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Submission to the Senate Enquiry:- The effectiveness of threatened species and ecological communities' protection in Australia.

THE EFFECTIVENESS OF THREATENED SPECIES AND ECOLOGICAL COMMUNITIES' PROTECTION IN THE KURTH KILN REGIONAL PARK, VICTORIA, AUSTRALIA.

SUMMARY:- The management of threatened species & ecological communities within the Kurth Kiln Regional Park is token, ad hoc & ineffective. A Key Threat to many of the listed species & ecological communities within the Kurth Kiln Regional Park is Planned Burning.

GENERAL INFORMATION ABOUT THE KURTH KILN REGIONAL PARK

The Kurth Kiln Regional Park (KKRP) covering some 3500 hectares is located 65 kilometres east of Melbourne, Victoria. The Park is mostly known for its Kiln used during the Second World War to make charcoal for gas producer units fitted to motor cars. The Park is popular for picnicking, camping, nature walking and horse riding. The Land Manager of the Park is Parks Victoria. Parks Victoria does not have a Management Plan for the KKRP.

The KKRP contains a range of forest types including Cool Temperate Rainforest which is listed as threatened under the Victorian Flora and Fauna Guarantee Act 1988. For a list of the Ecological Vegetation Classes within the Kurth Kiln Regional Park see Appendix 2. For a map of the Ecological Vegetation Classes within the Kurth Kiln Regional Park see Appendix 3.

The Kurth Kiln Regional Park falls within a Water Supply Protection Area declared under Section 27(1) of the Victorian Water Act 1989 "to protect its surface waters resources" (See Appendix 4 and Melbourne Water, 2012)

The majority of the Kurth Kiln Regional Park is zoned by the Victorian Department of Sustainability & Environment (DSE) for Ecological Fire Management, Zone 3, with only a small section adjacent to the Kilns Picnic & Camping Area and the nearby Gilwell Park Scout Camp being zoned for Strategic Wildfire Moderation, Zone 2. (See Appendix 4)

NOTE:- A key aim of for the Land Management of areas zoned for Ecological Fire Management is to achieve ecologically appropriate fire regimes for native species and/or ecological communities which have specific fire regime requirements. i.e. Ecological resilience through appropriate fire regimes (See DSE, 2012)

RARE, THREATENED & LISTED SPECIES & COMMUNITIES WITHIN THE KURTH KILN REGIONAL PARK

The KKRK contains a number of species of Fauna listed as threatened under the Victorian Flora and Fauna Guarantee Act 1988, including the Sooty Owl & the Powerful Owl.

The KKRK contains Fauna listed as vulnerable under the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). i.e. The Growling Grass Frog (*Litoria raniformis*)

The KKRK contains Flora listed as threatened under the Victorian Flora and Fauna Guarantee Act 1988, including Tall Astelia.

The KKRK contains Flora with a Victorian Conservation Status of Rare or Vulnerable including Brickmakers Saw Sedge, Tree Geebung, Small Fork-Fern & Notched Phebalium.

The KKRK contains Flora that is critically endangered in Victoria according to the IUCN Red List criteria. i.e. Jungle Bristle Fern - *Cephalomanes caudatum*

The KKRK also likely contains suitable habitat for the Helmeted Honey eater and the Leadbeater's Possum both listed as endangered under the EPBC Act 1999.

The following provides a brief examination of some of the rare & threatened species & ecological communities within the Kurth Kiln Regional Park with some comment as to their Conservation Status, & the effectiveness of current protection measures. Many of the facts speak for themselves.

LARGE FOREST OWLS

A study (Mc Nabb & Mc Nabb, 2002) for Parks Victoria confirms "*the high value of the large forest owl habitat extending across the major proportion of the Kurth Kiln Regional Park and Bunyip State Park.*" The report indicates that the "*Bunyip and Kurth Kiln owl habitat is shown to contain far more large owls than expected for the region in general. Indeed, these parks may contain some of the highest quality large forest owl habitat in Victoria.*"

SOOTY OWL - *Tyto tenebricosa*

The Sooty Owl has been listed as a threatened species under the Flora and Fauna Guarantee Act 1988. The Sooty Owl is dependent on closed forests (rainforests), tall open-forests and some open-forests; clearance and logging of those habitats has probably removed or modified a significant proportion of its former habitat. Over much of its range, the lack of suitably large hollows is considered to be a limiting factor to successful breeding and population recruitment.

The Sooty Owl is, therefore, vulnerable to land management practices that reduce the availability of these tree hollows now or in the future. The loss of hollow-bearing trees has been listed as a potentially threatening process under the Flora and Fauna Guarantee Act (SAC 1991b). In its final recommendation the Scientific Advisory Committee (SAC 1991a) determined that the Sooty Owl is:-

- significantly prone to future threats which are likely to result in extinction; and
- very rare in terms of abundance or distribution.

(See DSE, FFG Action Statement, 2001)

The Sooty Owl exists within the Kurth Kiln Regional Park. A map showing the Sooty Owl Detections within the Kurth Kiln Regional Park in 2001 is shown in Appendix 5. There were three (3) Sooty Owl detections. The same sites were reassessed in 2009. There were also three (3) detections. (See Appendix 6)

POWERFUL OWL - *Ninox strenua*

The Powerful Owl has been listed as a threatened taxon in Schedule 2 of the Flora and Fauna Guarantee Act 1988. In Victoria, the Powerful Owl has been recorded from most of the State. Throughout its range the Powerful Owl generally favours dense gullies for roosting and breeding sites. It prefers older forests where large tree hollows provide nesting sites and arboreal prey items are plentiful. Over much of its range, the lack of suitably large hollows is considered to be a limiting factor to successful breeding and population recruitment. The Powerful Owl is, therefore, vulnerable to land management practices that reduce the availability of these tree hollows now or in the future. The loss of hollow-bearing trees has been listed as a potentially threatening process under the Flora and Fauna Guarantee Act (SAC 1991). In its final recommendation the Scientific Advisory Committee (SAC 1994) has determined that the Powerful Owl is:

- significantly prone to future threats which are likely to result in extinction, and
- very rare in terms of abundance or distribution.

(See DSE, FFG Action Statement, No. 92, 1999)

The Powerful Owl exists within the Kurth Kiln Regional Park. A map showing the Powerful Owl Detections within the Kurth Kiln Regional Park in 2001/2 is shown in Appendix 5. There were three (3) owl detections. The same sites were reassessed in 2009. There were zero (0) detections. (See Appendix 6)

There was drought between 2001 & 2009 which may have impacted on the powerful owl population within the KKR. However the extensive planned burning within the KKR throughout this period, known to have impacted heavily on the remaining older habitat trees within the Park must also be a prime candidate for explaining the decline. The Friends of Hoddles Creek suspect that the Sooty Owl has survived better over this period because of their preference for damper habitats which are usually less impacted by planned burning. (For more information on Large Forest Owls & the threat from fire see Bilney.R, 2009)

TALL ASTELIA - *Astelia australiana*

The Tall Astelia is listed as Vulnerable under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and as Threatened under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act). Tall Astelia is contained within the Kurth Kiln Regional Park (See Yugovic & Moorrees 1992, Turner & Sydes 1995, Moorrees 1998, Woolfrey 1998, Valdes 1998, Woolfrey 2000, Cutler & Murphy, 2010)

There is a Victorian FFG Action Statement for the Tall Astelia. (See DSE, 1991) This DSE, FFG Action Statement No. 7 for Tall Astelia, 1991 states on Page 6 under the heading Implementation, Evaluation and Review that "*The Action Statement will be reviewed in 1995.*" The 1991 Action Statement is still current. Under the Heading **Interim Conservation Areas (450 ha)** the Action Statement states:- "*One sub-catchment in each of the major watersheds in which Tall Astelia occurs will be excluded from timber harvesting and maintained undisturbed for conservation and reference purposes until this action statement is reviewed (three years). These areas are Bjorksten Creek (La Trobe watershed), Seven Acre Creek upstream from Bunyip Road (Bunyip watershed), and Tomahawk Creek tributary (Yarra watershed).*"

Since Tall Astelia has national conservation significance, at least some populations require protection meeting biological reserve design standards. A principle of biological reserve design is sub-catchment protection, whereby biological values are made less vulnerable to disturbances originating upstream. These areas represent the least disturbed of those in which Tall Astelia now occurs. They form, as far as possible, controls in the event that other colonies are adversely affected by wildfire or other disturbances. The three areas provide replication and represent the major watersheds in which the species occurs.

The Tomahawk Creek tributary sub-catchment has the advantage of being relatively distant from the others and also represents the Riparian Scrub habitat of Tall Astelia. Only twenty tufts (possibly one plant) occur here, the only remaining occurrence in the Yarra watershed."



Tall Astelia, Upper Tomahawk Catchment, Kurth Kiln Regional Park, 24/9/2011, within proposed burn area, GB0012,
Photo Courtesy of D. Lockwood.

The Victorian Land Conservation Council's Melbourne Area District 2 Review, Final Recommendation C1 (see LCC, 1994) states the following :-

That:-

- (a) until the respective Flora and Fauna Guarantee Action Statement (No.7) is revised in 1996, tall astelia be managed according to the existing Action Statement.
- (b) following revision of the respective Flora and Fauna Guarantee Action Statement, tall astelia be conserved through implementation of that Action Statement, such conservation to include appropriate reserves.

The Forest Management Plan for the Central Highlands (DNRE, 1998) gives the following Management Prescription for Tall Astelia:-

- Sub-catchment protection for the colonies in Bjorksten, Seven Acre and Tomahawk Creeks
- 100 m buffer around Cool Temperate Rainforest or Riparian Thicket EVCs supporting Tall Astelia
- 40 m streamside buffer upstream of colonies
- 40 m buffer on isolated plants growing on road batters

The Central Highlands Comprehensive Regional Assessment Report (CHCRAR, 1997) states the following:- *“Even though Astelia australiana is not represented in dedicated conservation reserves, the Proposed Central Highlands Forest Management Plan includes specific management prescriptions for the species based on its FFG Action Statement. This includes subcatchment protection for the most significant occurrences and these are included in the Special Protection Zone (SPZ)”*.

The National Recovery Program for the Tall Astelia (Cutler & Murphy 2010) under the heading Current Conservation Measures states that:-

"A number of measures have been undertaken for the conservation of Tall Astelia, including:

- *Protection of populations in State Forest through the establishment of Special Protection Zones in the headwaters of Seven Acre Creek, Tomahawk Creek, Bjorkstens Creek and Tarago River coupled with 100 m buffers around populations and 40 m stream buffers upstream of populations. Where the vegetation is Cool Temperate Rainforest, wider buffers (40 m from the rainforest edge) apply. A 100 m buffer applies around areas of Cool Temperate Rainforest or Riparian Thicket supporting Tall Astelia within the Central Highlands, with a 40 m buffer upstream of colonies and a 40 m buffer on isolated plants growing on road batters (DSE 2003).*
- *Incorporation of the Otway population in the Great Otway National Park and the Egg Rock and Tomahawk Creek populations in the Kirth Kiln State Park."*

The National Recovery Program for the Tall Astelia also states on page 5 that:- *" Tall Astelia and its Cool Temperate Rainforest habitat are believed to be highly vulnerable to fire (Willis 1970; Pritchard 1997), and fire is probably the single greatest threat to the survival of the species. Loss of habitat through fire or other major disturbance is highly likely to lead to loss of colonies (Yugovic & Moorrees 1992). The species' distribution has already been reduced by successive forest fires (Willis 1970) and populations within Riparian Thicket habitat (in Kirth Kiln State Park) may be especially vulnerable to this threat (Woolfrey 2000)."*

It is with some incredulity that recent investigation by the Friends of Hoddles Creek revealed that:-

1. The Land Manager of the Kurth Kiln Regional Park, Parks Victoria was unaware of Sub-catchment protection from disturbance for Tall Astelia in the Upper Tomahawk Creek area.
2. The Land Manager of the Kurth Kiln Regional Park, Parks Victoria was unaware that there was a National Recovery Program for the Tall Astelia.
3. That the DSE is planning on burning the whole of the upper Tomahawk Creek sub-catchment. (Burn No. GB0012)

Note:- A recent field trip to the Egg Rock Creek tributary of the upper Tomahawk Creek Area found two markers locating Tall Astelia sites . Tall Astelia was no longer evident.

BRICKMAKERS SAW SEDGE - *Gahnia grandis*

The Victorian Conservation Status of Brickmakers Saw Sedge is Vulnerable. (See DSE, 2005) The Plant is known from only 3 locations in Victoria, Wilsons Promontory National Park, Bunyip State Park and the Kurth Kiln Regional Park. All these Parks are managed by Parks Victoria. In the Kurth Kiln Regional Park three samples of the Plant have been collected all near the Tomahawk Creek in 1964, 1979 & 1994. (See Appendix 7) The abundance of this Plant within the Kurth Kiln Regional Park is unknown. It is thought that the plant may have similar habitat preferences to that of *Astelia australiana* & *Austrostipa muelleri* (David Cameron, DSE pers. com.), both of which have been found in the Kurth Kiln Regional Park in the Tomahawk Creek area. So little is known about the occurrence and abundance of this plant within the Kurth Kiln Regional Park & more broadly within Victoria that it is not really possible to say with much certainty what the actual conservation status of the Plant is. It may be "just" rare or it may be critically endangered. There is no active research program or management plan for this species by Parks Victoria.

JUNGLE BRISTLE FERN - *Cephalomanes caudatum*

Jungle Bristle Fern has recently been discovered within the Kurth Kiln Regional Park by the Friends of Hoddles Creek. The Land Manager of the KKR (Parks Victoria) has advised that Jungle Bristle Fern is critically endangered in Victoria according to the IUCN Red List Criteria. Parks Victoria has also advised that:- "*Jungle Bristle Fern is a habitat specialist, growing usually only on trunks of very old and tall *Cyathea australis*. *Cyathea* is only suitable for colonisation of epiphytes once it's old and tall enough to have 'rootlets' developed on the trunks rather than just frond bases. *Cyathea* occurs on the margins of Cool Temperate and Warm Temperate Rainforest, and within Warm Temperate Rainforest. JBF is most likely to develop only on *Cyathea* that is in the most protected/sheltered situations e.g. very deep protected gullies, but is especially vulnerable to disturbance from harvesting and fire as its host species occurs in the non-core parts of the rainforest, i.e. on the margins. JBF is a fire refuge species". "Fire is the biggest threat to this species, and unfavourable fire regimes".*

The area within the KKR containing the Jungle Bristle Fern is proposed by the DSE for planned burning. (Burn No. GB0012, upper Tomahawk Creek Area)

DSE Burn Planners frequently propose the use of the Fuel Moisture Differentials of Cool Temperate Rainforest Boundaries as a method of controlling the spread and intensity of the Planned Burning. This is an inappropriate technique. According to the DSE:- "*Field observations of this practice indicate that repeated fires of this type enter rainforest margins and ecotones. This results in a reduction in the level of mesic broad leaved species both in the ecotone and over time in the stand itself. Accordingly Rainforest vulnerability to damage by severe fire is increased because such a process results in higher levels of more flammable sclerophyll species and an increase in canopy exposure*" (See Peel. B, 1999)

Jungle Bristle Fern in the KKR has been located relatively higher in the landscape than might be expected for this species. The use of rainforest margins as a control line for this planned burn is almost certain to cause the extinction of this already very rare species from the Kurth Kiln Regional Park.

HELMETED HONEYEATER - *Lichenostomus melanops cassidix*

The Helmeted Honeyeater is listed as threatened under the Victorian Flora and Fauna Guarantee Act 1988 and is listed as endangered under the Commonwealth Environment Protection and Biodiversity Act 1999. The current population of the Helmeted Honeyeater is confined to a five km. length of streamside remnant vegetation within the Yellingbo Nature Conservation Reserve. This reserve is close to the Kurth Kiln Regional Park and a Biolink between the Reserve & the Park is currently being established.

The Lands Conservation Council, Melbourne Area District 2 Review (LCC, 1994) found that the lower reaches of streams within the Kurth Kiln Regional Park "*support habitat suitable for the reestablishment of the helmeted honey eater*".

The FOHC have been unable to establish the current status of the habitat deemed suitable by the LCC in 1994. The FOHC have been unable to locate any surveys that assess areas within the Kurth Kiln Regional Park for Helmeted Honeyeater Habitat Suitability.

COOL TEMPERATE RAINFOREST

Cool Temperate Rainforest (EVC 31) is listed as threatened under the Victorian Flora and Fauna Guarantee Act 1988. The Kurth Kiln Regional Park contains Cool Temperate Rainforest. (See Woolfrey, A, 2000) While this is known by the Land Manager Parks Victoria (particularly for the upper catchment area of Tomahawk Creek) the DSE continue to map the Ecological Vegetation Class of the area otherwise. (See Appendix 3) As a result a planned burning fire management zone of fire exclusion (Zone 4) is not applied to the upper Tomahawk Creek Catchment (see Appendix 5) Planned Burning is not suitable for (or indeed an appropriate management action for) Cool Temperate Rainforest -EVC 31 & Wet Forest - EVC30. (See DSE, 2011 and Lindenmeyer, 2009) The Ecological Fire Status for the Upper Tomahawk Creek area consists of areas designated as "*Within growth stage bench - Aim to retain*" and "*non- target EVC*" (See Appendix 9 and DSE, 2009) The DSE & Parks Victoria plan to burn (Burn No. GB0012) the upper catchment of Tomahawk Creek. See DSE Fire Operation Plan, 2012, http://www.dse.vic.gov.au/_data/assets/pdf_file/0006/146652/Yarra-map_final-2012.pdf

RIPARIAN THICKET, RARE RIPARIAN ECOLOGICAL VEGETATION CLASS

The Kurth Kiln Regional Park also contains riparian vegetation types closely allied to Cool Temperate Rainforest. These communities are even rarer and more threatened than CTF but are not listed. For example the upper Tomahawk Catchment contains rare Riparian Thicket - EVC 59 (See Woolfrey, A, 2000) It is not listed, it is not mapped, a fire exclusion zone is not applied and It is proposed to be burnt. (Burn No. GB0012)

NOTE:- The DSE & Parks Victoria appear to remove themselves from the listing nomination process as a practice, if not a policy. Nominations are therefore effectively only received from the Public. This is a major deficiency of the current listing process.

IMPACT OF PLANNED BURNING

The Friends of Hoddles Creek (FOHC) understand a Key Threat to listed species & ecological communities within the KKR to be Planned Burning.

The following processes all relate to planned burning and are listed as potentially threatening under Section 10 of the Victorian Flora & Fauna Guarantee Act 1988:-

1. Inappropriate fire regimes causing disruption to sustainable ecosystem processes and resultant loss of biodiversity.
2. High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition
3. Loss of hollow-bearing trees from Victorian native forests.
4. Loss of coarse woody debris from Victorian native forests and woodlands.

Appropriate management of these processes play a key role in maintaining biodiversity by supporting protection of the integrity of ecosystems and reducing the direct threat to flora and fauna populations.

For example assessment of the growth stage distributions (relative proportions of EVC successional stages) for the Parks ecological communities is fundamental to managing the threat of inappropriate fire regimes. Yet this (what should be routine) procedure has never been undertaken for the Park. The net loss of hollow-bearing trees and the net loss of coarse woody debris within the KKRK is currently occurring and is obvious to both Parks Management Staff & Local Environment Groups.

A review by the Friends of Hoddles Creek of a recent Planned Burn (Hansens Creek Road, Burn No. GB0003) within the Kurth Kiln Regional Park revealed the following:-

- That the Burn site was not selected in accordance with best environmental practice for Zone 3 Ecological Burns. i.e. *Ecological Fire Status of "Within growth stage benchmark - Aim to retain."*
- That the Land Management Objective provided by the DSE for this Burn was technically/scientifically impossible. (i.e. to bring fire age class distribution closer to the idealised distribution identified through fire ecology study)
- Routine Planning Assessments as is required by DSE Guidelines were not undertaken. (e.g. Life stage Assessment for Burn Planning)
- That ecological assessments for the burn were based on Vegetative Growth Stage Data which the DSE knew to be incorrect.
- That the relatively recent logging history/s of the Burn Area was ignored when evaluating forest successional stage/age class.
- That the Annual Yarra Target for the ecological burning of Shrubby Foothills Forest (EVC 45) is being exceeded by approximately three times.
- That the DSE is burning Forest Habitat within a Conservation Reserve with age classes that are unrepresented elsewhere within the Reserve or the Yarra Land Management Unit. (i.e. A major Environmental Conservation Issue)
- That significant environmental damage was caused by the bulldozing of a control line that was unnecessary in the circumstances.
- That the Key Fire Response Species (KFRS) considered by the DSE for this burn were inappropriate for the Fire Cycle Stage of the Burn Area.
- That an attempt to exclude the rare Riparian Scrub Community (EVC 17) from the Burn for ecological purposes was only partially successful. Note:- The DSE Prescribed Pre burn assessment of this area for suitability of habitat for the FFG listed helmeted honey eater has been requested from the DSE but has not been made available.
- That no Pre Burn Overall Fuel Hazard Assessments were made hence not possible to accurately measure the outcome of the Burn in relation to reduction of Overall Fuel Hazard. That pre burn clearing around the bases of older habitat trees with hollows, for protection from the planned burn, was very limited in scale and mostly unsuccessful, resulting in disproportionate numbers of these trees being destroyed by the Burn. Note:- The DSE Prescribed pre burn assessment of the Burn Area for the identification of nesting & roosting trees for the FFG listed Sooty Owl has been requested from the DSE but has not been made available.
- That Control Line Rehabilitation program comprised minor erosion control works only.
- That the approved Burn Lighting Pattern could not by design produce a mosaic pattern. (Note:- This was an objective of the Burn).

This case study is available at the Friends of Hoddles Creek Website:-

<http://www.provender.com.au/fohc/CaseStudyHansonsCreek.pdf>

For an indication as to the extent of planned burning (recent past & proposed) within the Kurth Kiln Regional Park see Appendix 8. Long unburnt habitat is now very rare within the KKRK and is highly valuable. This is a critical conservation issue for the Park and for many of the rare & threatened species and ecological communities that are contained within the Park.

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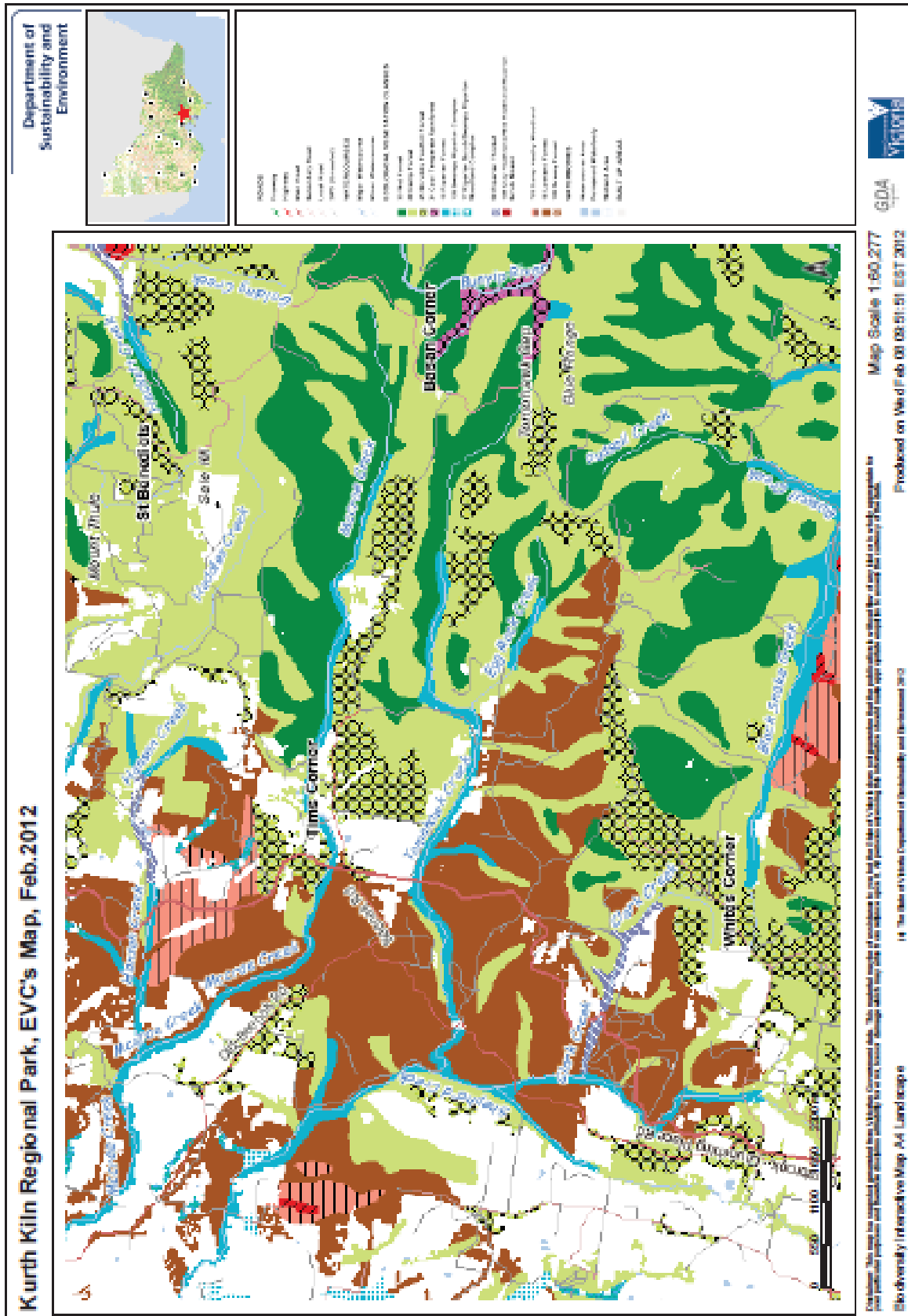
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APPENDIX 2:- ECOLOGICAL VEGETATION CLASSES, KKR

	Area	%
Kurth Kiln Regional Park, EVC's	3,447.5	
159 Clay Heathland/Wet Heathland/Riparian Scrub Mosaic	6.3	0.18
16 Lowland Forest	1,328.9	38.55
17 Riparian Scrub/Swampy Riparian Woodland Complex	4.6	0.13
18 Riparian Forest	223.3	6.48
29 Damp Forest	822.6	23.86
30 Wet Forest	407.6	11.82
45 Shrubby Foothill Forest	435.0	12.62
48 Heathy Woodland	131.0	3.80
59 Riparian Thicket	1.9	0.055
997 Private Land No Tree Cover	86.2	2.50

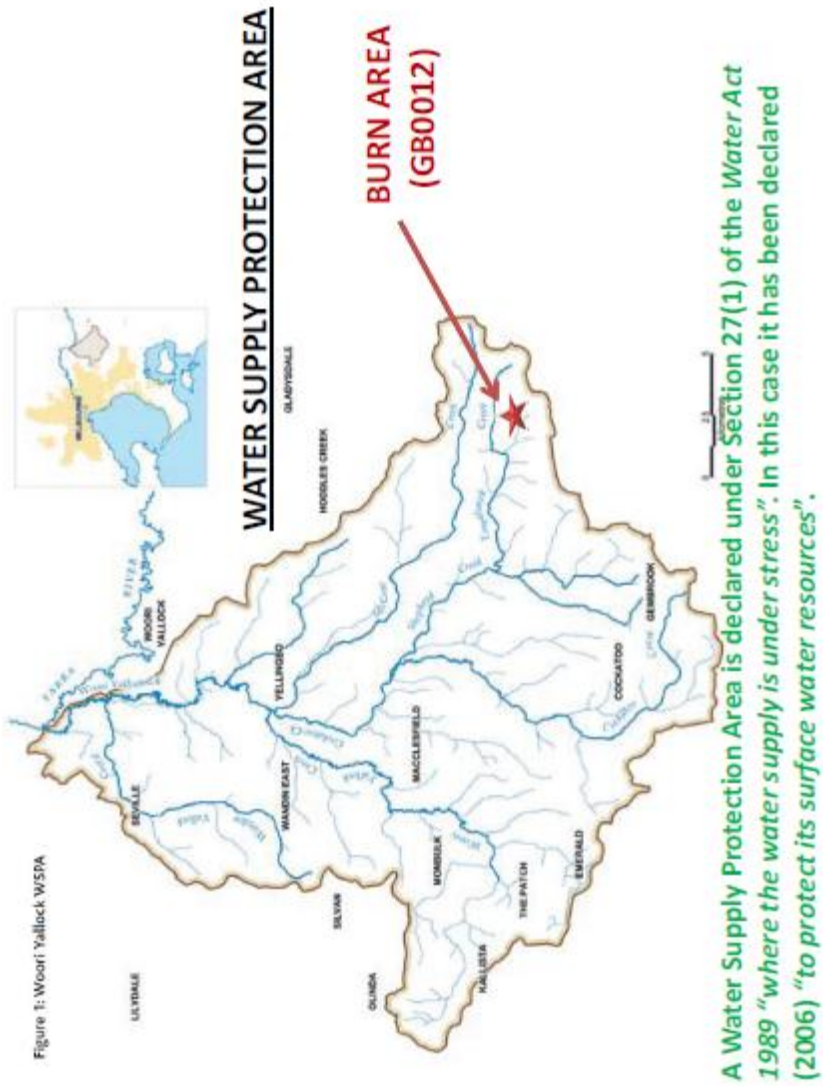
Source:- Parks Victoria, Jan. 2012

APPENDIX 3, ECOLOGICAL VEGETATION CLASSES, MAP, KKRP

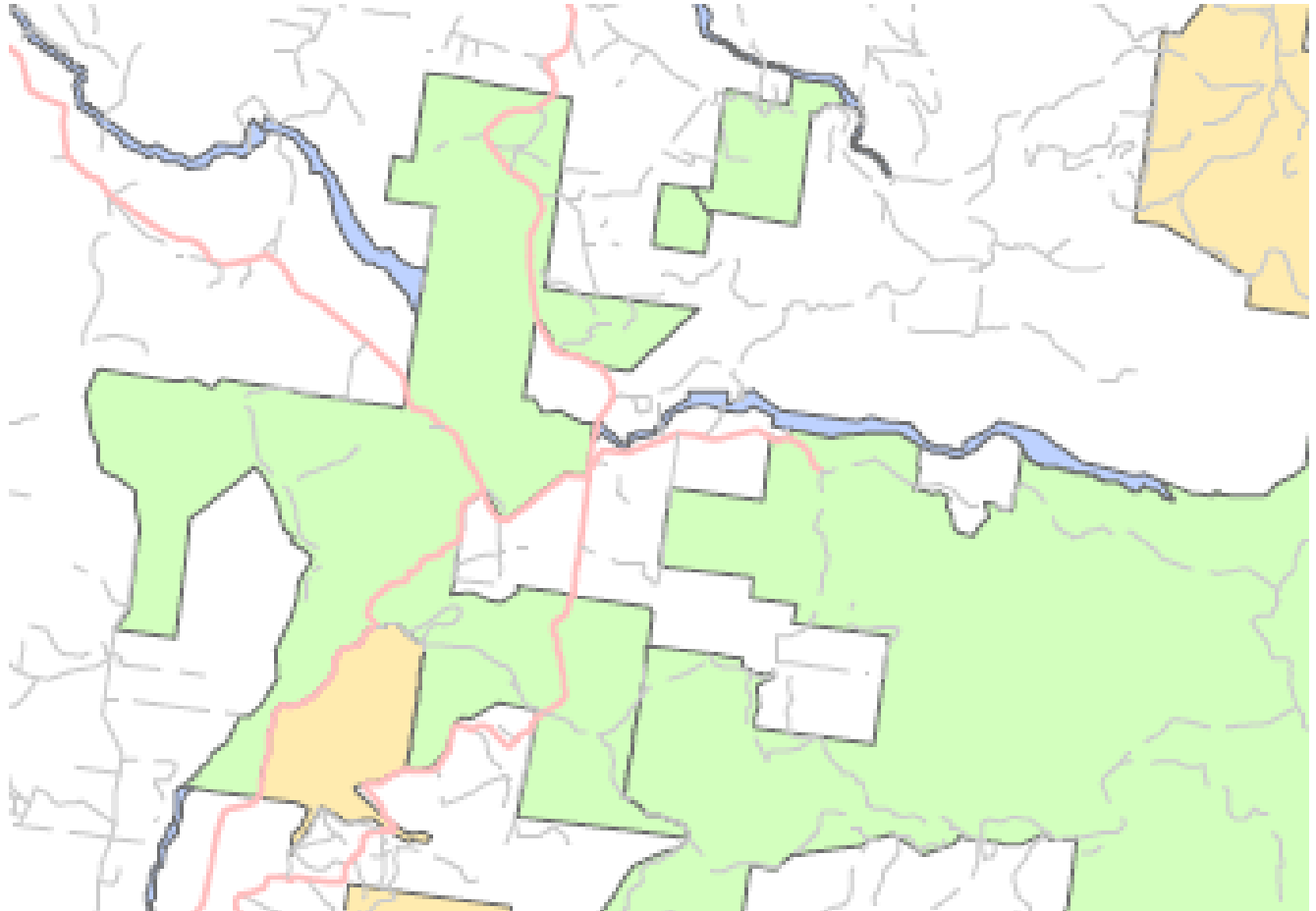


APPENDIX 4:- MAP OF THE WOORI YALLOCK WATER SUPPLY PROTECTION AREA.

NOTE:- The Kurth Kiln Regional Park lies within this area.



APPENDIX 5, FIRE MANAGEMENT ZONING, KKRP



GIS Desktop
 Department of Sustainability and Environment
 CS2/CP Use Only

Proposed Changes to YARRA Fire Management Zone 3

Legend
 ● Large Town
 ● Town
 — Main Road (Sealed)
 — Local Road
 — 2wd
Proposed Changes to Zone 3
 From Zone 2 to 3
 From Zone 1 to 3
 From Zone 4 to 3
 Land & Fire Districts
Fire Management Zoning
 1 - Asset Protection Zone
 2 - Strategic Wildfire Moderation Zone
 3 - Ecological Management Zone
 4 - Prescribed Burning Exclusion Zone

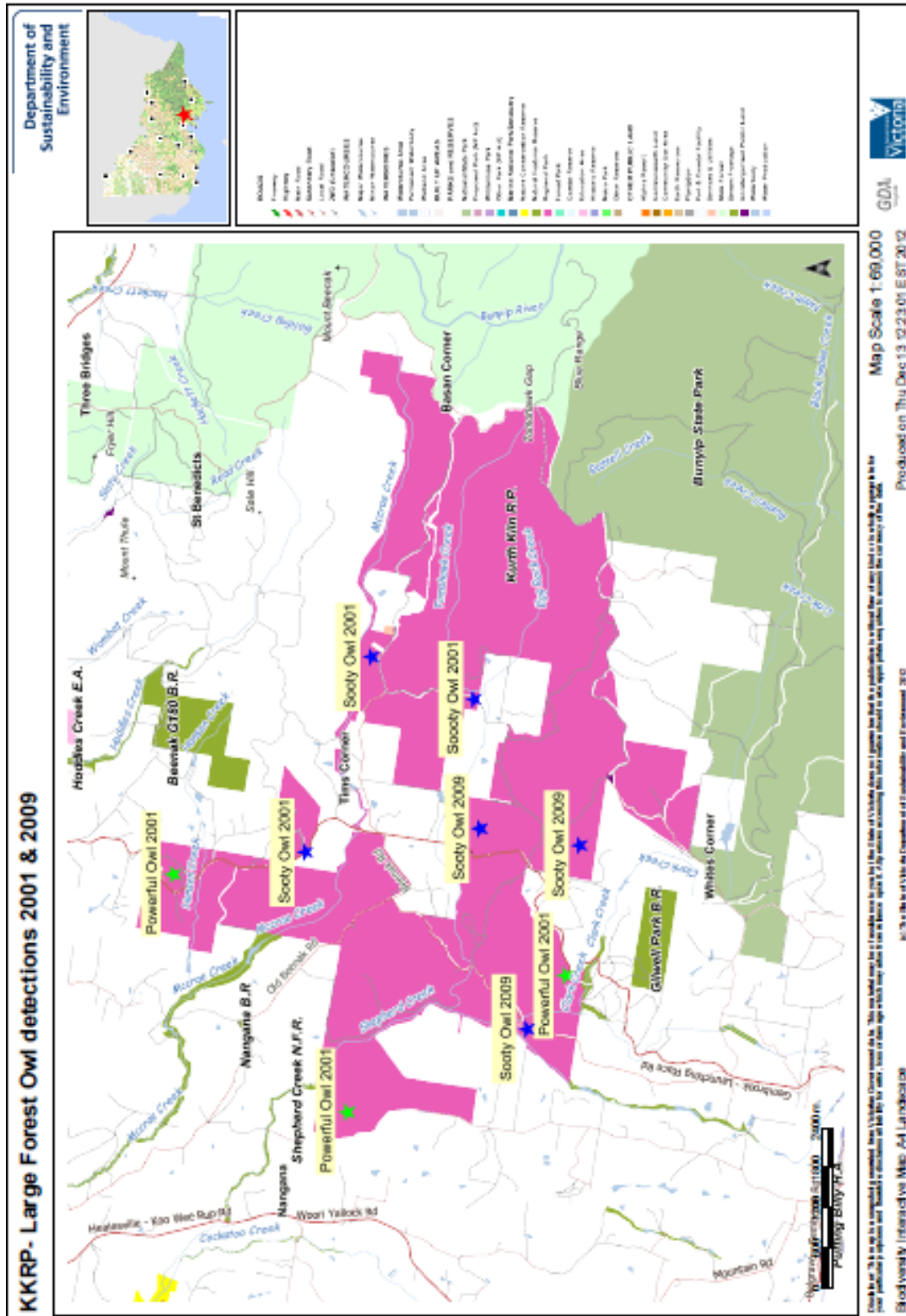
0 2.5 5 11
 Kilometres

Printed on: 15/01/2012
 Printed by: SWE/SL, 6091133-7
 Developed by: GIS Unit, DSE

Republic of Australia (The) (MAGS) Zone 3
 Commonwealth of Australia (CMA) (MAGS) Zone 3
 Department of Sustainability and Environment (DSE)

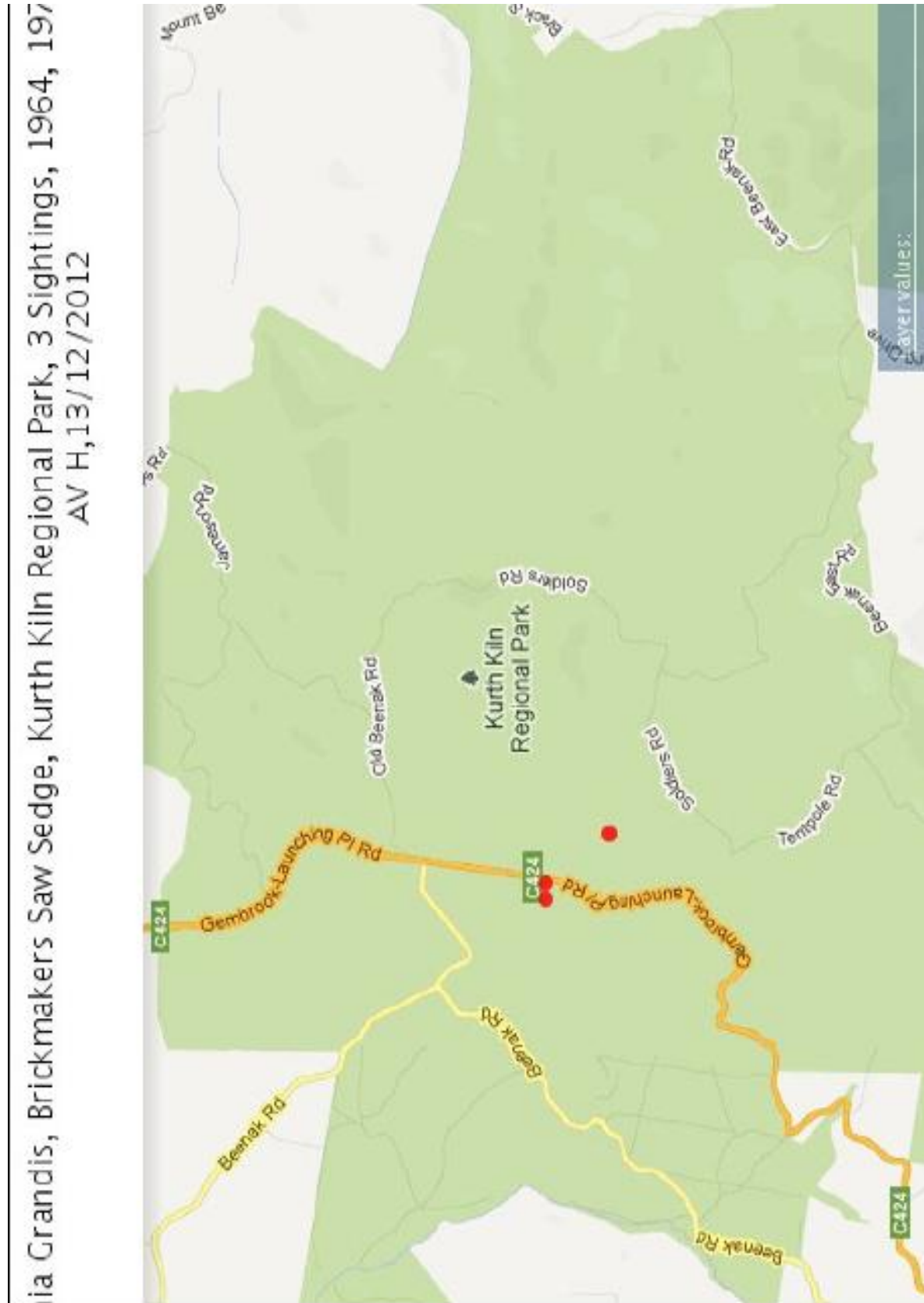
APPENDIX 6:- SOOTY & POWERFUL OWL DETECTIONS, KKR, 2001 & 2009

NOTE:- No Powerful Owls were detected in the KKR in the 2009 Survey.

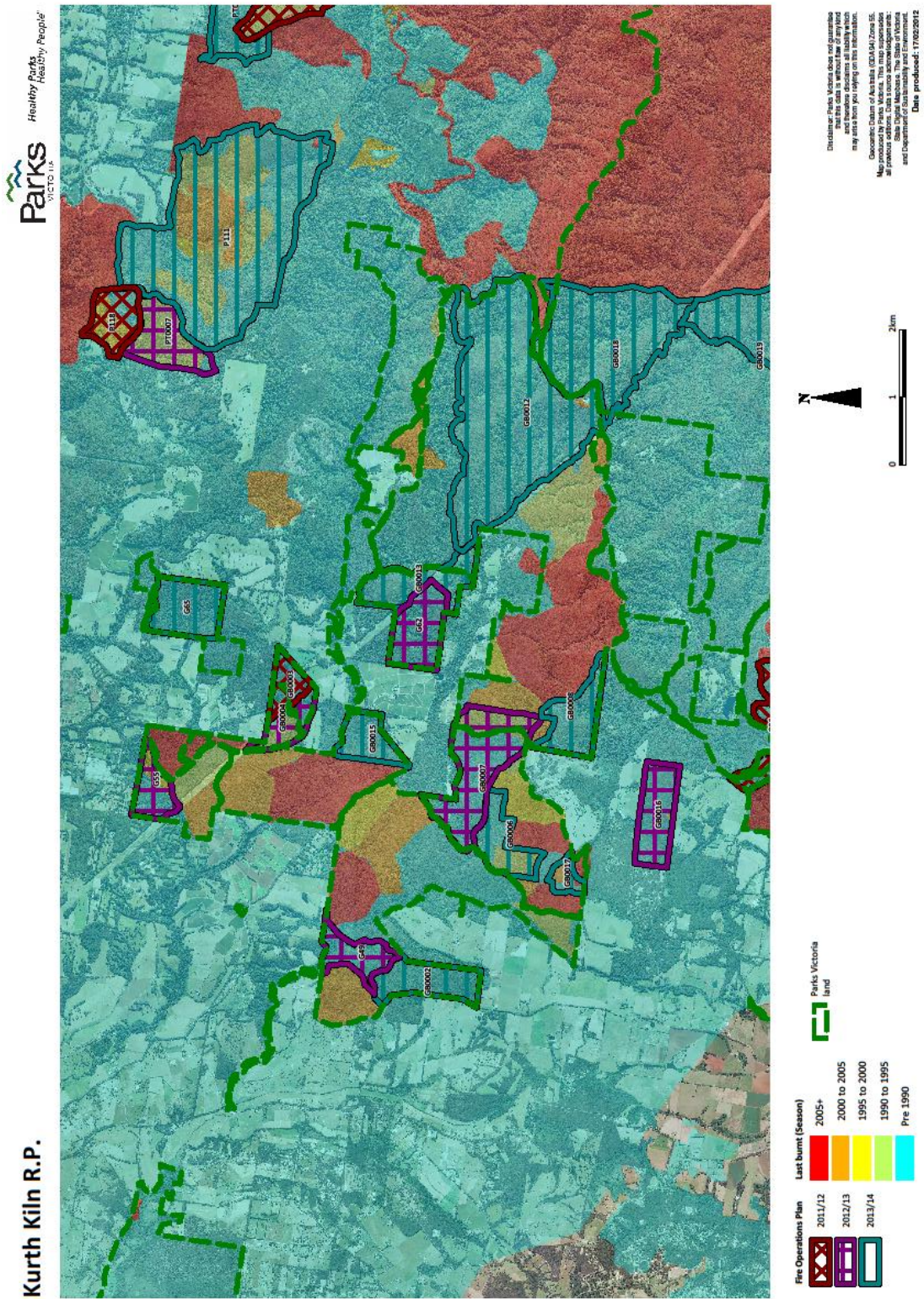


APPENDIX 7, BRICKMAKERS SAW SEDGE, GAHNIA GRANDIS, KURTH KILN REGIONAL PARK

NOTE:- 3 sightings in 1964, 1979 & 1994. The 1979 & 1994 sightings were at Tomahawk Creek.



APPENDIX 8:- RECENT & PROPOSED ECOLOGICAL BURNS, KURTH KILN REGIONAL PARK



SOURCE:- PARKS VICTORIA, 2012

This mapping indicates that relatively long unburned habitat is now rare within the KKR. This represents a major Biodiversity Conservation Threat to both Flora and Fauna.

APPENDIX 9:- ECOLOGICAL FIRE STATUS FOR THE UPPER TOMAHAWK CREEK AREA, KURTH KILN REGIONAL PARK



Ecological Fire Status (2009)

- Below Min TFI- Protect from fire
- <= 3 Years Below Min TFI
- Above Max. TFI- Potentially available to burn
- Over-represented Growth Stage- Potentially available to burn
- Within Growth Stage Benchmark- Aim to retain
- Under-represented Growth Stage- Retain
- Fire Sensitive EVC- Protect
- Non Target EVC
- No Fire History Records

