Draft NSW & National Recovery Plan

Recovery Plan for the Jervis Bay Leek Orchid (*Prasophyllum affine*)

Draft for Public Comment

April 2003

Natural Heritage Trust

Helping Communities Helping Australia

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Recovery Plan for the Jervis Bay Leek Orchid (*Prasophyllum affine*)

Executive Summary

This document constitutes the formal draft National and New South Wales State Recovery Plan for the Jervis Bay Leek Orchid *Prasophyllum affine*. It considers the conservation requirements of the species across its known range, identifies the future actions to be taken to ensure the long-term viability of the Jervis Bay Leek Orchid in nature and the parties who will carry these out.

The Jervis Bay Leek Orchid is listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and as Endangered (Schedule 1, Part 1) on the NSW *Threatened Species Conservation Act 1995*. It is a ground orchid which grows to 50 cm in height and flowers from late October until late November. This species occurs only in NSW, where it is confined to three areas, Kinghorne Point, Wowly Gully near the town of Calalla Bay, and near the township of Vincentia. These three areas are in the vicinity of Jervis Bay, south-east of Nowra on the NSW South Coast.

The future Recovery Actions detailed in this Recovery Plan include; (i) further survey of potential habitat (ii) monitoring known populations and investigating the ecology of the Jervis Bay Leek Orchid (iii) protection of all known sites and (iv) maintenance of an effective Recovery Team.

It is intended that this Recovery Plan will be implemented over a five-year period. Much of the Plan will be implemented using the existing resources of NSW Government agencies, community-based groups and Commonwealth Natural Heritage Trust funding already provided for this purpose. An additional $31,700 will be required to implement some currently unfunded actions.

Brian Gilligan
Director-General

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1 Introduction

The Jervis Bay Leek Orchid (*Prasophyllum affine* Lindl.) is a ground orchid that is only readily visible for about a month after flowering commences in late October. It occurs only in New South Wales and is currently known from three areas, Kinghorne Point, Wowly Gully near the town of Calalla Bay, and near the township of Vincentia. All areas are located in the vicinity of Jervis Bay, south-east of Nowra on the NSW South Coast.

This document constitutes the formal draft National and State Recovery Plan for the Jervis Bay Leek Orchid. It considers the requirements of the species across its known range, identifies the actions to be taken to ensure its long-term viability in nature and the parties who will carry these out.

The attainment of the objectives of this Recovery Plan is subject to budgetary and other constraints affecting the parties involved. It is also subject to amendments, if necessary. The information this Recovery Plan is accurate to April 2003.

This draft will be placed on public exhibition for a period of six weeks. Readers are invited to comment on its contents. Further information regarding the submission process and a submission form can be found at the rear of this plan.

2 Legislative Context

2.1 Legal Status

The Jervis Bay Leek Orchid is listed as Endangered under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Endangered (Schedule 1, Part 1) on the NSW *Threatened Species Conservation Act 1995* (TSC Act).

Among the consequences of listing a threatened species on the TSC Act are:

- a Recovery Plan must be prepared for the species;
- consideration must be given to the species when assessing the impacts of developments and activities, with the aim of minimising adverse impacts; and
- other actions that are likely to result in the harming or picking of that species or damage its habitat are licensed.

2.2 Recovery Plan Preparation

The TSC Act provides a legislative framework to protect and encourage the recovery of threatened species, endangered populations and endangered ecological communities in NSW. Under this legislation the Director-General of National Parks and Wildlife (NPW) has a responsibility to prepare Recovery Plans for all species, populations and ecological communities listed as Endangered or Vulnerable on the TSC Act schedules. Similarly, the EPBC Act requires the Commonwealth Minister for the Environment ensures the preparation of a Recovery Plan for nationally listed species and communities or adopt plans prepared by others, including those developed by State agencies. Both Acts include specific requirements for the matters to be addressed by Recovery Plans and the administrative process for their preparation.

This Recovery Plan has been prepared to satisfy both the requirements of the TSC Act and the EPBC Act. It is the intention of the Director-General of NPW to forward the final version of this Recovery Plan to the Commonwealth Minister of the Environment for adoption, once it has been approved by the NSW Minister for the Environment.

2.3 Recovery Plan Implementation

The TSC Act requires that a public authority must take any appropriate measures available to implement actions included in a Recovery Plan for which it has agreed to be responsible. Public authorities and councils identified as responsible for the implementation of Recovery Plan actions are required by the TSC Act to report on measures taken to implement those actions. In addition, the Act specifies that public authorities must not make decisions that are inconsistent with the provisions of a Recovery Plan. The main Government agencies relevant to this Plan are the New South Wales National Parks and Wildlife Service (NPWS) and Shoalhaven City Council (SCC).

The EPBC Act specifies that a Commonwealth agency must not take any action that contravenes an approved Recovery Plan.

2.4 Relationship to Other Legislation

The lands on which the Jervis Bay Leek Orchid occurs include those that are owned or managed by SCC, NPWS and privately owned land. Relevant NSW and Commonwealth legislation includes:

- NSW *National Parks and Wildlife Act 1974*
- NSW *Environmental Planning and Assessment Act 1979*
- NSW *Local Government Act 1993*
- NSW *Rural Fires Act 1997*
- NSW *Native Vegetation Conservation Act 1997*

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

The interaction of these Acts with the TSC Act legislation is varied. The most significant implications are described below and in Section 2.5.

The clearing of more than 2 hectares of native vegetation in NSW is subject to consent from the Department of Land and Water Conservation (DLWC) in accordance with the NSW *Native Vegetation Conservation Act 1997* (NVC Act). The Act is integrated with the *Environmental Planning and Assessment Act 1979* (EP&A Act), and requires that threatened species are taken into account when considering clearing applications under Part 4 of the EP&A Act. There are however, a series of exemptions and the NVC Act does not apply to certain types of land, including land zoned as 'residential', 'township', 'village', 'industrial', or 'business'. The land where the species occurs at Vincentia has a variety of zonings including 3 (a) Business Retail (SCC 1985 LEP and amendments) on the Retail Commercial area, 5 (c) Special Uses (SCC 1985 LEP and amendments) on the Leisure Centre area, 2 (c) Residential (SCC 1985 LEP and amendments) on the proposed Residential site and 1 (b) Rural (SCC 1985 LEP and amendments) on the Wirriliko Road site. The population of Jervis Bay Leek Orchid occurring at Kinghorne Point is on land that is zoned is zoned for Environmental Protection 7 (f3) (Foreshore Protection) (SCC 1985 LEP and amendments). The NVC Act thus applies to the Jervis Bay Leek Orchid occurrences at both Kinghorne Point and on the Wirriliko Road site.

The Act also allows for the development of Regional Vegetation Management Plans. Matters relating to threatened species and their habitats must be considered when preparing such a plan. Furthermore a Regional Vegetation Management Plan must be consistent with a Recovery Plan.

The *Rural Fires Act 1997* requires that all parties involved in fire suppression and prevention must have regard to the principles of Ecologically Sustainable Development (ESD) when exercising their functions and when preparing Draft Operational Plans and Draft Bush Fire Risk Management Plans. Consideration of the principles of ESD must include the conservation of biological diversity and ecological integrity. Within this, consideration must be given to the impact on threatened species and their habitats.

2.5 Environmental Assessment

New South Wales

The New South Wales *Environmental Planning and Assessment Act 1979* (EP&A Act) requires that consent and determining authorities, and the Director-General of National Parks and Wildlife, as a concurrence authority, consider relevant Recovery Plans when exercising a decision-making function under Parts 4 and 5 of the EP&A Act. Decision-makers must consider known and potential habitat of threatened species, biological and ecological factors and the regional significance of individual populations when undertaking s.5A (eight-part test) assessments.

The following public authorities currently have a decision making function in relation to the Jervis Bay Leek Orchid:

- SCC as both a consent authority and the owner of land which has the species present;
- The NPWS where a concurrence or consultation role under the EP&A Act is required (all tenures); or where a Section 91 Licence (under the TSC Act) or a Section 132 Licence (Licence to grow protected or threatened plants for sale) (under the NPW Act) is required (all tenures);
- the Department of Land and Water Conservation in relation to private land under the requirements of the NVC Act and in relation to provisions for integrated development 40 metres from a watercourse.

Any other activity not requiring development consent under the EP&A Act, and which is likely to have a significant impact on the Jervis Bay Leek Orchid, requires a Section 91 licence from the Director-General of NPW under the provisions of the TSC Act. Such a licence can be issued with or without conditions, or can be refused. Routine agricultural activities however, are exempt from the provisions of the TSC Act. This means, for example, that if populations of the Jervis Bay Leek Orchid occur on private rural land, in some circumstances they can legally be subject to grazing by domestic stock under the provisions of the TSC Act.

Commonwealth of Australia

The EPBC Act regulates actions that may result in a significant impact on nationally listed threatened species and ecological communities. It is an offence to undertake any such actions in areas under State or Territory jurisdiction, as well as on Commonwealth-owned areas, without obtaining prior approval from the Commonwealth Environment Minister. As the Jervis Bay Leek Orchid is listed nationally under the EPBC Act, any person proposing to undertake actions likely to have a significant impact on this species should refer the action to the Commonwealth Minister for the Environment for consideration. The Minister will then decide whether the action requires EPBC Act approval.

Administrative guidelines are available from Environment Australia to assist proponents in determining whether their action is likely to have a

significant impact. In cases where the action does not require EPBC Act approval, but will result in the death or injury of an individual Jervis Bay Leek Orchid and the member is in, or on a Commonwealth area, a permit issued by the Commonwealth Minister under the EPBC Act, will be required.

The Environment Minister can also delegate the role of assessment and approval to other Commonwealth Ministers under a Ministerial Declaration, and to the States and Territories under bilateral agreements. The development of a bilateral agreement between NSW and the Commonwealth is not yet complete, but when in place will avoid the need for duplication of environmental assessment.

2.6 Critical Habitat

New South Wales

The TSC Act makes provision for the identification and declaration of Critical Habitat. Under the TSC Act, Critical Habitat may be identified for any endangered species, population or ecological community occurring on NSW lands. Once declared, it becomes an offence to damage Critical Habitat (unless the action is exempted under the provisions of the TSC Act) and a Species Impact Statement is mandatory for all developments and activities proposed within declared Critical Habitat.

To date, Critical Habitat has not been declared for this species under the TSC Act. However, declaration of Critical Habitat for the Jervis Bay Leek Orchid will be considered within the life of this Plan.

Commonwealth of Australia

Under the EPBC Act, Critical Habitat may be registered for any nationally listed threatened species or ecological community. When adopting a Recovery Plan the Federal Minister for the Environment must consider whether to list habitat identified in the Recovery Plan as being critical to the survival of the species or ecological community. It is an offence under the EPBC Act for a person to knowingly take an action that will significantly damage Critical Habitat (unless the EPBC Act specifically exempts the action). Although this offence only applies to a Commonwealth area, any action that is likely to have a significant impact on a listed species occurring within registered Critical Habitat on other areas is still subject to referral and approval under the EPBC Act. Proposed actions within registered Critical Habitat on non-Commonwealth areas are likely to receive additional scrutiny by the Commonwealth Minister.

This Plan does not specifically identify habitat that is critical to the survival of the Jervis Bay Leek Orchid. However, NPWS considers that the areas critical to the survival of the species must include as a minimum all habitat currently occupied by it. The distribution, habitat and ecological information included in this Plan (sections 3.2 – 3.6) would assist the Federal Minister for the Environment in identifying habitat that is critical to the survival of this species. NPWS does not consider it appropriate that this Recovery Plan identifies or maps the occurrences of this species in the detail that would be required to define the Critical Habitat.

3 Species Information

3.1 Description and Taxonomy

The Jervis Bay Leek Orchid is from the group of terrestrial orchids known as Leek Orchids. Individual plants produce a single flowering stem up to 50 cm tall which bears up to 35 flowers (each about 9 mm across) in a moderately dense spike comprising the top third of the stem.

Bernhardt & Rowe (1993) described the Jervis Bay Leek Orchid as follows:

Leaf to 50 cm long, the apical part usually withered at flowering. Scape to 40 cm tall with up to 35 flowers in a broad, crowded spike. Flowers 7-9 mm wide, on slender ovaries, pale green, pink, brownish or purplish, lightly scented. Dorsal sepal ovate- lanceolate, to 10 mm x 5 mm. Lateral sepals linear-lanceolate, to 8 mm x 2.5 mm, free or united in the basal half, curved backwards, nearly parallel. Petals linear, to 7.5 mm x 2.5 mm, with pale margins. Labellum broadly ovate-lanceolate, to 8 mm x 5.3 mm, with a short basal claw, broad in the basal half then narrowed to a tail, bent back at right angles near the middle, the distal margins entire. Callus broad, fleshy, yellowish green, smooth, ending about 1 mm from the labellum apex. Column with narrow, curved appendages about 2.5 mm long.

Note: Flower colour is variable, both within and between sites, with plants in some populations having predominantly pale green to yellowish flowers, whereas in other populations they are predominantly brownish green to purple.

3.2 Distribution

The Type Locality for the Jervis Bay Leek Orchid is Port Jackson, NSW (between South Head and Botany Bay), but there have not been any collections there since 1803.

The species is currently known from three areas, Kinghorne Point, Wowly Gully near the town of Callala Bay, and near the township of Vincentia. These three areas are situated in the vicinity of Jervis Bay, south-east of Nowra on the NSW South Coast (see Figure 1).

Targeted surveys for the species were carried out in 2000 and more extensively in 2001, covering a large proportion of the identified potential habitat within the Jervis Bay area. Further targeted surveys may locate additional populations in the Jervis Bay area in those areas of potential habitat which were not intensively searched during 2001. However, based on the few additional sites found during the 2001 surveys, the distribution of the species is not expected to be much greater than that which is currently known.

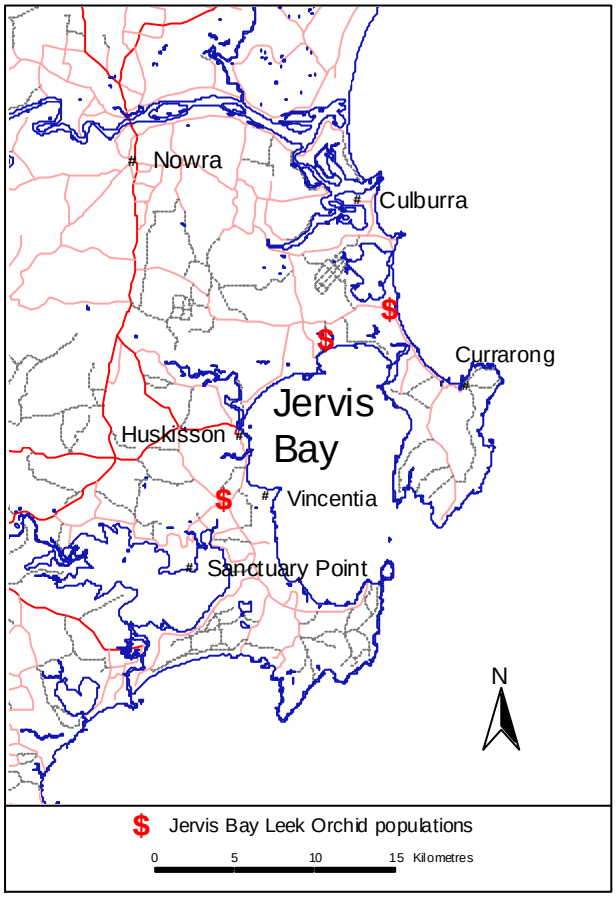

Figure 1: Current distribution of the Jervis Bay Leek Orchid

3.3 Land Tenure

The Kinghorne Point population of the Jervis Bay Leek Orchid is mainly located on freehold land, although a small part of the population occurs on a road easement owned by SCC. At Vincentia, the populations occur both on freehold property and on land owned by SCC. The areas occupied by the Jervis Bay Leek Orchid west of Currarong road near Kinghorne Point, and at Wowly Gully near the township of Callala Bay, occur within the NSW Jervis Bay National Park.

3.4 Habitat

The sites where this species occurs are characterised by having poorly drained grey-brown clay soils that support low heathland and sedgeland communities.

At Vincentia the Jervis Bay Leek Orchid occurs in two slightly different habitats. On the Vincentia Leisure Centre, the adjoining Residential area and the Wirriliko Road site the habitat is heathland-sedgeland, whereas on the proposed Vincentia Retail Commercial area the habitat is primarily sedgeland.

Vincentia Leisure Centre, adjoining proposed Residential area and Wirriliko Road site

The heathland-sedgeland vegetation is dominated by the shrubs; Sheoak (*Allocasuarina paludosa*), Mountain Devil (*Lambertia formosa*), Drumsticks (*Isopogon anemonifolia*), Broad-leaved Hakea (*Hakea dactyloides*) and a Wattle (*Acacia* sp.). The ground layer is dominated by Fish Bones (*Lomandra obliqua*), Silky Purple Flag (*Patersonia sericea*), *Ptilothrix deusta* and sedges. Other associated species include Banksia (*Banksia ericifolia*), Dagger Hakea (*Hakea teretifolia*), Rice Flower (*Pimelea linifolia*), Milkmaids (*Burchardia umbellata*), Many-flowered Mat-rush (*Lomandra multiflora*), Matcheads (*Comesperma ericinum & C. sphaerocarpum*), Devil's Twine (*Cassytha glabella*), Kangaroo Grass (*Themeda australis*), Eyebright (*Euphrasia collina*), Tall Leek Orchid (*Prasophyllum elatum*), Slender Onion Orchid (*Microtis parviflora*), *Epacris microphylla*, *Cyathochaeta diandra*, *Dampiera stricta*, *Mirbelia rubiifolia*, *Melaleuca thymifolia*, *Hibbertia riparia*, *Gompholobium* sp. and *Pultenaea* sp..

K. Mills (Kevin Mills and Assoc. Pty Ltd., pers. comm.) recorded additional species on the site at low densities. These included Peach Heath (*Lissanthe strigosa*), Wiry Panic (*Entolasia stricta*), Dwarf Blue Trumpet (*Brunoniella pumilio*), Twigrush (*Baumea juncea*), *Goodenia bellidifolia* and *Xanthosia tridentata*.

Proposed Vincentia Retail Commercial Area

The sedgeland vegetation contains species that prefer wetter sites and includes scattered shrubs of Sheoak (*Allocasuarina paludosa*), Mountain Devil (*Lambertia formosa*), Drumsticks (*Isopogon anemonifolia*), Hairpin Banksia (*Banksia ericifolia*) and Broad-leaved Hakea (*Hakea dactyloides*). Other associated species include Dagger Hakea (*Hakea teretifolia*), Guinea Flower (*Hibbertia riparia*), Rice Flower (*Pimelea linifolia*), Matcheads (*Comesperma ericinum*), Wallaby Grass (*Austrodanthonia tenuoir*), Kangaroo Grass (*Themeda australis*), Mat-rush (*Lomandra obliqua*), Eyebright

(*Euphrasia collina*), Milkmaids (*Burchardia umbellata*), Tall Leek Orchid (*Prasophyllum elatum*), Yellow Stars (*Hypoxis hygrometrica*), Tiger Orchid (*Diuris sulphurea*), Slender Sun Orchid (*Thelymitra pauciflora*), Fringed Midge Orchid (*Genoplesium fimbriatum*), Dotted Sun Orchid (*Thelymytra ixioides*), Short-lipped Leek Ochid (*Prasophyllum brevilabre*), Silky Purple Flag (*Patersonia sericea*), *Darwinia leptantha*, *Thelionema caespitosum*, *Mirbelia rubiifolia*, *Cyathochaeta diandra*, *Lepyrodia scariosa*, *Ptilothrix deusta*, *Pultenaea* sp., *Gompholobium* sp., *Billardieria* ?*procumbens* and a number of sedge species.

Kinghorne Point, Currarong

The Kinghorne Point site supports heathland vegetation with emergent clumps of a mallee form of Red Bloodwood (*Corymbia gummifera*). The community is dominated by shrubs such as Black Sheoak (*Allocasuarina paludosa*), Coast Banksia (*Banksia paludosa*), Dagger Hakea (*Hakea teretifolia*), Drumsticks (*Isopogon anemonifolia*) and *Melaleuca thymifolia*. Other associated species include Mountain Devil (*Lambertia formosa*), Broad-leafed Hakea (*Hakea dactyloides*), Matchheads (*Comersperma ericinum*), Rice Flower (*Pimelea linifolia*), Silky Purple Flag (*Patersonia sericea*), Fish Bones (*Lomandra obliqua*), Fringe Lily (*Thysanotus tuberosus*), Golden Spray (*Viminaria juncea*), False Sarsparilla (*Hardenbergia violaceae*), Sweet-scented Wattle (*Acacia suaveolens*), Broad-leaved Geebung (*Persoonia levis*), Eyebright (*Euphrasia collina*), Wiry Panic (*Entolasia stricta*), Rosy Baeckea (*Baeckea ramoissima*), Milkmaids (*Burcharia umbellata*), Small St. John's Wort (*Hypericum gramineum*), Trigger Plant (*Stylidium gaminifolium*), Slender Stackhousia (*Stackhousia viminea*), Guinea Flower (*Hibbertia riparia*), Sydney Golden Wattle (*Acacia longifolia*), Devil's Twine (*Cassytha glabella*), Tiny Sun Orchid (*Thelymitra carnea*), Wattle (*Acacia* sp.) *Billardieria procumbens*, *Caesia calliantha*, *Goodenia bellidifolia*, *Lissanthe strigosa*, *Xanthosia tridentata*, *Xathorrhoea concava*, *Darwinia fascicularis*, *Craspedia* sp., *Lomandra* sp., *Leptospermum* sp. and *Hybanthus* sp.

3.5 Ecology

General biology of Leek Orchids

The genus *Prasophyllum*, commonly known as Leek Orchids, comprises about 80 species, predominantly distributed in southern and eastern Australia, with a few in New Zealand (Jones 2000). Flowering plants consist of a single hollow, ephemeral, leek-like leaf, an underground tuber that is replaced annually, and a single flower spike bearing few to many flowers, depending on the species. The flower spike grows within the hollow leaf, emerging through a weak point of the leaf below the apex (Bower 2002).

General studies on the pollinators of *Prasophyllum* species have indicated that beetles tend to pollinate the larger species, whilst native wasps and native bees pollinate the smaller species (D. Jones, pers. comm.). Generally these insects seek the nectar in the flower. In the absence of suitable insects most orchid species will not set seed. The seed is dust-like and is wind dispersed.

Leek orchids do not necessarily flower every year, often skipping years when rainfall has not occurred prior to the flowering period (Jones, pers. comm.). Although successful flowering and reproduction is likely to be dependent on favourable weather and habitat conditions, the factors which influence flowering behaviour are poorly understood.

Leek orchids generally die back after the flowering and fruiting phases and exist only as a dormant tuber for much of the year.

Life Cycle

The Jervis Bay Leek Orchid is dormant over summer and it is believed to begin producing a leaf in late winter/early spring. The leaf can be up to 50 cm long and remains until after the flower spike emerges from near the leaf apex in late October/early November.

Prior to a study conducted by Bower in November 2001, the pollination biology of the Jervis Bay Leek Orchid was not known. This recent study found that the pollinators of *Prasophyllum affine* were a variety of wasps and ants (Hymenoptera) from five families/subfamilies. The most important group were the Flower Wasps (Thynninae), which dominated at both the Vincentia District Centre (*Neozeleboria* sp.) and Kinghorne Point (*Lophocheilus anilitatus*) sites (Bower 2002).

Bower also reported that the main flowering period for the Jervis Bay Leek Orchid in 2001 was from the 30th October to the 18th November, lasting three weeks. Fruits were ripe by mid December 2001. It was observed that the first flowers to open were those about a third of the way up the spike from the lowest bud. Flowers then open progressively above and below this point. The last flowers to open were the topmost buds. The percentage of the observed population of Jervis Bay Leek Orchid that developed fertilised seed pods were 34.7 % at Vincentia and 4.1% at Kinghorne Point (Bower 2002).

Population Size and Structure

Surveys in November 2000 located a total of 112 individuals of the Jervis Bay Leek Orchid within the two known sites at Vincentia and Kinghorne Point. At Vincentia a total of 42 plants were found, with 9 individuals on the Leisure Centre area and 33 on the Vincentia Retail Commercial area. At Kinghorne Point 70 individuals were observed within a road easement and the adjacent freehold land.

Detailed surveys in November 2001, including searches of additional identified potential habitat of the Jervis Bay Leek Orchid located 1,146 individuals. At the Vincentia sites 161, 45, 91 and 5 individuals were found at the Vincentia Retail Commercial area, Leisure Centre area, adjoining proposed Residential area and Wirriliko Road site respectively. At Kinghorne Point 80 individuals were observed on the road easement and 683 on the adjacent privately owned freehold land. In Jervis Bay National Park 12 individuals were found in the area near Kinghorne Point and 69 at Wowly Gully near the town of Calalla Bay. In 2001 there were between five and ten times as many plants at some sites than had been recorded in the November 2000 surveys.

As a result of the drought conditions experienced in 2002, none of the 154 flowering Jervis Bay Leek Orchid plants that had been marked in the monitoring plots in 2001 had produced either a leaf or a flower spike as of November 13, 2002. Similarly, no Jervis Bay Leek Orchid flowers or leaves were observed outside of the monitoring plots.

At present virtually nothing is known about the age structure of plants in the population, the longevity of individuals, nor the time required for seedlings to reach a reproductive stage. Current recruitment rates have not been determined, and it is not known whether recruitment occurs at a steady rate or occurs in pulses influenced by seasonal conditions. Monitoring plots were established at both Kinghorne Point and Vincentia in November 2001 and it is expected that these plots will yield information on the population dymamics of the species.

Disturbance Regimes

The habitat which supported the population of the Jervis Bay Leek Orchid at Kinghorne Point was slashed in 1995. The slashing left the remaining vegetation to an average height of 10-15 cm (P. Howell, Realty Realizations, pers. comm.; J. Briggs, NPWS, pers. comm.). Part of this area was slashed again in 1997/98. This slashing is not considered to have had a lasting negative impact on the Jervis Bay Leek Orchid, as this population has persisted, with relatively high numbers recorded in 2001. In November 1996 numerous Jervis Bay Leek Orchid plants were observed both on the unslashed road easement at Kinghorne Point and on the adjacent slashed areas (J. Briggs, pers. comm.).

The known sites where the Jervis Bay Leek Orchid occurs do not appear to have been subject to frequent fire. The Kinghorne Point site has not been burnt for at least 30 years (Gary Phillis, pers. comm.). There is a record held at Council of a hazard reduction burn that occurred adjacent to the Kinghorne Point area in 1990, however an accurate map of the fire boundary is not available. At Vincentia there was a fire on part of the site in 1994 and in 1998, however the abundance of *Banksia ericifolia* (a fire sensitive species), at the site indicate that fires have not been as frequent in the past.

The results of a trial burn undertaken at Kinghorne Point in autumn 2000 suggest that autumn burning has had a neutral impact on the population size of the Jervis Bay Leek Orchid (population sizes increased by a similar amount in both burnt and unburnt areas). Similarly, the slashing appeared to also have a neutral effect.

Fire and slashing are more likely to have an impact on the Jervis Bay Leek Orchid, as with other *Prasophyllum* species, if the habitat is burnt or slashed whilst the species is in leaf, flower or fruit. Such events would potentially destroy a season's reproductive effort and perhaps weaken the tubers by reducing the photosynthetic period of the growing season, possibly resulting in reduced flowering the following season.

There are indications that slashing of a site (Wirriliko Road site) at Vincentia in mid winter 2001 probably prevented some of a previously unrecorded population of the Jervis Bay Leek Orchid from flowering in November 2001. Some late flowering plants appeared on this site, but no plants were found when the majority of other populations were known to be flowering elsewhere. This observation suggests that only those plants whose leaves emerged late, after the slashing, were able to flower in 2001.

3.6 Ability of Species to Recover

Providing that threats to the current populations and other potential threats can be controlled with the cooperation of the landowners, there appears to be no reason that the Jervis Bay Leek Orchid cannot be maintained in the its natural habitat in the long term.

4 Management Issues

Threats to the long-term survival of this species are those associated with proposed urban development, changes to agricultural activities and increased public use of the areas where the species occurs.

Kinghorne Point, Currarong

At Kinghorne Point, part of the population occurs along a road easement which is used by 4WD vehicles to access the beach at Kinghorne Point. This road is in very poor condition and the vegetated verges where the Jervis Bay Leek Orchid occurs are being rapidly destroyed by vehicle traffic.

Most of the population at Kinghorne Point is on freehold land zoned for environmental protection (although existing-use rights operate). This area is currently subject to low levels of stock grazing. Provided gazing levels are not increased and the area is not fertilised nor pasture improved then the population of the Jervis Bay Leek Orchid on this land can be expected to survive. There are indications that slashing at certain times of the year is detrimental and frequent slashing may also have long term negative impacts. It is thus recommended that the Jervis Bay Leek Orchid habitat is not slashed until the impact of this activity is known.

Vincentia Leisure Centre & proposed Retail Commercial and adjoining Residential area

At Vincentia, the Jervis Bay Leek Orchid occurs on the Vincentia Leisure Centre area which is currently being developed. This population will require careful management to ensure that users of the Leisure Centre do not trample or otherwise degrade the native vegetation. The species also occurs on adjacent areas partly owned by SCC and partly in private ownership. These areas include the proposed Retail Commercial area and a residential development. Apart from appropriate development controls, increased public use of these areas associated with development will require strict measures to be implemented to ensure the protection of the species at these sites.

Bower (2002) recommended that efforts be made to retain the full diversity of pollinators of the Jervis Bay Leek Orchid at Vincentia. To achieve this, habitat diversity in the vicinity of the orchid populations needs to be maximised, i.e. conserving the full range of plant communities upon which the pollinators depend. These plant communities must meet three specific habitat needs of pollinators, namely adult food sources, larval food sources and refuge areas that will maximise the chances of pollinator survival during periods of adverse environmental conditions. The amount of habitat required for these purposes extends beyond the area currently occupied by the orchid. Thus more than the area currently occupied by the orchid will be required to fully protect the species on the Vincentia sites. In addition, Bower recommended that to allow opportunity for recolonisation, should a local pollinator population disappear, and to maintain genetic variation, Jervis Bay Leek Orchid sites remain linked to each other and to other bushland reserves by corridors through suitable habitat.

Wirriliko Road site

Further surveys will be required on this site to ascertain the full distribution of the Jervis Bay Leek Orchid, as winter slashing of the area in 2001 may have reduced the extent of flowering of the species in 2001. A private school is currently proposed for this site. Apart from appropriate planning to ensure that building and associated facility envelopes do not directly impact on the habitat of the Jervis Bay Leek Orchid, there will need to be careful management to ensure the habitat is protected from trampling damage by students and other individuals using the facility.

Jervis Bay National Park

The Jervis Bay Leek Orchid occurs in two locations within Jervis Bay National Park. The main management issue at both sites is to ensure that NPWS management works such as hazard reduction burning, weed spraying, track maintenance / construction and any other management activities do not impact on the species at these locations.

5 Previous Recovery Actions

- A Recovery Team was established in February 2001.
- Trial burns were undertaken in April 2001, one on the Retail Commercial area at Vincentia and one at Kinghorne Point. A slashing treatment was also conducted at the Kinghorne Point site.
- Detailed population counts were undertaken by SCC and private consultants in 2000 at the proposed Vincentia District Centre site and the Kinghorne Point site.
- A study was conducted from late October to early December 2001 to identify the pollinator/s of the Jervis Bay Leek Orchid at the proposed Vincentia District Centre and at Kinghorne Point. This study was to assist in determining the amount and types of habitat required to conserve these pollinator/s and was funded by Realty Realizations Pty. Ltd.
- Detailed surveys of known and potential sites of the Jervis Bay Leek Orchid were conducted in November 2001. These surveys included mapping of habitat occupied and conducting detailed counts of the number of plants.
- The Vincentia Leisure Centre access road was fenced by SCC in September, 2001 to prevent

vehicle damage to Jervis Bay Leek Orchid habitat adjacent to the road.

- Monitoring Plots were established at the proposed Vincentia District Centre site and at Kinghorne Point in November 2001. These were established to monitor individuals of the Jervis Bay Leek Orchid over time, and plots were also established at Kinghorne Point to monitor the effect of burning and slashing.
- All monitoring plots were inspected by NPWS in November 2002, but none of the total of 154 tagged plants (first marked in 2001) had produced either a leaf or a flower by that time.

6 Proposed Recovery Objectives, Actions and Performance Criteria for 2002/3-2006/7

The overall objective of this Recovery Plan is to ensure that all or most natural populations are stable or increasing in size.

Specific Objective 1: Further survey of potential habitat

Action 1: Additional survey

Further survey work should be conducted in an effort to locate any unrecorded populations, and to ascertain the limits of the range of the Jervis Bay Leek Orchid. Whilst the original population at Botany Bay is presumed extinct, potential habitat between Botany Bay and Jervis Bay may survive, and suitable sites should be surveyed for the presence of the Jervis Bay Leek Orchid. Potential habitat, i.e. habitat with similar characteristics to the currently known sites, will be identified from aerial photographs or field observation prior to surveys. Surveys will be co-ordinated by NPWS and undertaken with the assistance of Recovery Team members.

Performance Criterion 1

Within two years of the approval of this Plan additional survey in most potential habitat has been carried out in the Jervis Bay area, subject to favourable flowering conditions.

Specific Objective 2: Monitor known populations and investigate the ecology of the Jervis Bay Leek Orchid

Action 2.1: Monitoring

Selected sites of the Jervis Bay Leek Orchid will be monitored annually at flowering time by the NPWS to obtain basic demographic information about the species. Data to be obtained includes the extent of year to year variation in the size of the observable population and the area of habitat occupied.

Individuals within permanent plots will be marked and monitored for at least five consecutive years to determine what proportion of individuals flower each year, what percentage of flowers produce seed and how long individuals live. This information will assist in estimating the total population size at various sites.

Performance Criterion 2.1

Within one year of the approval of this Plan, base-line population size information will have been obtained, permanent monitoring plots established and the location of individual plants within these plots marked in the field. A monitoring program will be developed within a year of the approval of this Plan and conducted annually for the life of this Plan.

Action 2.2: Investigation of the ecological and habitat requirements of the pollinators of the Jervis Bay Leek Orchid

In planning to protect the Jervis Bay Leek Orchid, particularly within urban/semi-urban areas, it is essential that information on the ecology of the pollinators of this species is obtained. Leek Orchids will generally not set seed in the absence of the required pollinators. Development approvals will need to ensure that sufficient habitat is retained not only for protection of the orchid plants, but also to ensure that a viable population of the pollinators is maintained.

Performance Criterion 2.2

Within one year, research into the pollinators of the Jervis Bay Leek Orchid, including aspects of the ecology of the pollinator species will have commenced.

Specific Objective 3: Protection of all known sites

Action 3.1: Remedial works to be undertaken by SCC on the access road to Kinghorne Point

The Jervis Bay Leek Orchid population at Kinghorne Point is bisected by an access road. In most weather conditions this dirt track is trafficable only by 4WD vehicles, as the surface condition has deteriorated significantly since establishment. Due to the poor condition of the road, vehicles using this for visitor (mainly for the purpose of fishing and surfing) access to Kinghorne Point frequently drive on the vegetated road verge. This action is destroying the native vegetation which supports habitat and individuals of the Jervis Bay Leek Orchid. A section of this road approximately 300 m long will be repaired and fencing erected along the road edge by SCC to stop further damage to the habitat.

Performance Criterion 3.1

Within one year of the approval of this Plan the section of the road will be repaired and fencing erected.

Action 3.2: Protective measures to be implemented at the Vincentia sites

The NPWS, the Recovery Team, the landowners and Shoalhaven City Council are currently working together to determine whether a design for the further stages of the District Centre can be developed that will enable the habitat of the orchid and its pollinators to remain adequately protected. This process will involve consideration of those matters that would otherwise be required to be addressed in a formal Species Impact Statement (SIS). If these goals can be achieved then a suitable development may be able to proceed which does not trigger a significant effect through the application of the eight-part test (as required under s. 5A of the EP&A Act) and therefore does not require the formal preparation of a SIS. This is currently the preferred approach by all parties involved.

If the development proponent does submit a design that is determined by the consent authority to be likely to result in a significant impact, then a SIS and the concurrence of the Director-General of the NPWS would be required.

Vincentia Leisure Centre Area

In November 2000 the Jervis Bay Leek Orchid was discovered within a section of the Vincentia Leisure Centre area. This site was given formal approval for development in 1999 prior to the detection of the species on the site. The first major stage of the building works has already been completed and these works may have eliminated some of the original Jervis Bay Leek Orchid population. Under the provisions of the EP&A Act the remaining plants could now legally be destroyed. NPWS encourages SCC to consider options to modify proposed additional developments on this site to protect at least some of the remaining orchid plants and their habitat.

As part of the above process, further detailed surveys are also desirable to confidently determine the limits of distribution of the Jervis Bay Leek Orchid in the remaining potential habitat on the Leisure Centre site.

Vincentia Retail Commercial area

This area contains the major population at Vincentia and is largely in private ownership, but the area also contains road reserves owned by SCC. Since this area is in the ownership of two landholders and is adjacent to the Leisure Centre site the protection of the species in this location is best achieved through the joint development of an overall design for the site. NPWS will work with the private land owners and SCC to develop a design for any future proposals for the area that will ensure that the Jervis Bay Leek Orchid and other threatened species found on the site are adequately protected.

Vincentia Proposed Residential area

The Jervis Bay Leek Orchid was discovered on the southern fringe of the area in November 2000 and the distribution of flowering plants was mapped by NPWS and SCC in November 2001. It is desirable that the NPWS works with the owners and SCC to develop a design for any future proposals for the area that will ensure that the Jervis Bay Leek Orchid and other threatened species found on the site are adequately protected.

Vincentia Wirriliko Road site

In surveys conducted in November and December 2001, five individuals of the Jervis Bay Leek Orchid were discovered on the Wirriliko Road site. This site has been proposed as a site for a local private school. Further survey to ascertain the full distribution of the orchid at this site is required. NPWS will continue to work with the owners and SCC to develop a design that will ensure that the Jervis Bay Leek Orchid and other threatened species found on the site are adequately protected.

Performance Criterion 3.2

Vincentia Leisure Centre Area

Within 1 year of the approval of this Plan the NPWS has requested SCC to consider options to modify proposed additional developments on this site to protect at least some of the remaining orchid plants and their habitat.

Proposed Vincentia Retail Commercial area and adjoining proposed Residential area

SCC and NPWS will ensure that any approved development on either site will allow the long term survival of the Jervis Bay Leek Orchid, including adequate populations of its pollinators.

Vincentia Wirriliko Road site

SCC and NPWS will ensure that any approved development on this site will allow the long term survival of the Jervis Bay Leek Orchid, including adequate populations of its pollinators and that adequate surveys are undertaken prior to the development of a detailed site design.

Action 3.3: NPWS to ensure that that management actions do not adversely affect the Jervis Bay Leek Orchid populations in Jervis Bay National Park

The location, habitat and protection requirements for the Jervis Bay Leek Orchid will be incorporated into the relevant NPWS planning documents. These will

be included to ensure that track construction, fire suppression activities or any other management actions do not impact on the individuals present.

Performance Criterion 3.3

Within one year of the approval of this Plan the location, habitat and protection requirements for the Jervis Bay Leek Orchid will be incorporated into the relevant NPWS planning documents.

Action 3.4: Protective measures to be implemented at Kinghorne Point

Appropriate signage will be erected by SCC along the Kinghorne Point access road alerting the public to the conservation importance of the roadside vegetation and prohibiting the dumping of rubbish in the area.

Performance Criterion 3.4

Within one year appropriate signage will have been erected along the access road.

Action 3.5: Negotiate with landowners for the long-term formal protection of sites

The long-term security of the Jervis Bay Leek Orchid sites is an important goal in the protection of this species. NPWS will negotiate with landowners to develop formal protection mechanisms for privately owned sites. Options for formal protection of privately owned sites include Voluntary Conservation Agreements and Property Management Plans.

Performance Criterion 3.5

Within four years NPWS will have encouraged landholders to consider some form of long term protection for the currently known sites.

Action 3.6: Adequate surveys of sites of proposed developments or activities

Surveys should be conducted within any potentially affected habitat of the Jervis Bay Leek Orchid within the Shoalhaven City Local Government Area whenever a development or activity (*sensu* EP&A Act) is proposed, or there is an application to clear vegetation in these areas. These surveys would need to be conducted at a time when other populations of the Jervis Bay Leek Orchid are known to be in flower. Potential habitat is as described in section 3.4. NPWS and the SCC to provide, when required, advice to proponents/consultants on survey requirements in potential habitat and suitability of flowering season.

Performance Criterion 3.6

All developments or activities occurring within potential habitat of the Jervis Bay Leek Orchid have had adequate surveys conducted prior to the granting of approval or consent.

Action 3.7: Identification and nomination of Critical Habitat

The NPWS will consider the benefits of nominating Critical Habitat and, if appropriate, make a recommendation to the Minister for the Environment regarding which areas should be listed.

Performance Criterion 3.7

Within five years the NPWS will have considered the merits of identifying Critical Habitat, and if appropriate have made a recommendation to the Minister for the Environment regarding which areas, if any, should be declared Critical Habitat.

Specific Objective 4: Maintenance of an effective Recovery Team

Action 4: NPWS to continue to hold Recovery Team meetings at least annually

Recovery Team meetings will be required on a regular basis (at least annually) to review progress of the recovery program and ensure all interested parties are fully informed. If significant new populations are found on land under different ownership, then those new owners are likely to be invited to participate on the Recovery Team.

Performance Criterion 4

A Recovery Team meeting is convened by NPWS at least annually for the life of this Plan.

7 Implementation

Table 1 allocates responsibility for the implementation of Recovery Actions specified in this Plan to relevant government agencies and/or parties for a period of five years from the time this Recovery Plan is approved. Costs associated with each recovery action are identified in this table. The total estimated cost for the implementation of these actions is $ 72,950. The majority of the funds will be provided from existing resources within the NPWS, SCC, and funding already received from Environment Australia. However, an additional $ 31,700 of unsecured funds is required to implement some of the actions.

These additional funds will be sought from various sources, including corporate sponsorship and other external funding sources.

8 Social and Economic Consequences

The main social benefit of conserving the habitat in which the Jervis Bay Leek Orchid survives is in meeting the desire of many in the community that further loss of species and the ecological communities in which they occur should be prevented.

There are some potential social and economic costs associated with conserving the Jervis Bay Leek Orchid habitat. These include:

- The major social and economic impact will be a reduction in the area available for the provision of community and recreational facilities and other services at Vincentia, the most central location in the Jervis Bay region. In addition to reduced accessibility to the public and greater travel distances to some community service providers, e.g. ambulance service and some co-location advantages could be lost.
- Any other developments proposed for sites where the species occurs will have to be designed to minimise impact on the Jervis Bay Leek Orchid. In some cases the scale of the original development may have to be reduced in order to protect the orchid, resulting in reduced revenues from land sales, commercial ventures etc.
- Where development proposals and activities cannot be designed to have a non-significant impact, and the proponent wishes to proceed with the development, there will be a cost resulting from the preparation of a Species Impact Statement. In some instances there may be additional costs to a proponent resulting from a decision by public authorities to either not give consent, or to place conditions on giving consent to a development or approval to an activity.
- Some potential recreational uses for the Leisure Centre area at Vincentia may not be appropriate for the conservation of the species.

9 Roles and Interests of Indigenous People

The Jerringa Local Aboriginal Lands Council and Shoalhaven Elders Group representing indigenous people in the areas where the Jervis Bay Leek Orchid occurs have had a copy of the draft Recovery Plan sent to them. Their comments on the draft have been sought and will be considered in finalising the plan. It is also the intention of the Recovery Team to consider the roles and interests of these indigenous communities in the implementation of the recovery actions identified in this plan.

10 Biodiversity Benefits

In protecting the Jervis Bay Leek Orchid, the plant community in which it is found will also be conserved. Protecting the populations of the Jervis Bay Leek Orchid and its pollinators at Vincentia is also likely to protect some of the resident populations of the Eastern Bristlebird and Leafless Tongue Orchid. It may also protect habitat utilised occasionally by the Ground Parrot. These are also listed threatened species on the TSC Act.

11 Preparation Details

This Recovery Plan was prepared by John Briggs and Genevieve Wright of the NPWS, and edited by Michael Saxon of the NPWS.

It has been formulated with the advice and assistance of the Jervis Bay Leek Orchid Recovery Team. The Recovery Team is a non-statutory group of expert biologists, landowners/managers and other stakeholders. The Team has been established by the NPWS to discuss and resolve issues relating to the conservation and management of the species.

12 Review Date

In relation to its status as the State-endorsed Recovery Plan for the Jervis Bay Leek Orchid, any major changes to this Recovery Plan will require the revised Plan to be placed on public exhibition in NSW and re-approval by the NSW Minister for the Environment. The NPWS, Environment Australia or other Recovery Team members should be contacted if it is believed any change to the Recovery Plan or to the Recovery Program should be considered. This Recovery Plan is to be formally reviewed by the NPWS in conjunction with the Recovery Team within five years from the date of its approval.

13 References

Bernhardt, P. & Rowe, R.R. (1993), In *Flora of NSW*, Volume 4, Ed. Harden, G. J., New South Wales University Press, NSW.

Bower, C. C. (2002), *Pollination of the Jervis Bay Leek Orchid* Prasophyllum affine *Lindley (Orchidaceae)*. Final Report to the Jervis Bay Leek Orchid Recovery Team, pp. 65. Orchid Research, Orange.

Jones, D. L. (2000), *Ten new species of* Prasophyllum *R. BR. (Orchidaceae) from south-eastern Australia*. Orchadian 13(4):149-173.

14 Acronyms Used in this Document

DLWC – Department of Land and Water Conservation

EP&A Act – NSW *Environmental Planning and Assessment Act 1979*

EPBC Act – Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*

ESD – Ecologically Sustainable Development

SCC – Shoalhaven City Council

NPW Act – NSW *National Parks and Wildlife Act 1974*

NPWS – NSW National Parks and Wildlife Service

NVC Act – NSW *Native Vegetation Conservation Act 1997*

TSC Act – NSW *Threatened Species Conservation Act 1995*

Table 1: Estimated costs, funding source and responsible parties for implementing the actions identified in the Jervis Bay Leek Orchid Recovery Plan.

Action No.	Action Description	*Priority	^Feasibility	Responsible Party	Fund source	Cost Estimate ($'s/year)					Total Cost ($'s)
						02-03	03-04	04-05	05-06	06-07	
1	Additional Survey	1	100%	NPWS	'in kind'	0	1,050	1,050	0	0	2,100
				SCC	'in kind'	0	700	700	0	0	1,400
2.1	Monitoring	1	80%	NPWS	'in kind'	1,050	1,050	1,050	1,050	1,050	5,250
2.2	Investigation of the ecological and habitat requirements of the pollinators of the Jervis Bay Leek Orchid			Consultant	Cash	17,700	0	0	0	0	17,700
				NPWS	'in kind'	1,050	0	0	0	0	1,050
3.1	Remedial works to be undertaken by SCC on the access road Kinghorne Point	1	100%	SCC	'in kind'	1, 050	0	0	0	0	1,050
					Cash	10,000	0	0	0	0	10,000
				NPWS	'in kind'	2,800	0	0	0	0	2,800
					Cash	4,000					4,000
					NHT	0	1,000	0	0	0	1,000
3.2	Protective measures to be implemented at the Vincentia sites	2	80%	SCC	'in kind'	1,050	1,050	1,050	1,050	0	4,200
				NPWS	'in kind'	700	700	700	700		2,800
3.3	NPWS to incorporate the protective measures to be implemented at the JB National Park sites of the Jervis Bay Leek Orchid.	1	100%	NPWS	'in kind'	1,050	0	0	0	0	1,050
3.4	Protective measures for the Jervis Bay Leek Orchid to be implemented at Kinghorne Point	2	100%	SCC	'in kind'	1,050	350	0	0	0	1,400
				NPWS	'in kind'	1,050	350	0	0	0	1,400
3.5	Negotiate with landholders for the long-tem formal protection of sites	2	75%	NPWS	'in kind'	700	700	700	0	0	2,100
3.6	Ensure adequate surveys of sites of proposed developments or activities	1	100%	NPWS	'in kind'	700	700	700	700	700	3,500
				SCC	'in kind'	700	700	700	700	700	3,500
3.7	Identification and nomination of Critical Habitat	2	100%	NPWS	'in kind'	0	0	0	700	700	1,400
4	Maintenance of an effective Recovery Team	2	100%	NPWS	'in kind'	1,050	1,050	1,050	1,050	1,050	5,250
	Annual and total cost of the Leek Orchid Recovery Program				**NHT**	**0**	**1,000**	**0**	**0**	**0**	**1,000**
					Cash	**31,700**	**0**	**0**	**0**	**0**	**31,700**
					'in kind'	**14,000**	**8,400**	**7,700**	**5,950**	**4,200**	**40,250**
					TOTAL	**45,700**	**9,400**	**7,700**	**5,950**	**4,200**	**72,950**

Table 1 Costing Explanations:

Where fund source is listed as Cash, funding will be sought from sources such as Natural Heritage Trust, industry sponsors, the NSW State Biodiversity Program and NPWS annual provisions for implementation of threatened species programs. Salary for 'in-kind' contributions is calculated at $350 per day, which includes officer salary and on-costs, provision of office space, vehicles, administration support and staff management.

[1] Actions already approved for funding from the Commonwealth Natural Heritage Trust Endangered Species Program.

* Priority ratings as defined by Commonwealth Recovery Plan guidelines: 1 - action critical to prevent extinction, 2 - action prevents negative impact short of extinction,

^Feasibility assessment reflects estimated chance of success of the action on a scale of 0-100%.

Making a submission regarding this Draft Recovery Plan

You are invited to make a written submission to the NPWS regarding this draft recovery plan. To make your submission as effective as possible, please:

- refer to the section or action of the plan you wish to address;
- briefly explain the reasons for your comments,
- providing source information or examples where possible; and
- provide your name and address to enable receipt of your submission to be acknowledged.

The NPWS will consider all written submissions received during the period of public exhibition and must provide a summary report of those submissions to the Minister for the Environment prior to final approval of this Recovery Plan.

Please note, that for the purposes of the NSW *Privacy and Personal Information Protection Act* 1998 any comments on this draft Recovery Plan, including your personal details, will be a matter of public record and will be stored in the NPWS records system. Following approval of the plan by the Minister, copies of all submissions, unless marked 'confidential', will be available, by arrangement, for inspection at the NPWS office responsible for the preparation of the Recovery Plan.

Should you not wish to have your personal details disclosed to members of the public once the Recovery Plan has been adopted, please indicate below whether you wish your personal details to remain confidential to NPWS and not available for public access. Further information on the *Privacy and Personal Information Protection Act* 1998 may be obtained from any office of the NPWS or from the website: www.npws.nsw.gov.au.

Submissions should be received no later than the advertised date. Submissions should be addressed to:

The Director-General
c/o NPWS, Threatened Species Unit
Southern Directorate
PO Box 2115
Queanbeyan NSW 2620
Ph: (02) 6298 9700

Submission regarding the Draft Recovery Plan for the Jervis Bay Leek Orchid

Please ensure that you provide the information in the box below if you do not use the following form to make your submission.

Name Individual/ Organisation: .....

.....

Postal Address .....

.....

.....

Postcode: ..... Contact Number(s): .....

Date: .....

❒ Yes, please keep my personal details confidential to the NPWS

Submission:

NSW
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