Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Crinia tinnula Wallum Froglet (V)	Occurs in coastal, low-lying acid Paperbark forest, within the 'wallum country' (often on sandy soils). Known to occur within wet forest habitats in the Lower Hunter and western Lake Macquarie. The closest *C. tinnula* record is less than 2 km to the north of the subject site (NPWS Atlas of NSW Wildlife data).	**Low** - Riparian vegetation within the subject site is not representative of 'wallum' vegetation assemblages, consisting largely of Swamp Oak rather than *Melaleuca* and sedge fields. As such the habitat within the subject site is considered unsuitable for this species.	**Low** – Due to the lack of individuals and preferred habitat observed on the subject site, this species is unlikely to be affected by the proposal.
Heleioporus australiacus Giant Burrowing Frog (V, V)	This species is mostly restricted to Hawkesbury Sandstone. Usually found around sandy creek banks, with crayfish burrows in this area (Robinson, M. 1996).	**Low** – This species is unlikely to occur within the subject site due to the lack of appropriate habitat (Hawkesbury Sandstone) and records within 10 km (NPWS Atlas of NSW Wildlife).	**Low** – Due to the lack of habitat resources, hence preferred habitat on subject site, it is considered unlikely this species will be affected by the proposal.
Litoria littlejohni Little John's Tree Frog (V, V*)	A pale brown frog with dark speckles which occurs along permanent rocky creeks with thick fringing vegetation associated with eucalypt woodlands and heaths among sandstone outcrops. Occurs on the plateaus and eastern plains of the Great Dividing Range.	**Low** – This species is unlikely to occur within the subject site due to the lack of appropriate habitat (rocky creeks within sandstone outcrops) and records within 10 km (NPWS Atlas of NSW Wildlife).	**Low** – Due to the lack of habitat resources, hence preferred habitat on subject site, it is considered unlikely this species will be affected by the proposal.
Litoria aurea Green and Golden Bell Frog (E, V*)	Inhabits swamps, lagoons, streams and ponds as well as dams, drains and storm water basins. Thought to be displaced from more established sites by other frog species, thus explaining its existence on disturbed sites.	**Low** – This species is unlikely to occur within the subject site due to the lack of appropriate habitat (freshwater wetland, ephemeral ponds or drains with fringing vegetation).	**Low** – Due to the lack of habitat resources, hence preferred habitat on subject site, it is considered unlikely this species will be affected by the proposal.
Mixophyes balbus Southern Barred Frog (E, V*)	Found in rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range. Breeds in streams during summer after heavy rain, outside the breeding season adults live in deep leaf litter and thick understorey vegetation on the forest floor. Eggs are laid on rock shelves or shallow riffles in small, flowing streams.	**Low** – This species is unlikely to occur within the subject site due to the lack of appropriate habitat (undisturbed creeks in wet sclerophyll forest and rainforest) and lack of records within 10 km (NPWS Atlas of NSW Wildlife).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Mixophyes iteratus Giant Barred Frog (V)	Mostly restricted to wet sclerophyll forest and rainforest, including Antarctic Beech forest. Usually found within close proximity to permanent running water (Robinson, M, 1996).	**Low** – This species is unlikely to occur within the subject site due to the lack of appropriate habitat (undisturbed creeks in wet sclerophyll forest and rainforest) and lack of records within 10 km (NPWS Atlas of NSW Wildlife).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Pseudophryne australis Red-crowned Toadlet (V)	Generally restricted to Hawkesbury Sandstone where it may be found beside temporary creeks, gutters and soaks and under rocks and logs. Breeds in deep leaf litter inundated with heavy rain (Robinson, M, 1996).	**Low** – This species is unlikely to occur within the subject site due to the lack of appropriate habitat (Hawkesbury Sandstone) and lack of records within 10 km (NPWS Atlas of NSW Wildlife).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Avifauna			
Rostratula australis Australian Painted Snipe (E)	A small freshwater and estuarine wader, which prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber.	**Low - Moderate** – The lake fringes may provide some small areas of marginal habitat for the Painted Snipe at low tide; however, there are no records within 10 km of the subject site and the presence of this species is not expected.	**Low** – The vegetation within the riparian zone would be retained. Additionally, the species was not observed within the subject site during previous field surveys (HSO, 2001; 2003b, 2007). Furthermore, the habitat present is not considered to be of any significance to this species in a local or regional context.
Ixobrychus flavicollis Black Bittern (V)	Solitary species, living near water (estuarine to brackish) in mangroves and other trees which need to form only a narrow fringe of cover. A riparian species that occasionally ventures into the open within estuarine habitats. Recorded approximately 2 km to the south in 1993 (NPWS Atlas of NSW Wildlife).	**Low - Moderate** – Marginal habitat exists within riparian vegetation (quite exposed). However, the species was not recorded during the recent site inspection (2007) or previous investigations (HSO, 2001).	**Low** – The vegetation within the riparian zone would be retained. Additionally, the species was not recorded during the recent site inspection (2007) or during previous investigations (HSO, 2001) and habitat is not as preferred by this species.
Pandion haliaetus Osprey (V, M*)	Requires water bodies for fishing in close proximity (usually <1km) to suitably tall nesting site such as dead tree, power pole etc. Essentially and estuarine species, but an accidental species to inland / freshwater wetland habitats. Known to nest near Morisset hospital.	**Moderate -** The species is known to forage within Lake Macquarie and potential nesting sites exist within the subject site. The species may occasionally use the subject site and adjacent areas. However, the species or potential nests were not recorded during the recent site inspection (2007) or previous investigations (HSO, 2001; 2003b).	**Low – Moderate** Since the species was not recorded and no Osprey nests were observed within the subject site the proposal is considered unlikely to adversely impact the species. ***Notwithstanding, as there is some degree of likelihood that this species occurs within the site, it has been assessed by Seven-part test in Appendix F***
Haematopus fuliginosus Sooty Oystercatcher (V)	Marine, usually rock shoreline, high rocky islets, boulders below cliffs, wave-cut platforms and reefs. Also inhabits sandy beaches and coves between rocky headlands (Morcombe, 2000). Also occurs within closed estuarine habitats where rocky substrates are present.	**Low - Moderate** – The lake fringes may provide some small areas of habitat for the Sooty Oystercatcher at low tide; however, larger areas of more preferable habitat occur elsewhere within Lake Macquarie. Additionally, it was not recorded during the recent site inspection (2007) or previous investigations (HSO, 2001; 2003b).	**Low** – The majority of the marginal habitat present would not be affected by the proposal; hence, retaining ongoing potential opportunity for this species. .
Charadrius mongolus Lesser Sand Plover (V, M*)	When in Australia, this migratory species inhabits sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats. Prey includes molluscs, worms, crustaceans and insects.	**Low - Moderate** – The lake fringes may provide some small areas of marginal habitat for the Lesser Sand Plover at low tide; however, there are no records within 10 km of the subject site and the presence of this species is not expected.	**Low** – The vegetation within the riparian zone would be retained. Additionally, the species was not recorded during recent site inspection (2007) or previous investigations (HSO, 2001). Furthermore, the habitat present is not considered to be of any significance to this species in a local or regional context.
Ephippiorhynchus asiaticus Black-necked Stork (E)	Inhabits swamps associated with river systems and large permanent pools but sometimes appears on the coast or in estuaries. It has also been recorded on farm dams and sewage treatment ponds.	**Low - Moderate** – The lake fringes may provide some small areas of marginal habitat for the Black-necked Stork at low tide; however, there are no records within 10 km of the subject site and the presence of this species is not expected.	**Low** – The vegetation within the riparian zone would be retained. Additionally, the species was not recorded during recent site inspection (2007) or previous investigations (HSO, 2001). Furthermore, the habitat present is not considered to be of any significance to this species in a local or regional context.
Ptilinopus regina Rose-crowned Fruit-Dove (V)	Generally lives in rainforest, though it also frequents brushes of coastal districts as well as forests and mangroves.	**Low** – Preferred rainforest habitat absent. Marginal mangrove habitat present on lake fringe (below high tide mark) adjacent to subject site. Furthermore, the species was not recorded during the recent site inspection (2007) or previous surveys (HSO, 2001, 2003b).	**Low** – Marginal habitat present adjacent to the subject site; however, the proposal would not disturb this habitat.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Ptilinopus superbus Superb Fruit-dove (V)	Occurs in rainforest and similar closed forests including, monsoon forest, regrowth, lantana thickets and woodland adjoining rainforest at all altitudes.	**Low** – Preferred rainforest habitat absent from the subject site and species is unlikely to occur within the subject site. Furthermore, the species was not recorded during the recent site inspection (2007) or previous surveys (HSO, 2001, 2003b).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Calyptorhynchus lathami Glossy Black-Cockatoo (V)	Occurs in forests and woodlands where it forages predominantly on *Allocasuarina* cones. Requires large Eucalypt tree hollows for nesting.	**Low – Moderate** - The subject site contains *Casuarina glauca* that may provide foraging habitat for the Glossy Black-Cockatoo; however, this is likely to be marginal.	**Low** – Whilst some potentially suitable foraging habitat may be present within the site; the riparian *C. glauca* would be retained subsequent to the proposal. Additionally no hollow-bearing trees were recorded within the site. The proposal would result in little disturbance to Glossy Black Cockatoo foraging habitat and is considered unlikely to adversely affect the species.
Lathamus discolor Swift Parrot (E, E*)	On the mainland this species frequents Eucalypt forests and woodlands with large trees having high nectar production during winter. Mainland winter foraging sites often vary from year to year as a consequence of varying eucalypt blossoming cycles. Nests only in Tasmania.	**Moderate** – The species was not recorded within the subject site; however, *Eucalyptus tereticornis* would provide some winter flowering foraging resources for the species.	**Low** – The amount of foraging habitat to be removed as a result of the proposal is considered to be a small portion of the habitat available to the species in the local area. Additionally, no breeding habitat is present within the subject site. As such the proposal is considered unlikely to adversely affect the species. ***F***
Ninox connivens Barking Owl (V)	Occurs mainly in dry sclerophyll woodland. Nests in large Eucalypt hollows, and roosts in hollows or thick vegetation. Hunts a range of prey species including birds and both terrestrial and arboreal mammals.	**Low** – This species is rare on the coast and was not detected during targeted field surveys and evidence of large forest owl activity was not observed within the subject site during previous field surveys (HSO, 2001; 2003b, 2007). Marginal foraging habitat due to a mainly open understorey exists within the subject site as part of a larger home range. No hollow-bearing trees were recorded within the subject site and as such no breeding habitat exists.	**Low -** the amount of foraging habitat to be removed as a result of the proposal is considered to be a small portion of the habitat available to the species in the local area. Additionally, no breeding habitat is present within the subject site. As such the proposal is considered unlikely to adversely affect the species.
Ninox strenua Powerful Owl (V)	Occurs in sclerophyll forests and woodlands where suitable prey species occur (being predominantly arboreal mammals). Requires large hollows, usually in Eucalypt trees, for nesting. Roosts in dense vegetation within such areas.	**Low - Moderate** – This species was not detected during targeted field surveys and evidence of large forest owl activity was not observed within the subject site during previous field surveys (HSO, 2001; 2003b, 2007). Suitable foraging habitat exists within the subject site, albeit not preferred intact forest habitat. No hollow-bearing trees were recorded within the subject site and as such no breeding habitat exists.	**Low -** the amount of foraging habitat to be removed as a result of the proposal is considered to be a small portion of the habitat available to the species in the local area. Additionally, no breeding habitat is present within the subject site. As such the proposal is considered unlikely to adversely affect the species.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Tyto novaehollandiae Masked Owl (V)	Found in a range of habitats, locally within sclerophyll forests and woodlands where appropriate / preferred prey species occur (being predominantly terrestrial mammals). Requires large Eucalypt hollows for nesting and these hollows are also preferred for roosting sites.	**Low - Moderate** – This species was not detected during targeted field surveys and evidence of large forest owl activity was not observed within the subject site during previous field surveys (HSO, 2001; 2003b, 2007). Suitable foraging habitat exists within the subject site, albeit not preferred intact forest habitat. No hollow-bearing trees were recorded within the subject site and as such no breeding habitat exists.	**Low -** the amount of foraging habitat to be removed as a result of the proposal is considered to be a small portion of the habitat available to the species in the local area. Additionally, no breeding habitat is present within the subject site. As such the proposal is considered unlikely to adversely affect the species.
Climacteris picumnus Brown Treecreeper (V)	Frequents drier forests and woodlands, particularly open woodland lacking a dense understorey. Also found in grasslands in proximity to wooded areas where there are sufficient logs, stumps and dead trees nearby. Feeds on invertebrate larvae and small insects, particularly ants. Utilises hollows for roosting/nesting. Appears not to persist in remnants less than 200ha.	**Low** – The subject site contains highly marginal habitat for the Brown Treecreeper due to the fragmented nature of the vegetation and lack of hollow-bearing trees. Additionally, this species was not observed within the subject site during previous field surveys (HSO, 2001; 2003b, 2007). As such the species is considered unlikely to occur within the subject site.	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Xanthomyza phrygia Regent Honeyeater (E, E*)	Nomadic Honeyeater that disperses to non-breeding areas, including the coast, in winter, where flowering trees are sought. Within its range it is mostly recorded in Box-Ironbark Eucalypt associations along creek flats, river valleys and foothills. Coastal swamp forests are used when more western resources fail and may be critical refuges during these times. Nests mainly west of the divide, although breeding attempts have occurred at Quorrobolong.	**Low** - **Moderate** – The species was not recorded within the subject site; however, *Eucalyptus tereticornis* would provide some winter flowering foraging resources for the species.	**Low** – the amount of foraging habitat to be removed as a result of the proposal is considered to be a small portion of the habitat available to the species in the local area. Additionally, no breeding habitat is present within the subject site. As such the proposal is considered unlikely to adversely affect the species.
Lophoictinia isura Square-tailed Kite (V)	Inhabits open forests and woodlands, particularly those on fertile soils with abundant passerines. They may also range in nearby open habitats but not into extensive treeless regions. This species is notably absent from alpine regions and small isolated remnant woodlands in large open areas.	**Low – Moderate** - Marginal foraging habitat is present within the subject site. However, this species was not recorded within the subject site during fieldwork and the nearest record is almost 10 km to the west. Potential nesting habitat does exist within the subject site; however, no evidence of nesting was observed during the recent site inspection (2007) or previous surveys (HSO, 2001; 2003b).	**Low** – The subject site contains marginal foraging habitat for the species; however, only a small portion would be removed as a result of the proposal. Additionally, no evidence of the species was recorded within the subject site. As such the proposal is considered unlikely to adversely affect the species.
Mammals			
Dasyurus maculatus Spotted-tailed Quoll (V, V*)	Found in a variety of forested habitats. This species creates a den in fallen hollow logs or among rocky outcrops. Generally does not occur in otherwise suitable habitats that are in close proximity to urban development.	**Low** – The subject site is sparsely forested and is located adjacent to residential development at Morisset Park. As such the subject site offers limited habitat value to the Spotted-tailed Quoll.	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Petaurus australis Yellow-bellied Glider (V)	Usually associated with tall, mature wet Eucalypt forest. Also known from tall dry open forest and mature woodland. The diverse diet of this species is primarily made up of Eucalypt nectar, sap, honey dew, manna and invertebrates found under decorticating bark and pollen. Tree hollows for nest sites are essential, as are suitable food trees in close proximity.	**Low** – The subject site does not offer suitable habitat for the species (tall mature wet eucalypt forest) or suitable hollows for denning.	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Petaurus norfolcensis Squirrel Glider (V)	Occurs In Eucalypt Forests And Woodlands Where It Feeds On Sap Exudates And Blossoms. In These Areas Tree Hollows Are Utilised For Nesting Sites. Also Requires Winter Foraging Resources When The Availability Of Normal Food Resources May Be Limited, Such As Winter-Flowering Shrub And Small Tree Species.	**Low - Moderate -** Suitable habitat for the Squirrel Glider was found to exist within the north-west portion of the study area, adjacent to the Lake Macquarie SCA further to the west (HSO, 2001). However, the species was not recorded despite targeted surveys (HSO, 2001), the subject site does not contain suitable nesting/denning habitat and offers limited forage diversity with little to no understorey. The main resource potentially used by Squirrel Glider would be the winter-flowering *Eucalyptus tereticornis*. The Squirrel Glider is not considered likely to occur within the subject site on more than an occasional basis (ie dispersing young).	**Low** – No potential denning habitat and only a small portion of marginal foraging habitat would be removed as a result of the proposal. As such the proposal is considered unlikely to adversely impact the species.
Petrogale penicillata Brush-tailed Rock Wallaby (E, V*)	Occurs in forests and woodlands along the Great Divide and on the western slopes in escarpment country with suitable caves and rocky overhangs for shelter.	**Low** – No suitable habitat within the subject site (no escarpments, rocky overhangs or caves) and no records exist within 10 km (NPWS Atlas of NSW Wildlife data).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Phascogale tapoatafa Brush-tailed Phascogale (V)	Inhabits dry open forest and woodlands, often in areas with sparse groundcover. It is one of the most arboreal Dasyurids and mainly hunts invertebrates, although some vertebrate prey is taken on occasion. Utilises small tree hollows for nesting and refuge sites.	**Low** – Marginal foraging habitat exists within the subject site; however, no hollow-bearing trees that may be used for denning were recorded within the subject site. Furthermore, no records exist within 10 km of the subject site (NPWS Atlas of NSW Wildlife data) and the species was not detected during targeted survey (HSO, 2001; 2003b).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.
Phascolarctos cinereus Koala (V)	Occurs in forests and woodlands where it requires suitable feed trees (particular *Eucalyptus* spp.) and habitat linkages. Will occasionally cross open areas, although it becomes more vulnerable to predator attack and road mortality during these excursions.	**Low - Moderate** – Potential Koala habitat exists within the study area, which includes the subject site (HSO, 2001). However, no evidence of Koala was recorded during targeted surveys including spotlighting and scat searches (HSO, 2001; 2003b) and a lack of recent local records (NPWS Atlas of NSW Wildlife data) indicates that Koala is likely to be a very occasional visitor to the subject site, at most.	**Low** – The small amount of potential foraging habitat to be removed as a result of the proposal is not considered likely to adversely affect the species.
Potorous tridactylus Long-nosed Potoroo (V)	Prefers cool rainforest, wet sclerophyll forest and heathland. Sleeps by day in a nest on the ground, and digs for succulent roots, tubers, fungi and subterranean insects. Some diggings seemingly attributable to this species may belong to *Isoodon macrourus* (Northern Brown Bandicoot).	**Low** – No suitable habitat within the subject site (no rainforest or wet sclerophyll forest with groundcover) and no records within 10 km (NPWS Atlas of NSW Wildlife data).	**Low** – Due to the lack of habitat resources, hence preferred habitat within the subject site, it is considered unlikely this species will be affected by the proposal.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Pteropus poliocephalus Grey-headed Flying-fox (V, V*)	Forages over a large area for nectar / fruits etc. Seasonally roosts in communal base camps situated within wet sclerophyll forests or rainforest. Frequently observed to forage in flowering Eucalypts.	**Moderate - High** – Foraging habitat exists within *Eucalyptus tereticornis* and *Ficus* sp. (Figs) recorded within the subject site. However, no camps or camp habitat (gullies) were recorded from the subject site.	**Low – Moderate** The small amount of potential foraging habitat to be removed as a result of the proposal is not considered likely to adversely affect the species, given the abundance of foraging habitat within the local range for this species. ***Notwithstanding, as there is some degree of likelihood that this species occurs within the site, it has been assessed by Seven-part test in Appendix F***
Miniopterus schreibersii Eastern Bentwing-Bat (V)	This species utilises a range of habitats for foraging, including rainforest, wet and dry sclerophyll forests, woodlands and open grasslands. Requires caves or similar structures for roosting habitat.	**Moderate** – Suitable foraging habitat exists within the subject site. No suitable cave roosting habitat present within the subject site.	**Low** – No roosting habitat (caves and similar) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species. ***Notwithstanding, as there is some degree of likelihood that this species occurs within the site, it has been assessed by Seven-part test in Appendix F***
Miniopterus australis Little Bentwing-bat (V)	Prefers to forage in well-vegetated areas, such as within wet and dry sclerophyll forests and rainforests. Requires caves or similar structures for roosting habitat. Largely confined to more coastal areas.	**Moderate** – Suitable foraging habitat exists within the subject site. No suitable cave roosting habitat present within the subject site.	**Low** – No roosting habitat (caves and similar) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species. ***Notwithstanding, as there is some degree of likelihood that this species occurs within the site, it has been assessed by Seven-part test in Appendix F***
Mormopterus norfolkensis Eastern Freetail-bat (V)	This species forages predominantly in dry forests and woodlands east of the divide. It roosts in tree hollows, under bark and within man-made structures.	**High** – This species was recorded within the study area during fieldwork (HSO, 2001). No suitable roosting habitat (hollow-bearing trees) was recorded within the subject site.	**Low – Moderate** No roosting habitat (hollow-bearing trees) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species. ***As this species has been recorded on the site and the possibility of the proposal having a Moderate impact upon the local population of this species, it is recommended that Test Of Significance be applied to this species in Appendix F.***
Falsistrellus tasmaniensis Eastern False Pipistrelle (V)	This species is found in a variety of forest types such as open forests, woodlands and wetter sclerophyll forests (usually with trees >20m). This species roosts in tree hollows.	**Low - Moderate** – Marginal foraging habitat exists within the subject site. No suitable hollow roosting habitat was recorded within the subject site.	**Low** – No roosting habitat (hollow-bearing trees) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species.
Chalinolobus dwyeri Large-eared Pied Bat (V, V*)	This species forages in tall open forests and the edges of rainforest. It roosts in mine shafts and similar structures.	**Low - Moderate** – Marginal foraging habitat exists within the subject site. No suitable cave roosting habitat present within the subject site and no records exist within 10km of the subject site (NPWS Atlas of NSW Wildlife data).	**Low** – No roosting habitat (caves and similar) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Myotis adversus Large-footed Myotis (V)	Usually found near bodies of water, including estuaries, lakes, reservoirs, rivers and large streams, often in close proximity to their roost site. Although usually recorded foraging over wet areas, it also utilises a variety of wooded habitats adjacent to such areas including rainforest, wet and dry sclerophyll forest, woodland, and swamp forest. Roosts in small colonies of between 15 and several hundred individuals in caves, mines and disused railway tunnels.	**High** – This species was recorded within the study area during fieldwork (RPS HSO, 2008). No suitable roosting habitat (hollow-bearing trees) was recorded within the subject site or the study area.	**Low** – No roosting habitat (caves and similar) exists within the subject site and the small amount of marginal foraging habitat (preferred habitat would be over open water in Lake Macquarie) that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species. ***As this species has been recorded on the site and the possibility of the proposal having a Moderate impact upon the local population of this species, it is recommended that Test Of Significance be applied to this species in Appendix F.***
Scoteanax rueppellii Greater Broad-nosed Bat (V)	Forages in moister gullies and wet sclerophyll forests as well as in lightly wooded areas and open spaces / ecotones. This species roosts in tree hollows.	**Moderate** – Suitable foraging habitat exists within the subject site. No suitable hollow roosting habitat was recorded within the subject site.	**Low** – No roosting habitat (hollow-bearing trees) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species. ***Notwithstanding, as there is some degree of likelihood that this species occurs within the site, it has been assessed by Seven-part test in Appendix F***
Vespadelus troughtoni Eastern Cave Bat (V)	A cave dweller, known from wet sclerophyll forest and tropical woodlands from the coast and Dividing Range to the drier forests of the semi-arid zone. It has been found roosting in small groups in sandstone overhangs, in mine tunnels and occasionally in buildings. In all situations, the roost sites are frequently in reasonably well-lit areas.	**Low - Moderate** – Local records exist for the species and suitable foraging habitat exists within the subject site. However, the species is commonly found on the north coast of NSW and local records are considered to represent the occasional presence of the species.	**Low** – Unlikely that the species occurs within the local area on more than an occasional basis. No roosting habitat (caves and similar) exists within the subject site and the small amount of foraging habitat that would be modified as a result of the proposal is considered to be a small amount of the foraging habitat available to the species in the local area. As such the proposal is considered to be unlikely to adversely affect the species.
Endangered Ecological Communities			
Coastal Saltmarsh in the North Coast Bioregion	Coastal Saltmarsh in the NSW North Coast, Sydney Basin and South East Corner occurs in the intertidal zone on the shores of estuaries and lagoons, including when they are intermittently closed along the NSW coast. Classified by the Lower Hunter Central Coast Regional Biodiversity Conservation Strategy (LHCCREMS) as Map Unit (MU) 47a.	**High** – This vegetation community was recorded in a small area in close proximity to the subject site (HSO, 2001), within the study area and was mapped as part of this report.	**Low –** This vegetation community occurs in close proximity to the proposed boat lift. If appropriate nutrient and sediment control practices are put into place the impact from the proposal will be minimal.

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Freshwater Wetlands on Coastal Floodplains of the NSW North Coast, Sydney Basin and South East Corner bio-regions	Associated with periodic or semi-permanent inundation by freshwater, although there may be minor saline influence in some wetlands. They typically occur on silts, muds or humic loams in depressions, flats, drainage lines, backswamps, lagoons and lakes associated with coastal floodplains. Wetlands or parts of wetlands that lack standing water most of the time are usually dominated by dense grassland or sedgeland vegetation, often forming a turf less than 0.5 metre tall and dominated by amphibious plants including *Paspalum distichum*, *Leersia hexandra* and *Carex appressa*. Wetlands or parts of wetlands subject to regular inundation and drying may include large emergent sedges over 1 metre tall, such as *Baumea articulata, Eleocharis equisetina* and *Lepironia articulata*.	**Low** – No plant species representative of freshwater wetland vegetation was detected within the subject site. The subject site is not subjected to regular inundation.	**Low** – Unlikely to occur based on the lack of suitable habitat within the subject site; therefore no significant impact is expected.
Hunter Lowland Redgum Forest (HLRF) on	Found on gentle slopes arising from depressions and drainage flats on permian sediments of the Hunter Valley floor in the Sydney Basin and NSW North Coast Bioregions. Dominant canopy species include *Eucalyptus tereticornis, E. amplifolia* and *E. moluccana* with scattered other Eucalypt species also present. Classified by the Lower Hunter Central Coast Regional Biodiversity Conservation Strategy (LHCCREMS) as Map Unit (MU) 19.	**Low**– The subject site contains remnant *Eucalyptus tereticornis* trees that are a dominant canopy species representative of HLRF EEC. However, the presence of *Angophora floribunda* within the subject site indicates that the remnant Eucalypt Woodland is more likely to be have once supported River Flat Eucalypt Forest EEC than HLRF.	**Low** – Since the subject site is considered unlikely to contain remnant representatives of HLRF, no impact from the proposal is expected.
River-flat Eucalypt Forest (RFEF) on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bio-regions	Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. Composition of the tree stratum varies considerably, the most widespread and abundant dominant trees include *Eucalyptus tereticornis* (Forest Red Gum), *E. amplifolia* (Cabbage Gum), *Angophora floribunda* (Rough-barked Apple) and *A. subvelutina* (Broad-leaved Apple). Correlates with LHCCREMS communities - 'Central Hunter Riparian Forest' Map Unit (MU) 13, 'Wollombi Redgum-River Oak Woodland' MU14 and 'Redgum Roughbarked Apple Swamp Forest' MU38.	**High -** remnant *Eucalyptus tereticornis* and *Angophora floribunda* trees within the subject site suggest that parts of the subject site may have once supported this community or a close affiliate. The vegetation within the study area is commensurate to MU 38 – Redgum Rough-barked Apple Swamp Forest. Within the subject site a few scattered trees of *Eucalyptus tereticornis* trees occur which are not considered to be representative of the community. However, clearing for the St. John of God training centre and grazing has eradicated all but a few scattered remnant trees. Within the subject site, this community is comprised of canopy cover only with no understorey and a groundcover of exotic grasses and herbs. This vegetation community	**Low – Moderate** The subject site contains three remnant trees that may have once represented RFEF EEC. Thus a precautionary approach has been taken in that an assessment has been undertaken. Providing the recommended mitigation measures are adopted, enhancement of riparian vegetation would be undertaken to rehabilitate degraded retained areas of RFEF. ***A seven part test of significance will need to be applied for this community in Appendix F to accurately determine the significance of potential impacts upon this stand of RFEF.***
Swamp Oak Floodplain Forest (SOFF) of the NSW North Coast, Sydney Basin and South East Corner bio-regions	This community is associated with periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains, typically occurring on grey-black clay-loams and sandy loams. Usually occurring below 20 m altitude.	**High** – some riparian vegetation on the fringes of Lake Macquarie is considered to be representative of SOFF EEC due to the dominance of Swamp Oak (*Casuarina glauca*).	**Low – Moderate** The extent of the vegetation to be removed will be associated with the Boat lift site in Easement A. As a result, the proposal is not considered likely to adversely affect SOFF EEC. Additionally, beneficial riparian vegetation enhancement works are proposed. ***A seven part test of significance will need to be applied for this community in Appendix F to accurately determine the significance of potential impacts upon this stand of SOFF.***

Species / Community	Habitat Description	Chance of Occurrence On Subject Site	Likely Level of Impact within Subject Site
Swamp Sclerophyll Forest (SSF) on Coastal Floodplains	The community is associated with humic clay or sandy loams on waterlogged or episodically flooded alluvial flats and drainage lines within coastal floodplains. It is generally characterised by an open to dense canopy of eucalypts and / or paperbarks. Canopy heights generally vary from 8m to 25m depending on species composition. In the Hunter Region the canopy often contains *Eucalyptus robusta* and / or *Melaleuca quinquinervia* although other plant species, such as *Callistemon salignus*, *Casuarina glauca*, *Eucalyptus resinifera* subsp. *hemilampra*, *Livistona australis* may be present. Small trees and shrubs, including *Melaleuca* sp., *Glochidian ferdinandi*, *Acacia* sp. *Leptospermum polygalifolium* subsp. *polygalifolium* and *Dodanaea triquetra*, are often present in the lower strata. Correlates with LHCCREMS Map Unit (MU) 42 'Riparian Melaleuca Swamp Woodland', MU42a – 'Melaleuca Scrub', MU43 – 'Wyong Paperbark Swamp Forest' and MU43a – 'Melaleuca Scrub'.	**Low** – Riparian vegetation within the subject site does not contain representative species such as *Melaleuca quinquenervia* or *Eucalyptus robusta* within the canopy. As such no SSF is considered likely to occur within the subject site.	**Low** – Unlikely to occur based on the lack of significant vegetation components within the subject site; therefore, no significant impact is expected.
Endangered Populations			
Eucalyptus parramattensis subsp. *parramattensis* Endangered Population in Wyong and Lake Macquarie LGA's	The current population within Lake Macquarie LGA is 10 individuals and a record exists for this population near Moonee to the east of the study area (Atlas of NSW Wildlife data).	**Low** – No *Eucalyptus parramattensis* was recorded within the subject site during the recent site investigation (2007) or previous surveys (HSO, 2001; 2003b) and the Lake Macquarie LGA population is not known to extend to the subject site.	**Low** – Unlikely to occur based on the lack of suitable habitat within the subject site, therefore no significant impact is expected.

Notes: (V) = Vulnerable Species listed under the *Threatened Species Conservation Act 1995*.
(E) = Endangered Species listed under the *Threatened Species Conservation Act 1995*.
(V*) = Vulnerable Species listed under the *Commonwealth EPBC Act 1999*.
(E*) = Endangered Species listed under the *Commonwealth EPBC Act 1999*.
(M*) = Migratory Species listed under the *Commonwealth EPBC Act 1999*

4.2 Considerations under the EPBC Act 1999

Considerations have been made under the Commonwealth *EPBC Act (1999*). Searches of the Department of Environment and Water Resources On-line Database were undertaken to gather baseline data on the study area and general locality. This data, combined with other local knowledge and records, was utilised to assess whether the type of activity proposed on the subject site will have, or is likely to have a significant impact upon a matter of National Environmental Significance (NES), or on the environment of Commonwealth land*.

*The subject site is not land owned by the Commonwealth, and hence this portion of the Act is not applicable. The matters of NES and site-specific responses are listed below.

- *World Heritage areas:*

The subject site is not a World Heritage area, and is not in close proximity to any such area.

- *Wetlands protected by international treaty (the RAMSAR convention):*

The subject site is not part of any RAMSAR Wetland area, and is not in proximity to any such area.

- *Nationally listed threatened species and ecological communities:*

A total of 23 nationally listed threatened species under the *EPBC Act 1999* were listed as being relevant within the proximate region of the subject site as follows:

- *Acacia bynoeana* Bynoe's Wattle
- *Angophora inopina* Charmhaven Apple
- *Caladenia tessellata* Tessellated Spider Orchid
- *Cryptostylis hunteriana* Leafless Tongue Orchid
- *Diuris praecox* Newcastle Doubletail
- *Grevillea parviflora* subsp*. parviflora*
- *Microtis angusii* Angus's Onion Orchid
- *Syzygium paniculatum* Magenta Lilly Pilly
- *Tetratheca juncea* Black-eyed Susan
- *Heleioporus australiacus* Giant Burrowing Frog
- *Litoria aurea* Green and Golden Bell Frog
- *Litoria littlejohni* Littlejohn's Tree Frog
- *Mixophyes balbus* Southern Barred Frog
- *Mixophyes iteratus* Giant Barred Frog
- *Hoplocephalus bungaroides* Broad-headed Snake
- *Lathamus discolor* Swift Parrot
- *Rostratula australis* Australian Painted Snipe

- *Xanthomyza phrygia* Regent Honeyeater
- *Chalinolobus dwyeri* Large-eared Pied Bat
- *Dasyurus maculatus* Spotted-tailed Quoll
- *Petrogale penicillata* Brush-tailed Rock-Wallaby
- *Potorous tridactylus tridactylus* Long-nosed Potoroo
- *Pteropus poliocephalus* Grey-headed Flying-fox

The potential for the proposal to significantly impact on individuals or local populations for the above species is negligible given the small amount of highly disturbed habitat to be affected. This assessment concluded that it is considered unlikely the current proposal will have a significant impact upon a local population such that local extinctions would occur. Likewise, it is considered that no significant impacts are likely to occur on a Commonwealth level. As such, the proposal is not likely to be a controlled action in relation to any of these matters of National Environmental Significance. Thus referral to the DEWHA is not necessary.

- *Nationally listed migratory species:*

Eighteen nationally listed migratory species have been listed as being relevant within the proximate region of the subject site:

- *Haliaeetus leucogaster* White-bellied Sea Eagle
- *Hirundapus caudacutus* White-throated Needletail
- *Lathamus discolour* Swift Parrot
- *Merops ornatus* Rainbow Bee-eater
- *Monarcha melanopsis* Black-faced Monarch
- *Myiagra cyanoleuca* Satin Flycatcher
- *Rhipidura ruffifrons* Rufous Fantail
- *Xanthomyza phrygia* Regent Honeyeater
- *Ardea alba* Great Egret
- *Ardea ibis* Cattle Egret
- *Calidris acuminata* Sharp-tailed Sandpiper
- *Charadrius mongolus* Lesser Sand Plover
- *Galinago hardwickii* Latham's Snipe
- *Numenius madagascariensis* Eastern Curlew
- *Pluvialis fulva* Pacific Golden Plover
- *Rostratula benghalensis* Australian Painted Snipe
- *Apus pacificus* Fork-tailed Swift
- *Sterna albifrons* Little Tern

It is considered unlikely the current proposal would have a significant impact upon a local population of nationally listed migratory species such that local extinctions would occur. Thus referral to the DEWHA is not necessary.

- *All nuclear actions:*

No type of nuclear activity is proposed for the subject site.

- *The environment of commonwealth marine areas:*

The proposed activity on the subject site will not have a significantly adverse effect on any Commonwealth marine area.

Summary Statement:

Based on the above, it is considered the current proposal will not have a significant impact on any matters of National Environmental Significance under the *EPBC Act (1999)*; hence referral to the DEWHA is not necessary.

4.3 Assessment of Threatened Species & Ecological Communities

4.3.1 Flora

No threatened flora species were recorded or considered likely to occur within the subject site and as such there are few potential implications with regards to threatened flora species arising from the proposal.

No impacts upon EPBC Act matters of National Environmental Significance are expected.

4.3.2 Fauna

Two threatened fauna species (Eastern Freetail Bat - *Mormopterus norfolkensis* and Large-footed Myotis – *Myotis adversus*) were recorded within the study area during investigations (HSO, 2001 and 2008). A further five threatened fauna species were considered likely to occur within the subject site on at least an occasional basis. All the threatened fauna species considered likely to occur within the subject site are highly mobile species able to exist or traverse in open habitats.

The removal or modification of minor foraging habitat (vegetation) for these threatened fauna species is considered to comprise a negligible impact. This is particularly the case given the proportion of habitat available in the local area and the small amount of foraging habitat to be removed within the subject site.

Potential nesting/breeding habitat in tall remnant trees for Osprey may be affected as a result of the proposal. However, the species or evidence of Osprey nesting was not recorded during the various previous surveys (HSO, 2001; 2003b; 2007, 2008). No roosting/breeding habitat was recorded within the subject site for the remaining threatened fauna species considered likely to occur and as such would not be impacted upon by the proposal.

Potential impacts arising from the proposed Trinity Point Marina on threatened fauna species recorded or considered likely to occur within the subject site are of a small

scale and magnitude. The proposal is considered unlikely to adversely impact on threatened fauna species recorded or considered likely to occur within the subject site.

A helicopter landing pad and associated use of helicopters forms part of the Trinity Point proposal. The helicopter-landing pad is located at the end of the marina on Lake Macquarie, approximately 300 m from the subject site. Any impacts that require consideration as part of this Terrestrial Ecological Assessment are limited to those impacts that might be expected to occur upon aerial terrestrial (primarily) fauna. Such species would primarily consist of birds and bats. In terms of birds, the main issue of potential concern would be impacts upon flocking wader species. No significant residential populations of any such species have been recorded during the various surveys undertaken over the study area and adjoining lands. Bird mortality in general would not be expected to be significant as such impacts would be considered to consist primarily of occasional blade strike upon the common species recorded within the subject site. Bat mortality in general would be rare as the operation of the helicopter landing pad will be limited to daytime use.

No significant impacts upon EPBC Act matters of National Environmental Significance are considered likely to occur as a result of this development proposal.

4.3.3 Endangered Ecological Communities

The study area was found to contain three EECs listed under TSC Act 1995, River Flat Eucalypt Forest (RFEF), Coastal Saltmarsh (CS) and Swamp Oak Floodplain Forest (SOFF).

River Flat Eucalypt Forest (RFEF), The *Eucalyptus tereticornis*/*Angophora floribunda* Open Forest Vegetation community within the subject site contained Forest Red Gum (*Eucalyptus tereticornis*) and Rough-barked Apple (*Angophora floribunda*) which may indicate that the subject site once contained the RFEF EEC. However, clearing for the St. John of God training centre and grazing has eradicated all but a few scattered remnant trees along the foreshore and Lake Macquarie within the subject site. The regeneration potential of this vegetation community is considered to be quite low within the subject site due to the high level of soil disturbance, exotic species invasion and understorey maintenance (mowing).

Swamp Oak Floodplain Forest (SOFF), The *Casuarina glauca* Open Forest Vegetation within the study area classifies as the SOFF EEC but varies in condition from highly disturbed (isolated Swamp Oak (*Casuarina glauca*) trees within grassland) to areas where understorey components were present (within the reserved areas along the water's edge). The areas of this vegetation type, which fall within the subject area, are either isolated trees in exotic pastures or consist of small areas of vegetation through which a path to the water's edge is to be cleared. The majority of SOFF EEC that have remnant understorey is to be retained along the edge of Lake Macquarie.

Coastal Saltmarsh (CS), The *Juncus kraussii* Saltmarsh, *Sarcocornia quinqueflora* Saltmarsh and *Sporobolus virginicus*/ *Sarcocornia quinqueflora* Saltmarsh vegetation communities classify as the CS EEC. The coastal saltmarsh within the study area is considered to be in good condition with only a few weed incursions and with minor rubbish dumping. These vegetation communities fall predominantly within the study area outside the subject site. This vegetation community will be retained as part of the development proposal.

4.4 Key Threatening Process (KTP)

KTP's are listed in Schedule 3 of the *TSC Act (1995)*. Six KTP's have the potential to affect the site as a consequence of the proposed power easement and access road, being:

- Clearing of Native Vegetation;
- Invasion, establishment and spread of Lantana;
- Invasion of native plant communities by exotic perennial grasses; and
- Human caused Climate Change.

No other KTP's are believed to be likely as a consequence of the proposed marina.

"Clearing of Native Vegetation"

The proposal is likely to contribute to the Key Threatening Process '*Clearing of Native Vegetation'* as the development as proposed would involve clearing of some native vegetation. The proposal could therefore be viewed as potentially instigating a KTP upon threatened species on the subject site. This KTP is, however, not believed to be of significance to any of the threatened species addressed due to the presence of large tracts of similar habitat opportunities in the immediate area. Recommendations made in this report pertaining to retention of habitat and appropriate landscaping provides a means to conserve and enhance such habitat on site.

"Invasion, Establishment and Spread of Lantana"

The proposal is likely to contribute to the Key Threatening Process "Invasion, establishment and spread of *Lantana*" as a result of the proposal. The clearance of native vegetation to construct the marina will create bare soil which is vulnerable to weed invasion. Provided clearing is undertaken in close temporal association with the construction of the marina, the opportunities for weed invasion will be minimised as a result of the proposal. Furthermore, the existing remnant vegetation within and subject site has current invasions of *Lantana camara,* however the proponent is currently undertaking removal of this species which is enhancing the native biodiversity of the existing vegetation.

"Invasion of Native Plant Communities by Exotic Perennial Grasses"

The proposal is likely to contribute to the Key Threatening Process "Invasion of native plant communities by exotic perennial grasses". Invasion by exotic perennial grasses is an identified threat to particular species of native flora and the particular bird species that are reliant on these plants. Activities including road works and management of roadside areas are listed as factors that may advantage the establishment of exotic perennial grasses. Slashing, weed control, movement or addition of fertilisers and nutrients and changes to drainage often aids the spread of these grasses. All of these activities could potentially occur either during or post development. Due to previous human activities in the area, the introduction of weeds is evident within the subject site. Many of the perennial exotic grasses establish following disturbances such as construction works. This may result in local and regional declines of many native species and communities including threatened species that have potential habitat within the site. The subject site has incursions of exotic perennial grasses particularly within the cleared areas of the subject site. The

proposal may provide for some limited control within the areas affected by the proposal.

"Human Caused Climate Change"

The proposal is likely to contribute to the Key Threatening Process "Human Caused Climate Change" as a result of clearing vegetation and modification of the environment. It is considered that clearing and modification of the landscape could constitute a minor incremental change. Thus the extent to which the proposal would contribute to this process is considered unlikely to be significant.

No other KTP's are believed to be relevant to the current proposal.

4.5 Considerations under SEPP 44 - Koala Habitat Protection

First Consideration – Is the Land 'Potential Koala Habitat'?

Schedule 2 of State Environmental Planning Policy (SEPP) No. 44 – 'Koala Habitat Protection' lists 10 tree species that are considered indicators of 'Potential Koala Habitat'. The presence of any of the species listed on a site proposed for development triggers the requirement for an assessment for 'Potential Koala Habitat'. SEPP 44 defines potential Koala Habitat as:

> *"areas of native vegetation where the trees of the types listed in Schedule 2 constitute at least 15% of the total number of trees in the upper or lower strata of the tree component".*

Harper Somers O'Sullivan (2001) found that the study area represented 'Potential Koala Habitat' as defined by SEPP 44. Within the subject site, Forest Red Gum (*Eucalyptus tereticornis*) is the only Schedule 2 Koala feed tree.

Second Consideration – Is the Land 'Core Koala Habitat'

SEPP 44 defines core Koala habitat as:

> *"an area of land with a resident population of koalas, evidenced by attributes such as breeding females (that is, females with young) and recent sightings of and historical records of a population."*

Direct searches of Koala within the study area included spotlighting and diurnal searches. Indirect searches for evidence of Koala included searches for scats and scratches on tree trunks, particularly targeting primary browse species. No evidence of Koala was found within the study area and no individuals were observed (HSO, 2001; 2003b).

The most recent local Koala records are from 1997 near Morisset and from 1996 at Mannering Park (Atlas of NSW Wildlife data). Historical records that exist within 10 km of the study area including:

- 1950's on Pulbah Island in Lake Macquarie
- 1986 from Wangi Point

A lack of recent Koala records from the local area indicate that the local Koala population, should it exist, it is likely to be at very low density. Furthermore, the site is generally isolated for interconnecting vegetation within the locality.

Whilst the subject site offers potential Koala habitat, the lack of recent records combined with no evidence of Koala within the study area indicates that a resident Koala population is unlikely to be present within the subject site. As a result, the subject site was not considered to constitute core Koala habitat under SEPP 44 and no further provisions of the SEPP 44 apply to the subject site.

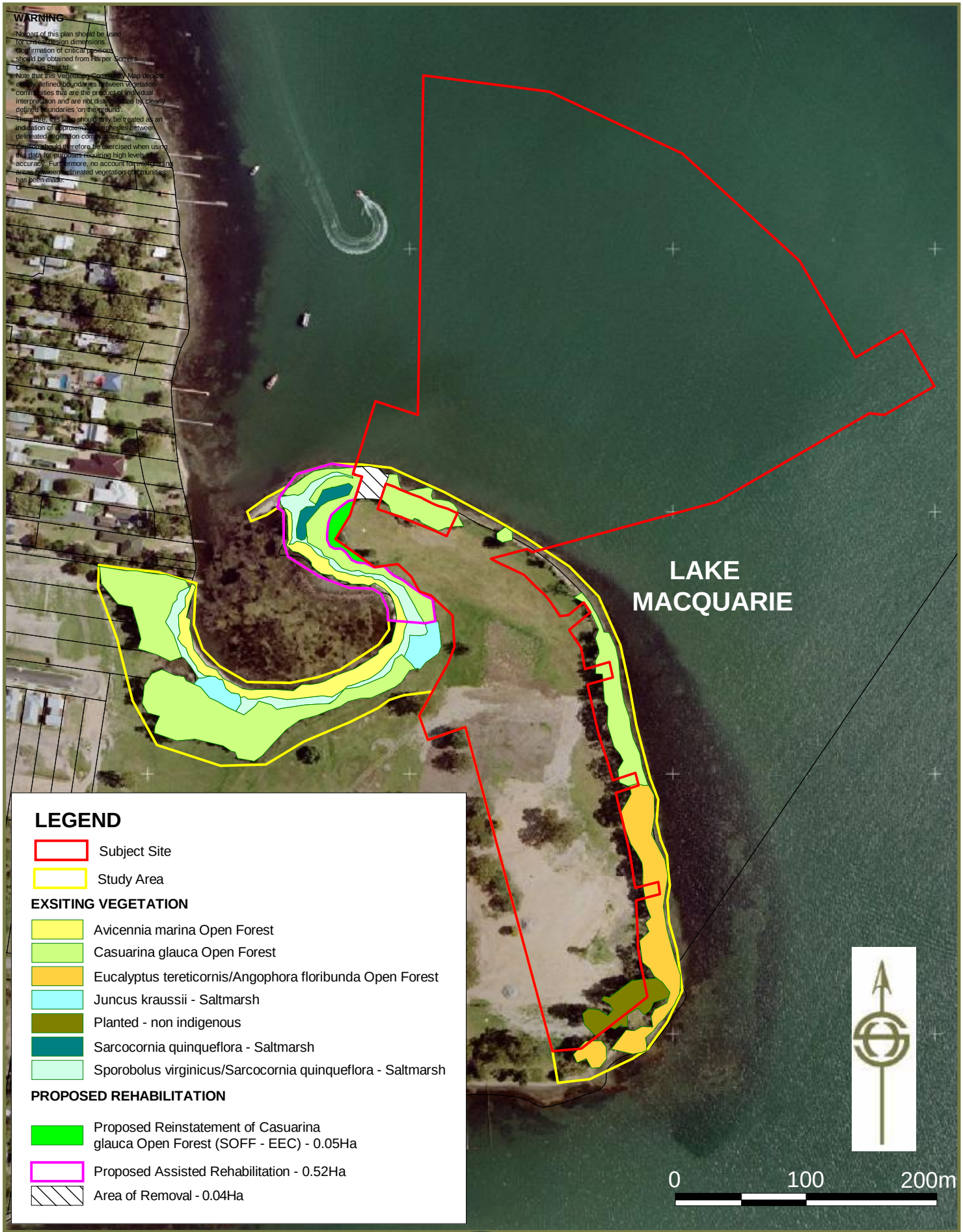
4.5.1 Proposed Offsets

A small portion of the disturbed SOFF (0.04ha) will require removal for the construction of a boat lift which is part of the proposed marina infrastructure. The boat lift has been located in an area where the shrub layer and groundcover typically associated with this EEC is absent only to be replaced by exotic pasture grass species.

Nevertheless the removal of the SOFF will require consideration in an offsets context, where the DECC generally employ a no nett loss coupled with improve or maintain outcome for the site. Notably in some instances this involves the re-instatement and/or rehabilitation of vegetation scheduled for removal and as such a nominal period for vegetation and in turn community establishment follows.

Under the current proposal, offsets for the SOFF removal will be sought on site. Specifically via the re-instatement of 0.05Ha (500m^2) of SOFF coupled with additional assisted rehabilitation within the north-eastern portion of the unnamed bay situated at the north of the study area. (Refer to Figure 4-1). There is a high degree of success expected for the re-instatement of the SOFF given the apparent concurrent topographic, hydrological and situation of the selected area.

In keeping with the improve and maintain principles of offsetting it is proposed to conduct weed control throughout the retained areas of vegetation within the study area. This will encourage natural regeneration within the existing foreshore vegetation communities. This will also include further infill planting of native groundcover, shrubs and trees. In addition to the aforementioned bushland regeneration in existing vegetation the areas on the foreshore of Lake Macquarie where no current vegetation exists will undergo rehabilitation through a replanting of natives. This work will be carried out by a qualified bushland regenerators working under the guidelines set out in the proposed vegetation management plan for the final development design. The Vegetation Management Plan will provide detailed information on weed control, planting, monitoring and timing of revegetation works to be conducted within the retained vegetation and the areas to be revegetated within the study area.



WARNING

No part of this plan should be used for construction dimensions. Confirmation of critical tie-ins should be obtained from Harper Somers O'Sullivan Pty Ltd.

Note that this Vegetation Community Map depicts clearly defined boundaries between vegetation communities that are the product of individual interpretation and are not distinguished by clearly defined boundaries 'on the ground'. Therefore, this plan should only be treated as an indication of approximate boundaries between delineated vegetation communities.

Caution should therefore be exercised when using this data for purposes requiring high levels of accuracy. Furthermore, no account for interpreting areas between delineated vegetation communities has been made.

LEGEND

- Subject Site
- Study Area

EXSITING VEGETATION

- Avicennia marina Open Forest
- Casuarina glauca Open Forest
- Eucalyptus tereticornis/Angophora floribunda Open Forest
- Juncus kraussii - Saltmarsh
- Planted - non indigenous
- Sarcocornia quinqueflora - Saltmarsh
- Sporobolus virginicus/Sarcocornia quinqueflora - Saltmarsh

PROPOSED REHABILITATION

- Proposed Reinstatement of Casuarina glauca Open Forest (SOFF - EEC) - 0.05Ha
- Proposed Assisted Rehabilitation - 0.52Ha
- Area of Removal - 0.04Ha

TITLE: Figure 4-1 Proposed Rehabilitation Areas

SCALE: 1: 3758.93 at A4 Size **DRAWN:** A.Saddington **APPROVED:** D.Landenberger

DATUM: MGA Zone 56 (GDA 94) **DATE:** 14/11/2008

LAYOUT REF: J:\JOBS\20k\20970 - Trinity Point\Marina & Resort - 2007-2008\MapInfo\WORKSPACES\REPORT WORKSPACES\20970 Figure 4-1 Rehabilitation Areas B-A4

CONTOUR INTERVAL: N/A

JOB REF: 20970

CLIENT: Johnson Property Group

PLANNING SURVEYING ECOLOGY

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4.6 Key Thresholds Assessment (Part 3A)

As required by the Draft Guidelines for Threatened Species Assessment for Part 3A applications (DEC / DPI 2005), the following assessment of Key Thresholds (four in total) is provided for the proposed Trinity Point Marina.

Whether or not the proposal, including actions to avoid or mitigate impacts or compensate to prevent unavoidable impacts will maintain or improve biodiversity values.

The proposal would remove a very small amount of remnant vegetation which classifies as highly disturbed RFEF and SOFF EEC. Clearing would be predominantly associated with constructing the boat lift in Easement A. As a result, it is proposed that 0.04 hectares of SOFF EEC would be removed as part of the proposal. The majority of remnant vegetation present within the study area would be retained post-development. Providing the recommended mitigation measures are adopted, enhancement of riparian vegetation would be undertaken to rehabilitate degraded riparian areas. Since only a very small amount of vegetation removal would be required and riparian areas would be rehabilitated/ landscaped, the proposal is considered likely to improve biodiversity values within the subject site.

Whether or not the proposal is likely to reduce the long-term viability of a local population of the species, population or ecological community.

No threatened flora species were recorded or considered likely to occur within the subject site.

A small portion of disturbed RFEF and SOFF (0.04 hectares) EECs may be removed as a result of the proposal. However, the remaining foreshore area including degraded areas of RFEF and SOFF would be rehabilitated/landscaped as part of the proposal. Rehabilitation of these EECs would occur along the shore of Lake Macquarie within the study area. This rehabilitation will involve weed removal and replanting of natives within the ground layer and understorey.

Two threatened fauna species were recorded within the subject site and a further six threatened fauna species were considered likely to occur at least on an occasional basis. Threatened fauna species discussed here include:

- **Eastern Freetail Bat (*Mormopterus norfolkensis*), recorded;**
- **Large-footed Myotis (*Myotis adversus*), recorded;**
- Osprey (*Pandion haliaetus*), suitable habitat present;
- Swift Parrot (*Lathamus discolor*), suitable habitat present;
- Grey-headed Flying Fox (*Pteropus poliocephalus*), suitable habitat present;
- Eastern Bentwing Bat (*Miniopterus schreibersii*), suitable habitat present;
- Little Bentwing Bat (*Miniopterus australis*), suitable habitat present; and
- Greater Broad-nosed Bat (*Scoteanax rueppellii*), suitable habitat present.

The removal of a negligible area of highly disturbed vegetation as a result of the proposal is considered to be a small portion of the foraging habitat available to these

threatened fauna species within the local area. Furthermore, all threatened fauna species that were considered likely to occur or were recorded within the subject site are highly mobile species capable of traversing or utilising open spaces.

Suitable nesting/breeding sites for the Osprey do exist within large trees in the remnant vegetation. This species or potential nests were not recorded during the recent site inspection (2008) or previous investigations (HSO, 2001; 2003b; 2007, 2008). Therefore, it is considered highly unlikely that the Osprey currently use the subject site for breeding. Providing recommended mitigation measures discussed in Section 6 are adopted, most mature eucalypts offering potential nesting sites for Osprey would be retained. The Osprey is known to nest within highly modified environments frequented by people (ie South West Rocks Country Club - nesting in satellite dish and artificial nesting pole). As such it is considered unlikely that the proposal would interrupt the breeding cycle of the Osprey such that it would reduce the long-term viability of a local population.

No suitable breeding/roosting habitat was found to occur within the subject site for the remaining threatened fauna species considered likely to occur or recorded within the subject site (ie other than Osprey).

In conclusion it is considered unlikely that the proposal would reduce the long-term viability of:

- threatened flora species since none are considered likely to occur;
- EECs, since only a small portion of highly disturbed RFEF and SOFF EEC would be removed and rehabilitation would occur; and
- threatened fauna species since the area of vegetation to be removed as a result of the proposal is a negligible proportion of the foraging habitat available to these highly mobile species in the local area and since no breeding/roosting/nesting habitat would be removed as a result of the proposal.

Whether or not the proposal is likely to accelerate the extinction of the species, population or ecological community or place it at risk of extinction.

It is considered unlikely that the proposal would place threatened flora or fauna species or EECs at risk of extinction, or accelerate this process, since no threatened flora species are considered likely to occur within the subject site; only a small portion of RFEF and SOFF EEC would be removed and rehabilitation would occur; and since the area of vegetation to be removed as a result of the proposal is a negligible proportion of the foraging habitat available to these highly mobile fauna species in the local area and since no breeding/roosting/nesting habitat for threatened fauna species would be removed as a result of the proposal.

No threatened flora species were considered likely to occur within the subject site.

Whether or not the proposal will adversely affect critical habitat.

There is no declared “Critical Habitat” within the study area, and as such the proposal will not adversely affect any such habitat.

5 RECOMMENDATIONS

The potential impacts arising from the proposed Trinity Point Marina on threatened species, populations and/or endangered ecological communities listed under TSC Act and/or EPBC Act, are considered to be minimal. However, a number of mitigation measures could be implemented to further reduce potential impacts. Recommended mitigation measures are:

- Minimise potential impacts associated with erosion and sedimentation on adjacent sensitive communities (ie Saltmarsh and riparian vegetation) and Lake Macquarie during construction through the inclusion of appropriate erosion and sediment controls.

- Adopt recommendations made by The Ecology Lab to minimise impacts on the aquatic environment and associated communities (ie mangroves and saltmarsh).

- Minimise potential impacts arising from stormwater runoff into adjacent riparian areas (Coastal Saltmarsh, River-flat Eucalypt Forest and Swamp Oak Floodplain Forest EECs) and Lake Macquarie by designing and installing appropriate stormwater detention and/or filtering devices.

- Prepare a vegetation management plan under the Statement of Commitments for the retained areas of vegetation along the foreshore within the study area for continued monitoring and weed control. This plan will compliment the Vegetation Management Plan which has previously been prepared for the estuarine vegetation communities within the study area (RPS HSO 2008).

- Under the aforementioned VMP undertake Assisted Rehabilitation and Re-instatement of SOFF and extant vegetation as discussed within section 4.5.1.

6 CONCLUSION

RPS Harper Somers O'Sullivan (RPS HSO) was commissioned by Johnson Property Group to undertake a reviewed Terrestrial Ecological Assessment for the development of land at Trinity Point, Morisset Park, Lake Macquarie, NSW. Methods undertaken included a review of previous ecological reports undertaken for the subject site (HSO, 2001; 2002; 2003a; 2003b; and 2007) and a recent site inspection to verify and update previous findings. The subject site was found to consist largely of cleared country with scattered remnant or ornamental trees. Disturbed remnant vegetation remained on the fringes of Lake Macquarie, largely outside of the proposed development footprint.

Two threatened fauna species were recorded within the study area (Eastern Freetail Bat - *Mormopterus norfolkensis* and Large-footed Myotis – *Myotis adversus*) and a further six threatened fauna species were considered likely to occur within the subject site on at least an occasional basis. No threatened flora species were recorded or considered likely to occur within the subject site.

Since the threatened fauna species recorded or considered likely to occur within the subject site are all highly mobile, potential impacts are largely restricted to the removal or modification of a negligible proportion of the foraging habitat available to the species' in the local area. Potential breeding/nesting/roosting habitat was found

for Osprey within mature trees within the subject site; however, no evidence of nesting was observed during site investigations (current; HSO, 2001; 2003b).

It was found that the potential impacts arising from the proposed Trinity Point Marina on threatened fauna species recorded or considered likely to occur within the subject site are of a small scale and magnitude. As such the proposal is considered unlikely to adversely impact on threatened fauna species recorded or considered likely to occur within the subject site.

Two EECs were recorded within the subject site but were highly disturbed consisting of isolated trees with no associated understorey. While a small area of SOFF EEC would be removed as part of the proposed development, it is considered that the impact would be offset by the retention of areas of EEC, which contain understorey and their enhancement through revegetation and landscaping.

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APPENDIX A Trinity Point Marina Director – General's Environmental Assessment Requirements

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NSW GOVERNMENT
Department of Planning

Contact: Thomas Mithen
Phone: 9228 6336
Fax: 9228 6540
Email: thomas.mithen@planning.nsw.gov.au
Our ref: MP 06_0309

Mr Keith Johnson
Johnson Property Group
340 Kent Street
Sydney NSW 2000

Dear Mr Johnson,

Subject: Proposed Marina/Residential/Tourist development at Lot 31 DP 1117408, Part Lot 32 DP 1119836 & Part Lot 33 DP 1117408 Trinity Point, Lake Macquarie (off Morisset Road) and the Lake Macquarie waterway (MP 06_0309).

On 7 April 2008, the Minister formed the opinion that your amended Project is one to which Part 3A of the Environmental Planning and Assessment Act 1979 ("the Act) applies. In addition, the Minister authorised the lodgement of a Concept Plan.

The Director-General's Environmental Assessment Requirements (DGRs) for the Environmental Assessment (EA) of the project for a Concept Plan are attached to this correspondence at **Attachment 1**. These requirements have been prepared by the Department in consultation with the relevant government agencies including Lake Macquarie City Council. The Director-General may alter or supplement these requirements, if necessary, and in light of any additional information that may be provided prior to the proponent seeking approval for the project.

It is noted that the residential component of the proposal is currently prohibited under the Lake Macquarie Local Environmental Plan 2004 (LEP 2004) and that Council has resolved under Section 54 of the Act to amend the zoning to permit the residential development. The EA for the proposal should therefore not be placed on public exhibition until the draft LEP has received a certificate certifying that it may be publicly exhibited under Section 65 of the Act.

The Department is currently organising to delegate the assessment of the application to Council which will allow Council to undertake exhibition and assessment of the proposal. However, the Minister will remain the consent authority.

Therefore you should contact the Council at least two weeks before you propose to submit the Environmental Assessment (EA) for the project to determine:

- the fees applicable to the application;
- consultation and public exhibition arrangements that will apply; and
- number and format (hard-copy or CD-ROM) of the Environmental Assessments that will be required.

Attachment 2 lists the relevant plans and documents which are likely to be required upon submission of your proposal. A list of some relevant technical and policy guidelines which may assist in the preparation of this EA are at **Attachment 3**.

Prior to exhibiting the EA, the Council will need to review the document to determine if it adequately addresses the DGRs. The Council may consult with other relevant government agencies in making this decision. If the Council considers that the EA does not adequately address the DGRs, they may require the EA to be revised accordingly.

Following this review period, the EA will be made publicly available for a minimum period of 30 days. It will be placed on the Department's and the Council's website along with other relevant information which becomes available during the assessment of the project. You must provide all documents and plans in a suitable format for the web.

If your proposal includes any actions that could have a significant impact on matters of National Environmental Significance (NES), it will require an additional approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. It is your responsibility to contact the Commonwealth Department of Environment, Water, Heritage and the Arts in Canberra (6274 1111 or http://www.environment.gov.au) to determine if the proposal is likely to have a significant impact on matters of NES and would require an approval under the EPBC Act. The Commonwealth Government has accredited the NSW environmental assessment process for assessing any impacts on matters of NES. As a result, if it is determined that an approval is required under the EPBC Act, please contact the Council immediately as supplementary DGRs will need to be issued.

Copies of responses from government agencies to the Department's request for key issues and assessment requirements are enclosed at **Attachment 4**. Please note that these responses have been provided to you for information only and do not form part of the DGRs for the EA.

If you have any enquiries about these requirements, please contact Thomas Mithen on 02 9228 6336 or via e-mail at thomas.mithen@planning.nsw.gov.au.

Yours sincerely,

17.4.08

Chris Wilson
Executive Director, Major Project Assessments
as delegate for the Director General

Attachment 1
Director-General's Environmental Assessment Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Application number
MP 06_0309
Project
Concept Plan Application: A concept plan approval is sought for construction of a marina comprising 308 wet berths and associated marina club, repair and maintenance facilities, chandlery and helipad, restaurant and café, function rooms, business centre/office, gymnasium, shops, 150 apartments (75 residential and 75 tourist accommodation), boardwalk and associated parking. The application will involve approval of the following conceptual key design parameters: marina and land use, built form, building heights and residential unit types, site coverage, FSR, setbacks, roads and vehicle access, pedestrian through site linkages, public domain works and infrastructure requirements, stormwater management and landscaping.
Location
Lot 31 DP 1117408, Part Lot 32 DP 1119836 & Part Lot 33 DP 1117408 - Trinity Point, Lake Macquarie (off Morisset Road).
Proponent
Johnson Property Group
Date issued
April 2008
Expiry date
2 years from date of issue
General requirements
The Environmental Assessment (EA) for the Concept Plan Application must include: 1. An executive summary; 2. An outline of the scope of the project including: • any development options; • justification for the project taking into consideration any environmental impacts of the project, the suitability of the site and whether the project is in the public interest; • outline of the staged implementation of the project if applicable; 3. A thorough site analysis including the affected part of the waterway (Lake Macquarie) and a description of the existing environment and constraints mapping; 4. Consideration of relevant statutory and non-statutory provisions, in particular relevant provisions arising from environmental planning instruments, State Environmental Planning Policies in particular SEPP 65 – Design Quality of Residential Flat Development, Regional Strategies (including draft Regional Strategies) and Development Control Plans. Including *Lake Macquarie Estuary Management Plan*; *Lake Macquarie Mooring Management Plan*; *Lake Macquarie Foreshore Stabilisation and Rehabilitation Guidelines; and Lake Macquarie Lifestyle 2020 Strategy.* Identify non-compliances and provide justification for any

departures.

5. Consideration of impacts, if any, on matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*;
6. Consideration of the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979*.
7. An assessment of the potential impacts of the project and a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures to be implemented to minimise any potential impacts of the project;
8. The plans and documents outlined in **Attachment 2**;
9. A signed statement from the author of the Environmental Assessment certifying that the information contained in the report is neither false nor misleading;
10. A Quantity Surveyor's Certificate of Cost to verify the capital investment value of the project; and
11. An assessment of the key issues specified below and a table outlining how and where in the EA document these key issues and the above requirements have been addressed.

Key Issues for the Concept Plan

The EA must address the following key issues:

1. Strategic Planning and Rezoning

1.1 Justify the proposal with reference to relevant local, regional and state planning strategies including the draft Local Environment Plan to amend the zoning of the land to permit residential development on the site. In that regard provide justification for any inconsistencies with these planning strategies.

2. Owner's consent

2.1 The proponent must provide evidence of land owner's consent to make application for all components of the proposal on Crown land, including the marina and helipad.

3. Design and Visual Impact

3.1 Provide a comprehensive Site Analysis identifying constraints and including landform features, levels, vegetation, heritage and other relevant environmental features.

3.2 Demonstrate the achievement of design excellence having regard to the significance of the site in relation to Lake Macquarie and its environs. Address impacts of the proposal on the amenity of the foreshore, overshadowing of open space and loss of views from public places and from existing approved development.

3.3 Identify urban design guidelines that take into account the existing low density character of the locality and identify appropriate development parameters in relation to building heights (number of storeys and metres), foreshore setbacks, building separations, site coverage and floor space ratios based on careful analysis of the site's constraints and opportunities and the potential visual and environmental impacts.

3.4 Address visual impact in the context of adjoining and surrounding development in relation to setting, density, built form, building mass, and height as viewed from the public domain including Lake Macquarie and all publicly accessible foreshore locations. The visual impact of the marina including the pylons and helipad and all other associated structures must be addressed in the visual impact analysis. In that regard a Visual Impact Analysis should include all significant vantage points from where the site can be viewed, both water and land based and provide relevant mitigation measures.

3.5 Use visual aids such as a scale model and photomontages to demonstrate visual impacts. Amelioration of visual impacts through design, use of appropriate colours and building materials, landscaping and buffer areas must be addressed.

3.6 Demonstrate the suitability of the proposal with the surrounding area in relation to potential character, height, bulk, scale, built form, amenity (including noise) and visual amenity having regard to *SEPP 71, NSW Coastal Policy 1997, Coastal Design Guidelines of NSW (2003)*, objectives of the 6(2) Tourism and Recreation zone and all relevant development control plans including *Lifestyle 2020 Strategy, DCP No. 1 – Principles of Development.*

3.7 Address the landscape setting and retention of existing significant vegetation on the site. Demonstrate that any removal of vegetation on the site will have minimal visual impacts.

3.8 Provide details of residential unit types and future management of tourist accommodation and measures to ensure conflict between user groups does not occur.

4. Public Access

4.1 Address existing and future opportunities for public access to and along the foreshore and future ownership and management of the foreshore reserve including any arrangements required by or of Lake Macquarie City Council.

4.2 Address the views of the *Lake Macquarie Estuary and Coastal Management Committee* and the *Office of the Lake Macquarie and Catchment Co-ordinator* and the related *Lake Macquarie Project Management Committee*;

4.3 Assess the impacts on recreational amenity arising from the loss of public access to areas of the lake that are proposed for marina and helipad operations.

4.4 Assess the impact on the Council foreshore reserved land and the impacts arising from reduced public access to the foreshore and the waterway.

5. Water Cycle Management

5.1 Address potential impacts on the water quality including stormwater management systems, surface water controls, management of slipways, hardstands and vessels, management of sewerage waste from vessels, fuel and chemical storage and management and spill management having regard to *State Groundwater, Rivers, Wetlands and Estuary Policies, Lake Macquarie Estuary Management Plan, Lake Macquarie Mooring Management Plan and Lake Macquarie Foreshore Stabilisation and Rehabilitation Guidelines.*

5.2 Address pollutant runoff loads from the site, treatment of waste, effluent disposal and sediment and erosion control. Demonstrate an acceptable level of water quality protection with respect to downstream receiving waters during and after construction.

5.3 Address changes in the hydrological regime of the catchment as a result of the project.

5.4 Provide a Water Management Plan and Site Water Balance incorporating on-site re-use of water; prevention of wet weather overflows of contaminated stormwater; segregation of contaminated water from non-contaminated water; spillage controls and bunding.

6. Waste Management

6.1 Identify all potential sources of liquid wastes and non-liquid wastes as defined in the environmental guideline *Assessment, Classification and Management of Liquid and Non-Liquid Wastes (EPA 1999)*. The EA should identify any wastes that will be stored, separated or processed on the site and identify the procedures to be adopted to manage these wastes.

6.2 Identify strategies for the management of sewerage waste from vessels and other

	sections of the facility including pump-out facilities and holding tanks; connections to sewerage systems operated by Hunter Water Corporation or options for waste water treatment, including examination of re-use options; spill management and containment; and management of privately owned vessels at the marina.
7. Groundwater Protection	
7.1	Address the *NSW Groundwater Policy Framework Document – General, NSW Groundwater Quality Protection Policy and NSW Groundwater Dependent Ecosystem Policy.*
8. Infrastructure Provision	
8.1	Address existing capacity and requirements of the development for sewerage, water, electricity, waste disposal, telecommunications and gas in consultation with relevant agencies. Identify and describe staging, if any, of infrastructure works.
8.2	Address developer contributions, and provide the likely scope of any planning agreement with Council/ Government agencies. In particular the dedication of land zoned open space adjoining the foreshore to Council in accordance with *Lake Macquarie s94 Contributions Plan.*
8.3	Address the provision of infrastructure for social and community needs due to residential development.
8.4	If applicable, provide details of the deed of agreement with the Roads and Traffic Authority for State Road infrastructure.
9. Noise Impact	
9.2	A Noise Assessment Report, prepared by a qualified acoustic consultant, is required to investigate potential noise impacts to more sensitive tourist and residential uses on the site and in the vicinity during the construction phase of the proposal and from the general operation of the marina facility and road transport to and from the site. Where necessary outline details of noise amelioration measures for the marina complex (refer to discussion under Section 15 in relation to helicopter noise).
10. Traffic and Access	
10.1	Prepare a Traffic Impact Study in accordance with the RTA's *Guide to Traffic Generating Developments.* Identify the suitability of the existing road network to accommodate the development and the adequacy of on-site parking and servicing arrangements. The traffic analysis shall use SIDRA or similar traffic model and take into account relevant intersections including current and traffic growth projects for the life of the project, 95th percentile back of queue lengths and delays and level of service on all legs. Provide an electonic copy of the traffic analysis/modelling in CD format
10.2	Address *Draft SEPP 66 – Integration of Land Use and Transport* and DoPs *EIS Guidelines on Roads and Related Facilities.*
10.3	Identify needs (if any) to upgrade roads/junctions and improvement works to ameliorate any traffic inefficiency and safety impacts associated with the development where relevant. This should include identification of pedestrian movements and appropriate treatments.
11. Aboriginal and Cultural Heritage	
11.1	Address the draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC, July 2005).*
11.2	Identify whether the site has significance in relation to Aboriginal cultural heritage and identify appropriate measures to preserve any significance. This is to be undertaken

by an appropriately qualified person in consultation with the local Aboriginal community.

11.3 Identify any items of eurpean heritage significance and provide measures for conservation of such items.

11.4 Address impacts on World Heritage areas, places listed on the National Heritage List and protected under the EPBC Act.

12. Flora and Fauna

12.1 Assess potential impacts on threatened species, populations and endangered ecological communities in accordance with the draft *Guidelines for Threatened Species Assessment DEC & DPI July 2005*

12.2 Address measures for the conservation of flora and fauna and their habitats within the meaning of the *Threatened Species Conservation Act 1995* and the *Fisheries Management Act,* having regard to the *Draft Guidelines for Threatened Species Assessment (DEC & DPI July 2005).* Address impacts on migratory species, RAMSAR wetlands and species listed under Section 18 and 18A of the EPBC Act.

12.3 Assess the impacts on flora and fauna in accordance with the *Lake Macquarie Flora and Fauna Survey Guidelines.*

13. Natural Hazards

Coastal Processes

13.1 Address coastal hazards and the provisions of the Coastline Management Manual. In particular consider impacts associated with wave and wind action, coastal erosion, sea level rise and more frequent and intense storms (also refer to discussion below under flooding).

13.2 Address consistency with *Rivers and Foreshores Improvements Act 1948, NSW Coastal Policy, NSW Wetlands Management Policy, NSW State Rivers and Estuaries Policy* and *NSW Estuary Management Policy.*

Contamination

13.3 Identify any contamination on site and appropriate mitigation measures in accordance with the provisions of SEPP 55 – Remediation of Land.

Acid Sulfate Soils

13.4 Identify the presence and extent of acid sulfate soils on the site and, where relevant, appropriate mitigation measures in accordance with the Acid Sulfate Soil Manual (NSW Acid Sulfate Soil Management Advisory Committee 1998).

Geotechnical

13.5 Prepare a geotechnical assessment of the property to address potential impact of subsidence and future mining of coal resources in the area.

Flooding

13.6 Demonstrate the development is compatible with Council's relevant Flood Policy and in accordance with the guidelines contained in the *NSW Floodplain Development Manual* (2005). Provide a Floodplain Risk Management Study addressing the potential impacts of flooding, taking into consideration the potential risks associated sea level rise and changes to hydrological processes, potential shoreline recession and greater frequency and intensity of storms. These risks should be assessed on the impact from development on the flooding regime and impacts from flood on proposed development.

14. Marina Development and Potential Impacts

14.1 Address the potential marina impacts:

- due to the marine structure and operations on the seabed, in particular on seagrass and benthic organisms including the shading effects of the structures proposed measures to prevent/mitigate impact (The design should minimise shading on the seagrass beds);
- due to any structure located on the foreshore to interfere with the free movement of seagrass wrack along the foreshore, and on wave energy and the risk of deflection or refraction to other locations and proposed measures to prevent/mitigate impacts;
- due to stormwater run-off on water quality and seagrass beds and proposed measures to prevent/mitigate impacts;
- due to marina operations and the increase in vessel numbers and usage levels on water quality, aquatic ecology, and recreational amenity;
- due to management of travel lift, hardstand areas, workshop, vessels, management of sewerage waste from vessels, fuel and chemical storage and management and spill management on water quality and seagrass beds and proposed measures to prevent/mitigate impacts;
- on navigation and existing swing moorings on or in the immediate area of Bardens Bay;
- on air quality including dust generation during construction activities and boat maintenance and repairs;
- due to day berthing facilities for the general public;
- due to dredging activities including method to be used; dimension of area of works; nature of sediment; environmental safeguards;
- marine vegetation and include mapping and density distribution and measures to minimise harm to marine vegetation and details of compensatory habitat development to replace lost vegetation;
- on fish species and their habitat; and
- on commercial, recreational or indigenous fishing activities.

14.2 Justify the suitability of the site for a marina development including the extensive infrastructure (eg. breakwalls) to accommodate the proposal in this location.

14.3 Address the cumulative impact on increased boating activities in the locality including the provision of appropriate boating infrastructure.

14.4 Provide hydrographic survey and modelling details and the need for dredging both on-site and for access from other parts of the lake and ocean (via Swansea Channel) and the impacts and on-going maintenance issues.

14.5 Undertake an assessment of potential impacts of the marina development on hydrodynamic processes within Lake Macquarie and Bardens Bay including detailed hydrodynamic modelling undertaken to quantify potential impacts.

14.6 Undertake an analysis of the need for marina facilities and consider other existing and proposed marina developments on Lake Macquarie and the suitability of the site for marina facilities.

14.7 Address the principles of Crown lands management under Section 11 Crown Lands Act 1989 and Part 3 – the land assessment provisions.

14.8 Provide an economic feasibility report, prepared by an appropriately qualified consultant, addressing the proposed marina size and the tourism component.

15. Establishment of Helipad and Helicopter Noise Impacts

15.1 Address CASA's *Guideline for Establishment and Use of Helicopter Landing Sites (HLS)*, in particular the "Recommended Criteria for a Basic and Standard HLS".

15.2 A Noise Assessment Report, prepared by a qualified acoustic consultant is required to investigate potential noise impacts associated with the taking off, approaching and enroute of helicopters to the helipad. The report shall address potential impacts on residential areas and other noise sensitive locations/uses; fauna and their habitats in particular threatened species, populations, or ecological communities of fish or marine vegetation and their critical habitat.

15.3 Identify all types of helicopters that are proposed to be used and include flight path, hours and frequency of operation, noise contours/levels, route, noise mitigation measures and/or acoustic treatments and need for such a facility. Best practice in the measurement and prevention/mitigation of noise impacts shall be adopted.

16. Energy Efficiency

16.1 Demonstrate intended compliance with the *Lake Macquarie Development Control Plan No. 1 – Volume 1 - Energy Efficiency for Residential and Commercial Buildings* and the *Lake Macquarie Greenhouse Action Plan.*

16.2 Identify how the proposal will reduce water usage and greenhouse gas emissions to satisfy BASIX targets.

Consultation

You should undertake an appropriate and justified level of consultation with the following agencies during the preparation of the environmental assessment:

(a) *Agencies or other authorities:*

- Commonwealth Department of Environment, Water, Heritage and the Arts;
- Department of Water and Energy;
- Department of Environment and Climate Change;
- Department of Planning Hunter Regional Office, Newcastle;
- Department of Primary Industries;
- Department of Lands;
- Heritage Council;
- Mine Subsidence Board;
- New South Wales Aboriginal Land Council and Local Aboriginal land Council/s such as the Koompahtoo Local Aboriginal Land Council and other Aboriginal community groups including the Awabakal Descendants Traditional Owners Aboriginal Corporation;
- NSW Road and Traffic Authority;
- Commonwealth Civil Aviation Safety Authority;
- Lake Macquarie City Council;
- NSW Maritime Authority; and
- Hunter Water Board; and
- Relevant energy supply authority.

(b) *Public:*

Document all community consultation undertaken to date or discuss the proposed strategy for undertaking community consultation. This should include any contingencies for addressing any issues arising from the community consultation and an effective communications strategy.Consultation should include the *Lake Macquarie Estuary and Coastal Management Committee, Lake Macquarie Aquatic Services Committee, The Office of the Lake Macquarie and Catchment Coordinator* and the *Lake Macquarie Project Management Committee* and address any issues raised in stakeholder forums

The consultation process and the issues raised should be described in the Environmental Assessment.
Deemed Refusal Period
60 days

Attachment 2
Plans and Documents to accompany the Application

Plans and Documents of the development	The following plans, architectural drawings and diagrams of your proposal as well as the relevant documents will be required to be submitted with your Concept Plan application: 1. The **existing site survey plan** is to be drawn to 1:500 scale (or other appropriate scale) and show: • the location of the land, the measurements of the boundaries of the land, the size of the land and north point; • the existing levels of the land in relation to buildings and roads; • location and height of existing structures on the site; • location and height of adjacent buildings and private open space. 2. An **aerial photograph** of the subject site with the site boundary superimposed. 3. A **Site Analysis Plan** must be provided which identifies existing natural elements of the site (including all hazards and constraints), existing vegetation, property dimensions, footpath crossing levels and alignments, existing pedestrian and vehicular access points and other facilities, slope and topography, natural features such as watercourses, rock outcrops, utility services, boundaries, orientation, view corridors and all structures on neighbouring properties where relevant to the application (including windows, driveways etc.). 4. A **locality/context plan** drawn to 1:500 scale (or other appropriate scale) should be submitted indicating: • significant local features such as parks, community facilities and open space, water courses and heritage items; • the location and uses of existing buildings, shopping and employment areas; • traffic and road patterns, pedestrian routes and public transport nodes; and • The existing site plan and locality plan should be supported by a written explanation of the local and site constraints and opportunities revealed through the above documentation. 5. The **Environmental Assessment** in accordance with the Director-General's Environmental Assessment Requirements as outlined in Attachment 1. 6. The **Conceptual Architectural drawings** are to illustrate the following general features: • location of any existing building envelopes or structures on the land; • and proposed dwelling types; • location of proposed public open space; • public domain works, proposed communal facilities and servicing points; • indicative building heights shown as building envelopes in elevation, significant level changes; • FSR, building separations and foreshore setbacks; • parking and vehicular access arrangements; and • pedestrian access to, through and within the site.

	7. **Other Plans** including (where relevant): **Road Hierarchy & Open Space Network Plans** - illustrating indicative road and open space networks. **Stormwater Concept Plan** – illustrating the concept for stormwater management from the site. **Infrastructure Plans** – conceptual drawings indicating all proposed infrastructure including roads, water supply, water re-use, sewerage and earthworks. **Landscape Concept Plan** – plan or drawing that shows the indicative planting design and plant species to be used, listing botanical and common names. **View Analysis** – artist's impression, photomontages, etc of the proposed development in the context of the surrounding development. **Flood Evacuation Plan** – plan showing the proposed access from the site during extreme flood events. **Foreshore Open Space Plan** – showing location of the cycleway/walkway and any proposed structures or easements over the land. **Water Cycle Management Plan** – showing all hardstand areas and stormwater management systems. **Waste Management Plan** – showing all sources of waste to be stored, separated or processed including pump-out facilities and holding tanks and spil management procedures The following plans, architectural drawings and diagrams of your proposal as well as the relevant documents will be required to be submitted with your application: 8. The detailed **Architectural drawings** associated with the marina buildings and structures are to illustrate the following general features: • location of any existing building envelopes or structures on the land; • the sections, elevations and floor plans of buildings/structures associated with the marina; • public domain works, proposed communal facilities and servicing points; • public and private parking and vehicular access arrangements; and • pedestrian access to, through and within the marina site and/or waterway and adjoining foreshore areas. 9. The detailed **Design Drawings** associated with the marina including the breakwater and other associated water based structures including the helipad. 10. The detailed **Visual Site Analysis** associated with the land based development and proposed marina and helipad and associated buildings and structures in the context of surrounding development. 11. It is understood the application will be documented to a Project Application standard for the marins including hardstand areas and workshop, helipad, breakwater, travel lift and fuel storage. The detailed environmental/design reports including a Coastal Processes Study, Breakwater Design Study and other relevant assessments to satisfactorily address the issues associated with the marina and associated facilities outlined in **Attachment 1**.
Specialist advice	Specialist advice, where required to support your Environmental Assessment, must be prepared by suitably qualified and practising

	consultants in relation to issues including, but not limited to, the following: • Aquatic Ecology and Coastal processes • Flora and Fauna; • Landscaping; • Aboriginal Archaeology and European Heritage; • Geotechnical and/or hydro-geological (groundwater); • Stormwater/drainage and Flood Management; • Urban Design/Architectural; • Traffic and Access; • Contamination in accordance with the requirements of SEPP 55; • Acid Sulphate Soil Management Plan; • Town Planning, visual analysis including justification of proposed building envelopes and heights in relation to relevant controls; • Social and Economic Impact; • Disability Access; • Building Code Australia; • Hydrodynamic Processes; and • Greenhouse Gas Emissions.
Documents to be submitted	• 25 hard copies of the Environmental Assessment; • 25 sets of architectural and landscape plans to scale, including ten (10) sets at A3 size (to scale); • 6 copies of the Environmental Assessment and plans on CD-ROM (PDF format), not exceeding 5Mb in size (see below); and • If the Environmental Assessment is bulky and lengthy in volume, you will be required to package up each Environmental Assessment ready for distribution by the Council to key agencies. • Six (6) full sets of all documenation (EA and plans) (hard copy) to scale for placement in the Morisset Council library
Electronic Documents	Electronic documents presented to Council and the Department of Planning for publication via the Internet must satisfy the following criteria:- • Adobe Acrobat PDF files and Microsoft Word documents must be no bigger that 1.5 Mb. Large files of more than 1.5 Mb will need to be broken down and supplied as different files. • File names will need to be logical so that the Council and Department can publish them in the correct order. Avoid sending documents that are broken down in more than 10 files. • Image files should not be bigger than 2Mb. The file names will need to be clear and logical so the Council and Department can publish them in the correct order. • Graphic images will need to be provided as [.gif] files. • Photographic images should be provided as [.jpg] files. • Large maps will need to be presented as individual files and will need to be calibrated to be no more than 2Mb each. • Images inserted into the document will need to be calibrated to produce files smaller than 1.5Mb. Large images will need to be presented as individual files and will need to be calibrated to be no more than 2Mb each. The file names will need to be clear and logical so the Council and Department can publish them in the correct order. Alternatively, these electronic documents may be placed on your own web site with a link to the Council's and Department of Planning's website.

Attachment 3
State Government technical and policy guidelines

The following list provides relevant technical and Policy Guidelines which may assist in the preparation of the Environmental Assessment. It should be noted, however, that this list is not exhaustive as other documents and policies may need to be reviewed. It is also important to note that not of all of these guidelines may be relevant to your proposal.

The majority of these documents can be found on the relevant Departmental Websites, on the NSW Government's on-line bookshop at http://www.bookshop.nsw.gov.au or on the Commonwealth Government's publications website at http://www.publications.gov.au.

Aspect	Policy /Methodology
Biodiversity	
Flora and Fauna	Draft Guideline for assessment of impacts on Threatened Species under Part 3A (Department of Planning 2005)
Fish and Aquatic Ecosystems	Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (NSW Fisheries, 2003)
	Threatened Species Management Manual (NPWS, 1998)
Coastal Planning	
	NSW Coastal Policy 1997 - A sustainable Future for the New South Wales Coast, NSW Government, 1997
	Coastal Design Guidelines for NSW, PlanningNSW, February 2003
	NSW Wetlands Management Policy (DLWC, March 1996)
Bushfire	
	Planning for Bushfire Protection 2006 (NSW Rural Fire Service)
Contamination of Land	
	Best Practice in Contaminated Sites (Commonwealth DEH, 1999, ISBN 0 642 546460)
Environmental Management Systems	
	NSW Government Interim Water Quality and River Flow Environmental Objectives (DEC)
	Guidelines for the preparation of Environmental Management Plans (DIPNR, 2004)
Heritage	
Aboriginal	Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC July 2005)
	Draft Guideline for assessment of impacts on Aboriginal Heritage under Part 3A (Planning 2005)
	Interim Community Consultation Requirements for Applicants (DEC, 2004)
Non-Indigenous	Assessing Heritage Significance Update for Heritage Manual (Heritage Office, 2000)
	NSW Heritage Manual (NSW Heritage Office, 1996)
Noise	