cultural and natural history and issues related to conserving and managing Cascade Reserve.

Objectives:

- Develop a museum/interpretive centre on the Cascade whaling station site.
- Define and develop interpretation/education resource material specific to the reserve.
- Encourage scientific and educational activities in the reserve that contribute to the community's understanding of and public support for environmental conservation and management.

4.5.6. Stock Management

Aim: To minimise the negative impacts of cattle grazing.

Objective:

- Develop and implement appropriate techniques to provide controlled stock access to water and pasture while limiting impacts upon sensitive areas.
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4.6. Management Strategies and Actions

4.6.1. Cultural Heritage Management

4.6.1.1. Landscape

Coastal and pastoral scenery, with scattered mature native trees and patches of native forest are the primary landscape elements of Cascade Reserve. Maintaining and enhancing these elements will be important in planting designs and vegetation management.

Particular views that will be protected are:

- the pastoral landscape, scattered mature trees, ocean view and wooded hillsides from the south through Cockpit (Cascade Creek valley);
- the pastoral landscape of Cascade Hill, looking from the south-east;
- the pastoral landscape of the area between Cascade and Youngs Road, looking from the north-east, south and east;
- the coastal views from the Prince Phillip Drive lookout; and
- the coastal views from 'Fredick's Edge'.

4.6.1.2. Historic Sites

Robert Varman's report²¹ on historical and archaeological sites in Cascade Reserve identifies significant cultural heritage sites and provides guidance for management and interpretation.

Important sites that will be protected are:

- the Phillipsburg village site;
- Phillipsburg cemetery;
- Cascade Creek and valley, especially Cockpit and the cascades;
- Cascade farm and agricultural hut site (near Young's Road); and
- Cascade whaling station site.

4.6.1.3. Phillipsburg

Any road works, including maintenance, to Harpers Road between Cascade Road and the Harpers Road stone bridge could damage the Phillipsburg site. Any such works that are likely to affect the Cascade Reserve will require the prior written approval of the Conservator of Public Reserves. The Conservator of Public Reserves shall not approve any such works unless satisfied that the heritage values of the Phillipsburg site will not be damaged.

4.6.1.4. Phillipsburg Cemetery

The grass within the cemetery enclosure will be maintained by whipper snipper.

4.6.1.5. Cascade Creek and Cockpit

De-silting of the weir shall not be undertaken without the prior written approval of the Conservator of Public Reserves. Such approval shall only be granted after taking archaeological advice and being satisfied that the heritage values of the Cascade Creek and adjacent sites will not be damaged.

²¹ Varman, V.J.P. 1998. *Archaeological Zoning Plan: Phillipsburgh/Cockpit Historic Site. Part 1: Inventory; Part 2: Historical.* Consultant Report for the Norfolk Island Landcare Group. National Estates Grant Program.

No other works shall be permitted in Cascade Creek unless the Conservator of Public Reserves is satisfied such works are in the interests of the conservation and management of the reserve. In all such instances, the Conservator of Public Reserves shall seek archaeological advice prior to deciding whether to approve such activity.

The deteriorating concrete slabs, septic tank and paths at the former fish factory site will be removed. This site will be grassed and developed as a public recreation picnic area. Care will be taken to ensure that facilities and structures at the picnic area are designed and placed in a way that does not detract from the landscape or First Settlement heritage values of the site.

4.6.1.6. Cascade farm and agricultural hut site

This location is locally referred to as “Lily Oodoo’s” or “Aunt Lil’s”.

Rock and spoil from the Cascade cliff safety project has been temporarily stored on this site. All of this material will be removed from the reserve by 30 December 2003. In doing so, care will be taken not to disturb the original ground surface of the Cascade farm and agricultural hut site. Pasture will be re-established on this area.

4.6.1.7. Cascade Whaling Station site

Some elements of this site are deteriorating and require repair/restoration.

Undermined sections of the concrete terraces and steps will be filled and stabilised. The sea wall of the middle and lower terraces will be repaired using appropriate materials.

The condition of the steel digester on the middle terrace was assessed by the Director, Norfolk Island Museum in May 2000. This relic will be assessed by maritime archaeologists during the March 2002 Sirius wreck expedition.

It is unlikely that this last significant surviving piece of equipment from the modern whaling station will be conserved *in situ* without enclosing it in a protective structure of some kind. It is also unlikely that sufficient funds could be found to carry out the ongoing restoration and conservation work that would be necessary to conserve this relic if it is left exposed at the whaling station site.

The Cascade whaling station site would make an excellent location for a world class museum/interpretive centre that would emphasise and interpret the links between Polynesian settlement and heritage, First European settlement, and Pitcairner settlement and development. All are strongly linked through their dependence on and use of the resources of the sea. There are significant similarities in land use at Cascade by the first European settlers and the Pitcairners. The major elements of Pitcairn/Norfolk culture derive from Polynesian traditions and culture, especially relating to making craft and gathering and using food from the sea and the land. Whaling during the 19th century linked the Pitcairners with other cultures, in particular North America, resulting in changes to language and traditions. The modern whaling industry marks a transition from a subsistence economy to the development of today’s tourist industry. James Cook especially noted the abundance of whales around Norfolk. The Cascade whaling station museum would be a celebration of the contribution that whales and whaling have made to the people of Norfolk Island. Whaling also links Norfolk directly to conservation issues of global importance that are relevant to today’s and tomorrow’s generations.

A museum/interpretive centre at the Cascade whaling station site would also provide a venue for:

- administrative and curatorial space for the Norfolk Island Museum;
- local individuals and craft groups to utilise craft resources such as flax and Moo-oo growing in the reserve and to display/sell their work;
- meeting places for community groups (conservation, cultural); and
- visitors to watch activities at the jetty, including lighterage operations, perhaps from an open air deck with bar/restaurant.

Any building on the Cascade whaling station site would have to be sympathetically designed to fit the site, its history and landscape. A primary design requirement would be the aesthetic inclusion of the whaling station digester inside the museum/display space.

This project cannot proceed without community support and involvement. The community will be consulted on and involved in:

- the concept;
- funding;
- design selection;
- construction; and
- use and management.

The capital funding required to construct a Cascade whaling station museum/interpretive centre is beyond the resources of the Administration of Norfolk Island. It would also require funds greater than could be raised through the usual community fund raising avenues in the community.

A “Norfolk Island Environment and Heritage Trust” will be established under appropriate legislation to provide a vehicle through which funds that might be donated by individuals, institutions, and governments on and off the island can be accumulated. To ensure that funds are properly accounted for and are properly directed the Trust will be publicly accountable and managed through a statutory office that acts with advice from a community-based committee.

If this concept gains community support and sufficient funds can be raised, an appropriate target date for opening the proposed Cascade whaling station site museum/interpretive centre would be 8 June 2006, the 150th anniversary of the arrival of the Pitcairn Islanders on Norfolk in 1856.

4.6.1.8. *Traditional Craft Plants*

The coastal cliffs and hillsides at Cascade were originally covered in Native Flax and Moo-oo. Other plants used for traditional crafts, such as Ti, Norfolk Palm, and Drain Flags were probably also common.

To increase the availability of suitable raw material, a number of traditional craft plants have been planted in the forest rehabilitation area established on Broken Bridge Creek by the Norfolk Island Landcare Group. This area is small but easily accessed. It is intended to establish Native Flax and Moo-oo on the hillsides near the cascades and the whaling station site. Other traditional species will be planted in forest remnants.

4.6.2. Natural Heritage Management

4.6.2.1. *Habitat Rehabilitation*

The coastal cliff from the western boundary of the reserve to the whaling station and including the falls area at Cockpit will be fenced and allowed to regenerate with appropriate planting in the steeper areas. Ongoing weed control will prevent further weed establishment. Native species such as Moo-oo and Native Flax will be planted on steep slopes in the falls area and between the falls to maintain the character of the cultural landscape and recreate the original coastal vegetation. Cattle will be excluded from Cascade Creek to enable creek vegetation to regenerate naturally.

A post and rail fence will be constructed along the section of Cascade Creek adjacent to Harpers Road to prevent stock access to the remnant vegetation and creek. The exact location of this fence will be determined in the light of archaeological advice. The material dug from fence post holes will be examined for archaeological remains.

Rehabilitation of remnant forest areas will be undertaken in the following sequence:

1. East ridge of Cascade Creek, between Harpers Road stone bridge and Broken Bridge creek
 - remove weeds;
 - plant native species.
2. Youngs Road valley
 - remove woody weeds.
3. Slopes on east side of Cascade Creek between Broken Bridge Creek and the weir
 - electrify fence;
 - remove woody weeds;
 - plant native species.
4. Valley between Prince Phillip Drive and western boundary of the reserve
 - fence to exclude cattle;
 - remove woody weeds;
 - plant native species.

4.6.2.1.1 **Rehabilitation Planting**

Restoration of native forest habitat through natural regeneration will be enhanced by the removal of competitive weed species. Where necessary, appropriate native species will be planted to increase the density and diversity of the native forest. Seed will be spread by hand to enhance the natural regeneration of flax and other colonising native flora on the cliffs.

Additional native trees will be planted in pallets in the areas of the reserve grazed by cattle.

The disused section of Red Road within the reserve is badly eroded. This section of the road will be filled, shaped, and then grassed.

Tree planting programs in cooperation with the local community will be encouraged.

4.6.2.2. *Significant Species*

There are a number of species of flora and fauna in the reserve that are vulnerable or endangered. Their survival will be maximised by improving native habitat diversity and by controlling weeds and vertebrate pests.

4.6.3. Pest Species Management

4.6.3.1. Weed Control

Weeds in the pasture areas of the reserve can be largely controlled by hand clearing. However, it may be appropriate to slash some areas periodically.

Wherever practical, weeds (such as Kikuyu, Ipomoea, Lantana, African Olive, Porpieh and Hawaiian Holly) in the reserve will be removed by hand. Herbicides will be used where disturbance would affect soil stability or other native species.

The long-term weed control strategy in the reserve will be based on:

- maintaining a healthy native forest cover;
- removing young weeds by hand;
- appropriate use of herbicides and minimum disturbance control techniques;
- mulching bare areas where practical to reduce erosion, retain soil moisture, and inhibit reinfestation;
- intensively controlling weeds along the creek and in tree fall clearings, with supplementary planting of native species as necessary; and
- mechanised weed control in public areas and grazing areas.

Grassed areas near the road, car parking area and public facilities will be maintained by slashing and or mowing. Slashing will also be used to control weeds on flatter parts of the reserve. Cattle grazing will continue to maintain grass in unfenced areas of the reserve.

4.6.3.2. Rat Control

A seasonal rat baiting program will be established in areas with vulnerable flora and fauna. Rat control should also reduce the predation pressure on other birds that are now uncommon in the reserve, such as the Norfolk Island Green Parrot, Norfolk Island Boobook Owl, Scarlet Robin, Golden Whistler and Grey Fantail.

4.6.3.3. Cat Control

Live trapping of cats in the reserve will be implemented periodically.

4.6.3.4. Fungus control

The incidence and effect of *Phellinus noxius* in the reserve will be monitored and minimised by enhancing forest diversity and minimising disturbance and damage to tree butts and roots.

4.6.4. Recreation Management

Cascade Reserve is an important recreation area.

4.6.4.1. Vehicle Parking

Vehicle parking is available at the Cascade whaling station site and along Cascade Road towards the jetty.

Timber vehicle control barriers will be erected to define vehicle parking at Cockpit. Site plans to develop a recreation area at the former fish factory site will incorporate a formed parking area.

4.6.4.2. *Walking Tracks*

There are no formal walking tracks in the reserve. A warning sign will be erected at the informal track that leads to the cliffs and lower Cascade. A fence will be erected to exclude cattle from the cascades and steeper hillsides.

4.6.4.3. *Picnic and BBQ Facilities*

Barbecue and picnic facilities in the reserve are inadequate. A picnic and barbecue area will be developed at the former fish factory site. Designs for this picnic area will be subject to public consultation.

The location and number of picnic/barbecue facilities in the reserve will be reviewed periodically by the Conservator of Public Reserves.

4.6.4.4. *Rubbish*

The number, type, and location of rubbish bins in the reserve will be reviewed periodically by the Conservator of Public Reserves.

4.6.4.5. *Public Toilets*

There are no public toilet facilities in the Cockpit area. However, there is a public toilet at the Cascade whaling station site. This facility is in good condition and is adequate for current use.

4.6.5. Education and Interpretation

Community education and interpretation will centre on the Cascade whaling station site museum/interpretation centre. Other locations in the reserve may be used to interpret natural processes, flora and fauna, and particular historic sites.

4.6.5.1. *Interpretation Strategy*

An Interpretation Strategy and interpretive material for Cascade Reserve will be developed as resources become available. The principal interpretation and education themes in the reserve will be:

- natural habitats;
- significant species;
- conservation, land management and the environment; and
- impacts of human activity and sustainable resource use.

Community involvement in the development and delivery of the Interpretation Strategy is encouraged.

4.6.5.2. *Signs*

A warning sign will be erected near the cascades to warn the public to take special care if they use the informal walking track to the cascades and foreshore.

Signs will be designed and erected in appropriate locations to provide visitors with information about the natural and cultural features of the reserve if required by the interpretation strategy. These signs may include the location of major features, parking area and facilities, safety warnings, and location and direction signs.

4.6.5.3. *School Visits*

The Norfolk Island Parks and Forestry Service will encourage, and where possible assist with, appropriate school visits to the reserve which are designed to provide an understanding of Norfolk's natural and cultural heritage and aimed to encourage students to participate in environmental protection, research, and rehabilitation.

4.6.5.4. Tours

The development of a museum/interpretation centre would make a significant contribution to the promotion of Norfolk Island's culture and economy, will reduce some of the pressure on other facilities on the Island and offer a unique cultural experience that differs from other activities presently available on Norfolk Island. The Norfolk Island Parks and Forestry Service will encourage, and where possible assist with, appropriate walking tours in the reserve that are designed to provide visitors with an understanding of Norfolk's natural and cultural heritage.

4.6.5.5. Community Group

A community interest group will be encouraged to assist in the development and implementation of management programs in Cascade Reserve.

4.6.6. Stock Management

Cattle will be excluded from:

- coastal slopes and hillsides from the western boundary of the reserve to the Cascade whaling station site,
 - and including the area downstream from the weir on Cascade Creek and between the cascades;
- Cascade Creek from the Harpers Road stone bridge to the Cockpit picnic area;
- native forest remnants along the eastern side of Cascade Creek; and
- native forest remnant in the gully between Prince Phillip Drive and the western boundary of the reserve.

4.6.7. Forestry

Trees will not be taken for timber from the reserve, unless to do so is considered by the Conservator of Public Reserves to be in the interests of the conservation and management of the reserve.

4.7. Research and Monitoring

The Conservator of Public Reserves will develop a strategy for conducting research and for monitoring the effectiveness of management programs in the reserve. Photopoints will be established in significant areas. A photographic record will be kept of all stages of project implementation. Where practical, alternative techniques will be trialed to assess management strategies and effects.

4.8. *Controlled Activities*

This Section shall be read in conjunction with Section 11 of the Plan of Management (Part A) and the *Public Reserves Act 1997*.

Section 11 of the Plan of Management (Part A):

- approves specific controlled activities, with respect to all public reserves;
- provides general guidelines in respect of granting approvals and permits for controlled activities, with respect to all public reserves;
- specifies activities²² in accordance with section 47(2) of the *Public Reserves Act 1997* that shall not be undertaken in any public reserve without a permit; and
- provides general guidelines in respect of granting permits for activities specified in accordance with section 47(2) of the Act.

This section of the Plan of Management (Part B) specifies controlled activities in accordance with Section 47 of the *Public Reserves Act 1997* in relation to the use of Cascade Reserve.

4.8.1. Camping

Camping shall not be permitted in Cascade Reserve.

4.8.2. Vehicles

Private and commercial motor vehicles other than plant and equipment may be driven and temporarily parked on the access track to the former fish factory site at Cockpit.

²² The activities specified are additional to the Controlled Activities prescribed in Part V of the *Public Reserves Act 1997*.