Assessment for Minimum Impact on Nesting Eagles of the Proposed Helicopter Flight Route from Derwent Bridge to Halls Island, Lake Malbena

BACKGROUND

A regular helicopter flight to facilitate 25 Halls Island bookings between mid-October and May is proposed from Derwent Bridge to Lake Malbena north of Lake St Clair following an approximately 24km long mildly zig-zagging route (Fig 1).

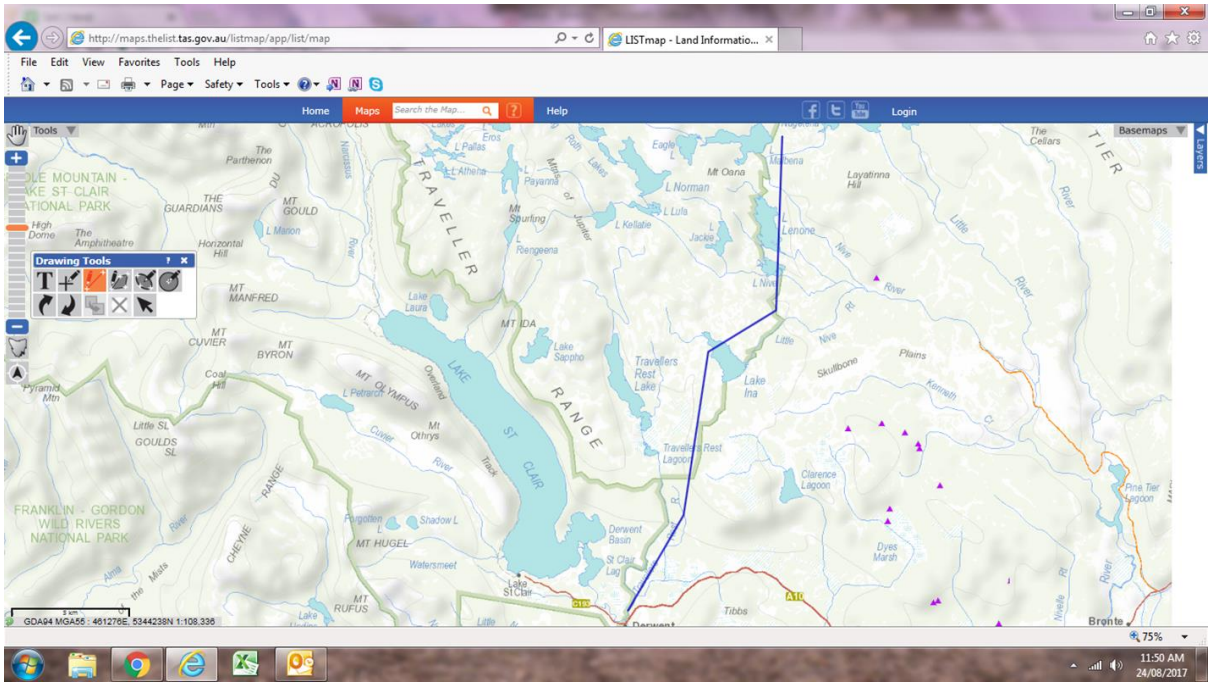

Figure 1. Proposed flight route (blue line) between Derwent Bridge (bottom of map) and Halls Island, Lake Malbena (top of map).

In September 2017 I was asked by Daniel Hackett (the proponent) to assess the risks to nesting eagles and advise on managing those risks.

Wedge-tailed Eagles *Aquila audax fleayi* are often seen in the general area (per obs), White-bellied Sea-eagles *Haliaeetus leucogaster* rarely. The former species is listed as endangered on the Tasmanian Threatened Species Protection Act 1995 and Commonwealth Environment Protection and Biodiversity Conservation Act 1999 and a priority species under the Tasmanian Regional Forest Agreement and the latter is listed as vulnerable under the Tasmanian Threatened Species Protection Act 1995). Conservation of nests of both are treated similarly because nests may be interchanged, the different species using them at different times (Threatened Species Section 2006).

POTENTIAL DISTURBANCE

The sensitivity of Tasmanian eagles to disturbance is well known (eg Threatened Species Section 2006). Helicopters are a potential serious disturbance for nesting eagles. However, it is low, slow flying, manoeuvring helicopters, especially hovering, that are problematic since these activities are both particularly noisy and can mimic aggressive, dominant behaviour of eagles. Nest desertions have been caused by very close flying in such circumstances during breeding (eg power-line checking helicopter recently on Bruny Island, Cochran pers comm).

More common than actual desertion is the risk of accidents to paniced eagles flushing or treading on eggs/chicks and risks to eggs/chicks from exposure and predation after flushing. There is also a risk of reduced feeding rates of chicks with regular disturbance.

There is also an obvious risks to eagles and people from collisions.

High flying, transiting helicopters seem to have an effect more akin to that of fixed-wing aircraft – less disturbing, as measured by flushing from nests (pers obs of watching eagles on nests and nearby aircraft in many situations, including Freycinet National Park, Maria Island National Park and Tasman National Park, Mooney 1988)

Best practices are to keep aircraft, especially helicopters, at least 1km from nesting eagles (Threatened Species Section 2006, Anon 2015), a *Fly Neighbourly* policy as applied in some forestry areas and national parks (eg Freycinet and Maria Island National Parks) and proposed for others (eg . the 3 Capes Walk in the Tasman National Park).

Nesting requirements of Tasmanian eagles are well known and for Wedge-tailed Eagles (overwhelmingly the subject of this assessment) are essentially old growth native forest in sheltered positions sheltered from severe weather (eg Brown and Mooney 1997) and heavy anthropogenic disturbance. Disturbance factors and management thereof are also well known (eg Mooney and Holdsworth 1991, Mooney and Taylor 1996, Mooney 2000, Threatened Species Section 2006).

THE AREA

The area is a high altitude (circa 1000m) plateau in national park bounded by other State Reserve to the north and west and State Forest to the south and east. Essentially the area is gently undulating (away from major lake edges) with a mosaic of scree, old growth, predominantly eucalypt native forest, alpine sedge and grassland and wetlands including numerous small lakes, many interconnected.

LOCAL EAGLE DISTRUBUTION

Wedge-tailed Eagles can be seen anywhere in the area and many nests are known to the east and south, mainly as a result of being found during forestry activities (Fig 2.).

Few nests are known in the national park. It is likely that despite the bias caused by search effort between these tenures, nesting density is genuinely higher in State Forest because it is at slightly lower altitude on slightly better soils (higher primary productivity). Nest distribution in State Forest does not well reflect delinearation of nesting territories because many nests have been deserted and new ones built nearby (eg Mooney and Holdsworth 1991, Mooney 1993) and multiple such moves

confuse which nests belong to what territories. Thus the regular nest clustering with few nests/territory, typical of undisturbed areas is somewhat lacking. Thus, care must be taken when rolling out local nesting densities to nominate likely nesting places (being highly territorial nest locations can be somewhat predicted by local nearest-neighbour distances).

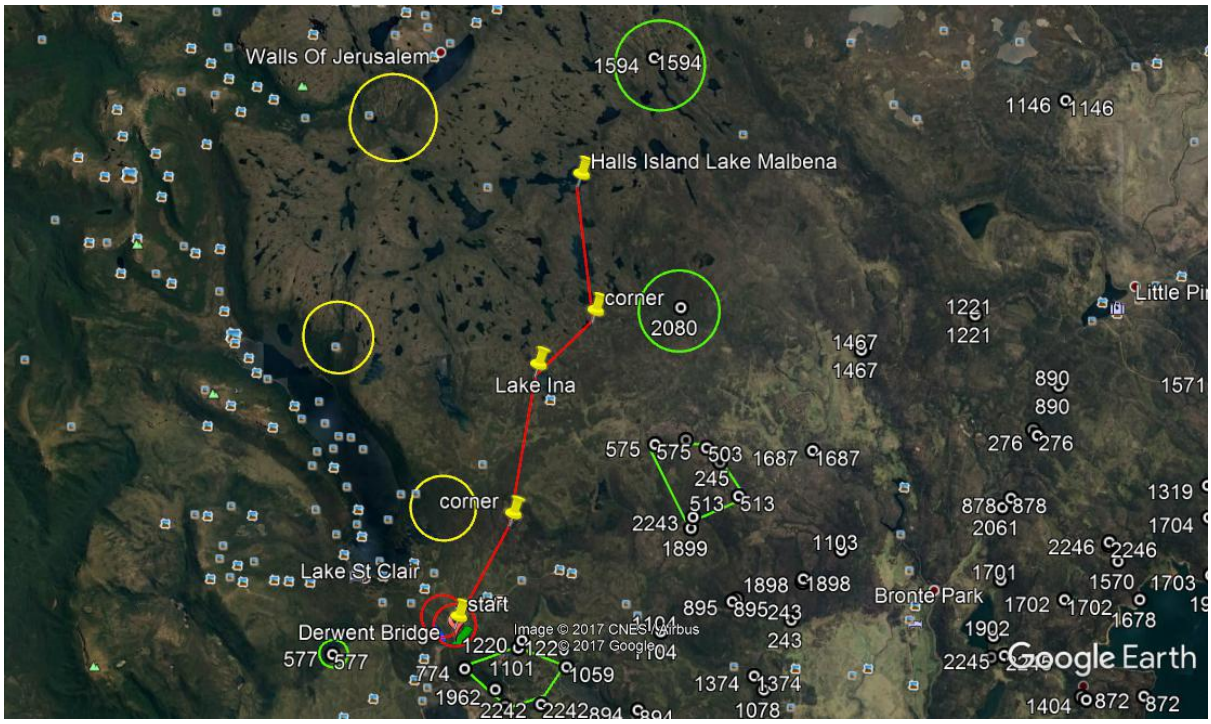

Figure 2. Nests and Proposed helicopter route (red line with yellow markers), adjacent nesting territories (green circles and polygons), likely adjacent nesting territories (yellow circles) and areas within 1 km of Derwent Bridge and the PWS helicopter pad (red circles). The many white numbers refer to eagle nests recorded on the Natural Values Atlas; some are deserted or no longer exist.

MANAGEMENT OPTIONS

Options for conservation of nesting eagles along flight routes are to try and tailor routes by weaving between nests or to overfly nests by 1000m+ along a route of minimum likelihood of nests if bad weather dictates lower flights (for safety).

Flight Mangement Options	**Advantages**	**Disadvantages**
Tailored Route Find all nests by active searches of likely habitat and create a route staying 1km from any active nests, that activity being decided in mid/late spring activity checks (eg Mooney 1988).	Routes can be precisely tailored and woven between nests	Nests may be missed or built in between flying seasons. Tailored routes can be inflexible regarding weather. Nest searches have only a 2 year life span so may need regular repetition potentually creating its own disturbance. Nests may be built in between searches and therefore be

		inadvertently disturbed until the next search.
High Flights Overfly potential nesting habitat by at least 1000m with start and end points being searched within 1km for eagle nests (safe zones). Bad weather that requires lower than 100m operational height flying can follow a route of lowest likelihood of eagle nests from a consideration of distribution of nesting habitat.	Start and/or end points are usually near habitation and nests are less likely to be there. An advantage of a helicopter is it can ascend and descend steeply and stay within any such safe zone.	Bad weather may force lower transit altitudes.

By far the most flexible (and a safest for eagles and aircraft) approach is to have a Standard Operating Procedure of overflying (by 1000m or more) potential nesting habitat, except for end points of the flight. That way new nests en route are automatically protected.

SEARCHES OF END POINTS

The Lake Malbena area (Fig 3) was searched for eagle nests by the Parks and Wildlife Service in May 2016 using the standard operating procedure of systemmatic searching of likely habitat with helicopter, trained (accredited) searcher and an observer (Anon 2016). No nests were found and this search is valid until May 2018 (unpublished report, Chris Colley, PWS).

Figure 3. Area around halls island, lake Malbena searched by helicopter in May 2016.

The southern end point (Derwent Bridge) was assessed by NJM for nesting habitat on 19/9/17, the best potential nesting habitat in the area 1km from Derwent Bridge clearly being in the south west area (about 30 ha, blue polygon, Fig 3) with a lesser but still useful habitat area being to the south east of Derwent Bridge (about 50 ha, green polygon, Fig 3). These and other areas (mainly small pockets of suitable, sheltered trees) within 1km of Derwent Bridge were searched on foot by Nick Mooney (highly experienced raptor observer and nest searcher and principal author of most publications on eagle nesting in Tasmania) and Daniel Hackett (the Proponent and naturalist/bushman) on 21/9/17. Periodic searches for flying or vocalising eagles or mobbing

currawongs or corvids (behaviours that might reflect a nearby nest and/or eagles) were aso undertaken.

RESULTS

No eagle nests were found and no evidence of eagles seen during the searches.

DISCUSSION

On an area basis alone the 314 ha assessed has a probability of about 0.15 of holding a nest and the area searched a probability of about 0.04 (well searched areas in such habitat hold about 1 nest/2100ha, NJM unpublished data). So, it is unlikely a nest was in the area. Combined with the negative result from the Lake Milbena helicopter search by the Parks and Wildlife Service, it is reasonable to say the end points of the proposed flight route are clear of eagle nests.

Foot searching was the standard historical search method before budgets were sufficient to encompass helicopter searches and helicopter searches are inappropriate in the eagle breeding season July-February inclusive (Anon 2015). The author carried out many (laborious) searches for eagle nests during the 1980s and 1990s, pioneering this method, also helicopter searches and checks by fixed-wing aircraft (Mooney 1988). Diligent foot searching is as effective as helicpter searching in that a similar proportion of nests (95%+) are found (Wiersma, FPA, pers comm).

Most of the best potential nesting habitat lies within 1km of the local Parks and Wildlife Service helicopter pad just north of Derwent Bridge (Fig 3) meaning the search also somewhat serviced that area's potential disturbing influence.

Raptor nesting territories are thought to be dome or cone shaped, the altitudional limit likely reflecting the practicality of a territorial bird being able to confront a high flying interloper. Although data on this have not been published the concensus between international eagle experts (eg Jemima Parry Jones, World Bird of Prey Centre, UK, David Bird, McGill Uni, Canada, Al Hamarda, USA, Jerry Olsen Australia) is that there is an altitudional limit - essentially a point where it is not worth the resident eagle(s) reacting to the particular intrusion. For transient disturbance (eg an uninterupted overflight by another eagle or aircraft) this height may be in the vicinity of 500m above the canopy for large eagles but for lingering disturbance (eg a circling or hovering aircraft or eagle) the limit may be more like 1000m. Wedge-tailed Eagles certainly fly higher than this (Cherriman pers comm) but apparently not in reaction to transient intrusion.

This overflight option allows conspecifics or other competitive species to cross territories without serious dispute.

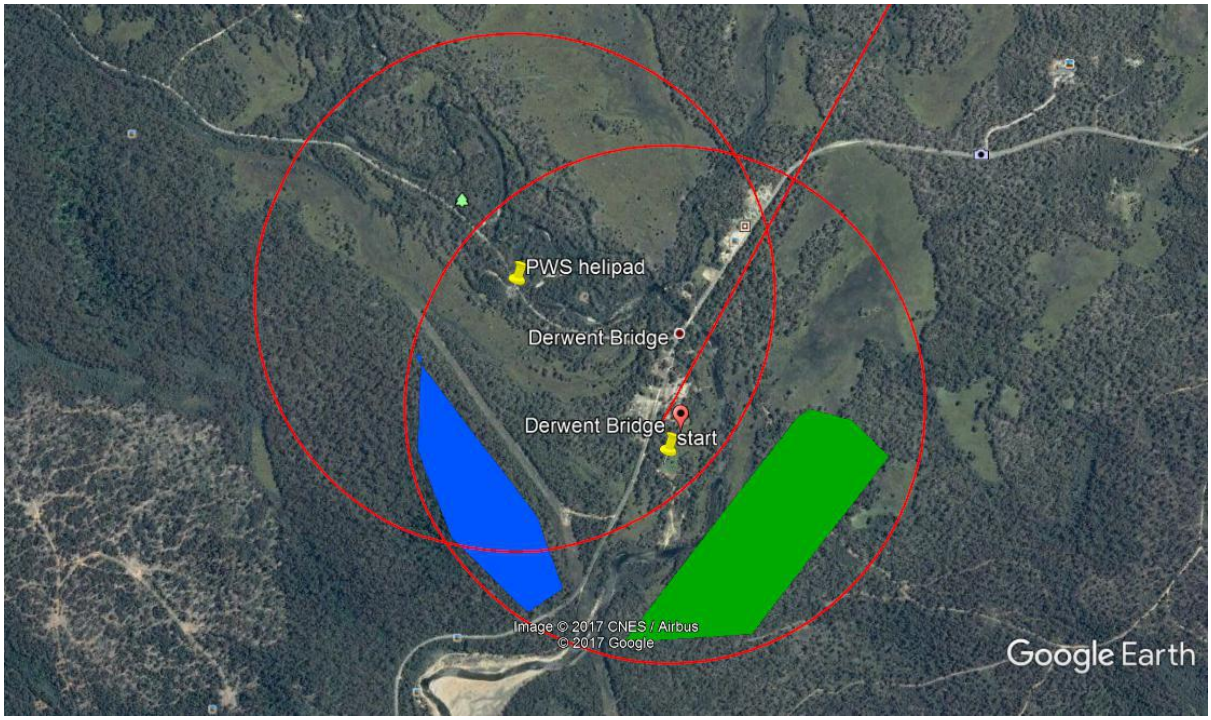

Figure 4. The area within 1km of Derwent Bridge and areas of high quality eagle nesting habitat (blue) and medium-high quality (green) overlapping the area with 1km of the PWS helipad.

RECOMMENDATIONS

1. Helicopter operations follow the proposed route, climbing and descending steeply to stay within the end point 'safe zones'.
2. Wherever possible use flight landing and take-off routes at Derwent Bridge already established by Parks and Wildlife Service Helicopter use.
3. Transient operational height be 1000+m.
4. Close manoeuvring, hovering and other 'lingering' to be avoided en route and minimised during landing and take-off.
5. During weather conditions not allowing 1000+m overflight the route chosen to be followed (since it has a very low chance of nests).
6. Eagles flying at or above operational heights to be circumvented.

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26/9/17