ENVIRONMENTAL ASSESSMENT

PROPOSED REDEVELOPMENT AND MARINA EXTENSION

LAKE MACQUARIE YACHT CLUB, 9 ADA STREET, BELMONT

Prepared on behalf of:
LAKE MACQUARIE YACHT CLUB

Prepared for submission to:
DEPARTMENT OF PLANNING

Prepared by:

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SUBMISSION OF ENVIRONMENTAL ASSESSMENT

Prepared under Part 3A of the Environmental Planning and Assessment Act, 1979

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PROJECT PLAN APPLICATION

Applicant Name: Lake Macquarie Yacht Club

Applicant Address: P O Box 150
Belmont NSW 2280

Land to be Developed: Lots 973, 974, 975 in DP 755233 and part of Lots 7019 and 7020 DP 1055579 (No. 9 Ada Street, Belmont).

Proposed Development: New Clubhouse and Marina Extension.

ENVIRONMENTAL ASSESSMENT

An EA is attached which addresses all matters listed under Part 3A of the Environmental Planning and Assessment Act 1979

CERTIFICATE

I certify that I have prepared the contents of this EA and to the best of my knowledge:

- It contains all available information that is relevant to the environmental assessment of the development to which the EA relates; and
- It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

Signature:

Name: David Humphris

Date: 26 August 2010

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Purpose and Proposal

This Environmental Assessment accompanies a major project application which seeks approval under Part 3A of the Environmental Planning and Assessment Act 1979. Lake Macquarie Yacht Club ("LMYC") seeks approval for the proposed redevelopment of the LMYC, including a new clubhouse, an extended marina and an extended car park.

The Site and Locality

The subject land is reclaimed Crown land comprising Lots 973, 974, 975 in DP 755233, as well as part of Lake Macquarie and the adjoining Cullen Park. The reclaimed land portion of the site (which accommodates the clubhouse, car park and associated hardstand) has an approximate area of 5,100 square metres. The water based component comprising the existing marina, occupies an approximate area of 8,700 square metres. The land and water based components of the site are under the care and control of the Land and Property Management Authority.

The site is known as No. 9 Ada Street, Belmont. The LMYC is on the eastern shores of Lake Macquarie within the suburb of Belmont near the intersection of Ada Street and the Pacific Highway. The Pacific Highway links Belmont with the city of Newcastle to the north and Sydney to the south. Lake Macquarie is Australia's largest coastal saltwater lake and is around 150 kilometres north of Sydney and around 20 kilometres south of Newcastle. The lake has around 150 kilometres of shoreline and is about four times the size of Sydney harbour. The LMYC at Belmont extends approximately 100 metres into the lake.

The LMYC has provided around 80 years of service to the Lake Macquarie area. The LMYC is a not for profit community based yacht club.

The Locality

The site is adjoined by predominantly residential uses, although there are retail, commercial and recreational uses within close proximity. These include the Belmont 16 Footers Club to the north and various retail and commercial uses along the Pacific Highway, which are associated with the town centre of Belmont.

Existing Development

The existing development includes a car parking area for around 94 vehicles on reclaimed land (with access off Ada Street); a two storey clubhouse (which includes meeting rooms, licensed premises with bar and restaurant, office and general amenities); an 84 berth marina; 12 swing moorings licensed to the LMYC and a hardstand area adjacent to the car park which accommodates 19 yachts. The LMYC has 3 subtenants including the restaurant/bistro, boat brokerage and sailing school.

Project Need

There is a general trend for yachts to be increasing in size and keel depth. Approximately 0.6 metres of depth has been lost around the existing marina infrastructure over the last 45 years or so. It is now difficult for yachts with a draught of around 2 metres to navigate into and out of the marina due to insufficient water depths. The new marina extension will provide the necessary depth for yachts with a draught over 2 metres.

The existing marina caters for around 83 boats and is fully subscribed. Furthermore, the existing marina does not cater for large power boats, catamarans and deeper draft yachts. There is a growing demand for marina berths within Lake Macquarie and the LMYC currently has around 40 names on the marina waiting list. This is a

conservative estimate of demand and does not represent latent demand. This is situation common to other marina operators in Lake Macquarie.

The current parking arrangements adequately cater for club requirements during the week, but can be oversubscribed on weekends, public holidays and during special event days.

The foundations and structure of the clubhouse are deteriorating. The clubhouse is built over a harsh saltwater environment on timber piles on timber joists and bearers. Many of these are rotted out and propped up in a make-shift way. The sub floor timber structure has deflected and the foundations are deteriorating. The clubhouse is slowing sinking into the lake. The current position of the club is the optimal position and therefore a replacement facility is required. There is therefore a need for the land-based facilities associated with a new marina to be expanded and to be updated to ensure they remain attractive for new boat owners, residents and visitors (including tourists). Such an upgrade is also required to meet the demand associated with the new marina extension and associated increase in club membership. The proposed expansion would produce economic benefits to the wider community, including employment opportunities during the construction and operational phases. In addition, there will be economic benefits to the wider community of an expanded marina.

Marina Demand

A detailed supply and demand analysis of marina berths has been undertaken in the Social and Economic Impact Assessment. The NSW Maritime Authority has estimated that Lake Macquarie has over 2,200 moorings, including 400 marina berths. In contrast there are more than 23,000 registered vessels. Over the 10 year period to 2000 there had been an 11% growth in demand for mooring sites in Lake Macquarie. The NSW Maritime Authority has confirmed that such growth has continued since 2000. Furthermore, the existing marina has a 100% occupancy rate and the club presently has around 40 names on the marina waiting list. This does not represent latent demand. It is also understood that power boat registrations in Lake Macquarie have increased 41% in the past 10 years, rising from 15,280 in 1996 to 21,493 in 2006. Furthermore, sailing boat registrations increased 16% from 1,261 to 1,461 over the same period.

Currently there are around 409 marina berths in Lake Macquarie. Should the proposed developments at the Lake Macquarie Yacht, Marmong Point and Trinity Point proceed, there will be a net increase of 326 new marina berths. If, according to the Trinity Point Marina Demand Study, the upper end of the supply and demand analysis is correct at 398 marina berths, there is a potential undersupply of 72 berths. However, given the projected demand at 2016, the trend towards increased demand and utilisation of marina berths when they become available and the demand for visiting/short duration berthing requirements, the proposed cumulative supply of marina berths across Lake Macquarie is reasonable. Furthermore, the potential demand from the Sydney market has not been quantified and could easily increase this demand scenario. As a result, additional demand over and above the projected 398 berths in 2011 is more likely.

The Proposed Development

The proposal comprises the following key elements:

- An extension to the existing marina to accommodate 64 additional wet berths/boats (***Note**: 72 new wet berths are to be provided in the new marina extension. However, the existing marina berths are to be reduced to 76 berths with a catamaran configuration*. The marina extension will result in a total of 148 wet berths (including temporary day berths and berths used by the Club).
- The surrendering of 4 commercial swing moorings licensed to the LMYC which will reduce the number of such swing moorings to 8.
- The demolition of the existing two storey clubhouse and the erection of a new contemporary style two storey clubhouse building.

- The reconfiguration of the existing parking area to accommodate a total of 127 car spaces, including 3 disabled spaces (ie. 33 additional spaces). The existing car park will be resealed and will be extended over the existing rock ballast walls to both the north and south.
- The provision of 24 additional at grade parking spaces and 2 car and trailer spaces within the existing gravel car park in Cullen Park. This includes landscaping of Cullen Park and the provision of public access along the foreshore.

There are presently no hazardous goods or materials that are stored on the existing marina, including fuel storage, and this will continue to be the case.

Environmental Assessment

The proposed development has been informed by the environmental constraints and opportunities investigated. Mitigation and management measures have been recommended in the supporting specialist reports to create a sustainable development that is integrated into the natural setting. The analysis of the key issues has included the following:

Wind and Wave Action and Coastal Erosion

The Hydrodynamic Assessment showed that sea level rise and the associated increase in depths in the lake appear to have only a small impact on the wave climate. The wave skirt around the proposed marina would attenuate the wave (as is currently the case) and distort the wave field. At the shoreline (where potential erosion may occur or seagrass wrack may accumulate), there is no measurable difference in the wave climate when compared with simulations of the existing development.

The wave climate within the proposed marina would reduce resuspension of sediments and this would improve light transmission in that area under windy conditions. The lake bed stresses due to wave action would also generally be reduced, increasing the potential for the establishment of seagrasses within the bounds of the proposed marina (as is evident in the existing marina). The design of the proposed wave skirt, in particular the substantial gap beneath the skirts, would allow reasonably free flow through the system with minimal turbulence derived from the skirt itself, apart from the immediate small scale wakes imposed by the gaps in the skirt. These will be well above the benthic system and will not cause bottom disturbance. The new marina piles will result in turbulent wakes, however, these will generally be at very low velocities and are unlikely to cause scouring beyond the immediate vicinity (around 1 metre) of the pile.

The western skirt of the proposed marina would be the most important in reducing wave action in the marina because most waves approach the marina from the west due to the bathymetry of the Lake. The proposed marina extension would penetrate a zone of waves in excess of 0.6m and attenuate this. On the downwind side a much larger protected area is created reducing wave heights further north of the existing marina, in addition to the reductions that would occur north of the proposed marina. Despite these changes occurring in moderately deep water, there is little evidence of change occurring at the shoreline, where the filled car park has the dominant effect, along with bottom frictional effects in much shallower water. When the potential impact of 1 in 50 year winds with raised sea level (increased depth of 910mm) is modelled, the additional sheltering effect of the proposed marina is again evident. However, even in these extreme wind conditions the effects do not impact significantly on shoreline conditions.

Flooding and Sea Level Rise

The Council's Sea Level Rise Policy adopts a 50 year building life for proposed developments. The redevelopment of the club in say 2010 would require a floor level of around 2.27 metres AHD. The Council would prefer the club to be built to the 50 year level now and then to wait until the sea level rises accordingly. In addition, Council Officers have advised that the existing car park should be designed for a 20 year design life and should be raised to 1.23 metres AHD.

In response to this policy, the new club has been designed at an appropriate level that would allow the ground floor level to be increased over time as required by sea level change. The proposed level of the ground floor at construction would be 780mm higher than the current floor level. The new club would comprise a new concrete slab built with a ground floor level of 1.98 metres AHD. When required, an additional concrete slab would be laid above the existing concrete slab to provide a higher floor level to meet the Council's required 2.27 metres AHD floor level. The ceiling height of the ground floor would be adequate to allow the ground floor to be built up over time as required. Doors would be made higher initially to allow an increased floor level with the substructure being designed to allow for the additional weight. Services (where possible) would be brought down through the ceiling rather than up through the floor. Although new fit out works at the ground level would be required within the club following the raising of the floor level, this can be timed with the general fit out works that are common within club buildings every 10 to 15 years or so. It is likely that only one floor level addition would occur during the next 50 years and this would be co-ordinated with one of the aforementioned club fitouts.

With regard to the car park, it is proposed that there would be no change to its existing level at the time of construction of the club. The car park would remain at a level which presently varies between 0.8 and 1.2 metres AHD. However, the central aisle of the car park (between the access point off Ada Street and the LMYC entry) will be raised to a level of 1.23 metres AHD to comply with Council's requirement for flood free access and egress during an emergency flood event.

Hydrodynamics

The currents in Lake Macquarie are very small under tidal influence alone and the most significant motion is wind driven. The simulations undertaken in the Hydrodynamic Assessment demonstrate that there will be negligibly small impacts on advection and dispersion of buoyant materials and solutes contained in wind and tide driven flows as a result of the proposed marina. These simulations also provide clear predictions of unchanged movement of sea-grass wrack and together with the unchanged shoreline wave-climate, indicate that changes in sea grass wrack would not be measurable.

There will be some resistance to flows into and within the proposed marina (as is currently the case) but this has been minimised by focussing wave attenuation (ie. the marina skirt) on the western side of the marina, which is parallel to the major flow directions which are north-south, parallel to the shore. As the structure reduces currents and wave action, there will be reduced turbulence within the new marina. Immediately adjacent to the new marina (ie. the new flow obstacles associated with the piles and skirts), there will be turbulent wakes, however, these will dissipate within a few metres.

Boat Users and Navigation

Lake Macquarie accommodates much of the area's water based recreational activities with approximately 40 boat launching ramps, 16 sailing clubs, six marinas, various public jetties, swimming enclosures and boat mooring areas. Boating activities on the Lake include yacht racing, recreational sailing, cruising (sail and power boats), fishing, waterskiing, jet skiing, windsurfing, kite surfing, canoeing, rowing, swimming and diving. The proposed development is not anticipated to be one that results in additional boat users on Lake Macquarie. It is anticipated that the new marina berths will be filled as a result of the following demands:

- The existing 40 boats on the waiting list for a marina berth at LMYC.
- The predicted increase in boat numbers and the need for between 166 and 398 new marina berths by 2011.
- Boats on swing moorings in other more remote parts of the lake that would like to be closer to the facilities that LMYC offers and will continue to offer.
- Other boats in existing marinas on the lake where the facilities are not as central to the areas of population as those of LMYC.

- Some visiting yachts and power boats that tend to stay for temporary periods within the sheltered waters of Lake Macquarie.

The westernmost extent of the proposed marina ensures it occupies a space on the lake currently taken up by swing moorings, and therefore not used for general boating purposes. The position of the marina therefore would not impact on general navigation and boat user areas thereby resulting in minimal interference to competing uses of the surrounding waterway. Water skiing, wake boarding, jet skiing, kite surfing, recreational fishing, recreational sailing etc are generally undertaken throughout various parts of Lake Macquarie, including parts of Belmont Bay. However, the new marina extension will take place in an area that is presently occupied by swing moorings and is therefore a part of the Lake where these activities do not presently occur.

Foreshore Protection and Improvement

The protection and improvement of the foreshore, particularly the Cullen Park foreshore adjoining the club, has been the subject of consultation with Council and NSW Government Agencies. This area presently comprises a degraded gravel area of public open space which is predominantly used for car parking. This foreshore area will be substantially improved and will include the provision of a sealed car park, additional landscaping, a foreshore pedestrian walkway to the existing small park at Andersons Point and the creation of a salt marsh environment along the Lake foreshore.

Economic Impacts

A Social and Economic Impact Assessment ("SEIA") has been prepared in relation to the proposed development and concludes the redevelopment would have an overall positive economic impact on the broader local government area as well as the local community of Belmont.

With regard to the marina, the SEIA concludes the development provides a positive economic contribution via the availability of the marina facility to local boating and chandlery suppliers. The estimated cost generated per boat is estimated to be anywhere between $4,500 and $19,000 per boat per annum.

With regard to tourism, the SEIA concludes that the average input into Lake Macquarie's economy over this 3-4 year average is $115 million or approximately $28.75 to $38.33 million dollars per year. The main source of income is generated by domestic overnight and day visitors. The club hosts five regattas per year which attract between 100-200 people to each event (includes families). People attending regattas are regarded as domestic overnight and domestic day visitors and they usually stay in local accommodation and attend other activities during their stay. Based on the above spend people attending regattas alone could contribute up to $300,000 per annum into the local economy. The development therefore has the capacity to cater to the desired activities for a range of visitors to the area via its restaurant facilities, capacity for functions and specific boating activities.

With regard to employment, the SEIA concludes that the club employs 20 people in 8 full time positions. Catering at the facility is undertaken by contractors who have recently entered into a new three year lease. It is expected that once the marina has been finalised there will be an additional position created (Marina Manager) making a total of approximately 9 full time positions. Due to the hospitality nature of the club, additional staff requirements for functions or at peak times are filled via their casual pool. Once the redevelopment is completed, the staff establishment will be reviewed to assess if additional full time employment positions are required. With regard to the number of jobs created from the development, it is estimated that one direct job year is created in the construction industry per $160,000 of construction investment. Based on an estimated overall capital cost of approximately $7 million, the development has the potential to create approximately 44 direct job years over the construction period. In addition to direct employment, ABS National Accounts Data indicates that a multiplier of 2.6 applies to the direct construction employment. Therefore the creation of 44 direct job years during construction would result in approximately 70 job years in the wider economy.

Social Impacts

The SEIA prepared in relation to the proposal concludes that there will be positive social impacts with regard to population characteristics, employment, the community structure, health and safety of those living and working in the vicinity of the development, crime risk, accessibility, social cohesion, sense of place and community. Generally there is no issue from residents with the concept of the redevelopment of the club. Residents agree that the yacht club is in need of a redevelopment due to its age and condition. Yachting and boating are characteristic of the area and the club has been a part of the community for many years. Therefore the redevelopment generally is not in conflict with the surrounding area.

Traffic and Parking

The proposal includes the reconfiguration of the existing parking area to accommodate a total of 127 car spaces, including 3 disabled spaces (ie. 33 additional spaces). The existing car park will be resealed and will be extended over the existing rock ballast walls to both the north and south. There will also be the provision of 24 additional at grade parking spaces and 2 car and trailer spaces within the existing gravel car park in Cullen Park. This includes landscaping of Cullen Park and the provision of public access along the foreshore. The traffic and parking impacts of the proposed development have been detailed in the Traffic and Parking Assessment Report. This assessment concludes that the proposed traffic impacts will be minimal and the proposed increase in parking will satisfactorily cater for the majority of the club's parking demand.

Ecology

The existing terrestrial habitats within and adjacent to the site are substantially modified and degraded as a result of historic land uses. No threatened terrestrial flora or fauna species, populations or ecological communities, listed under either the NSW Threatened Species Conservation Act or the Commonwealth Environment Protection and Biodiversity Conservation Act, were identified within the study area during the survey period and none is expected to occur.

The aquatic habitats within the study area are in reasonably good condition despite the long term use of the area as a marina. Adjacent aquatic habitats are also in reasonable condition although the seagrass beds have been adversely affected by numerous swing moorings. No threatened aquatic flora or fauna species, populations or ecological communities, listed under the NSW Threatened Species Conservation Act, the NSW Fisheries Management Act or the Commonwealth Environment Protection and Biodiversity Conservation Act, were identified within the study area during the survey period and none is expected to occur on anything other than a rare visitor basis. However, there is a Proposed Determination from the Fisheries Scientific Committee to list the seagrass *Posidonia australis* in Lake Macquarie and elsewhere as Endangered Populations. Posidonia occurs within the existing marina as well as the other locations within Belmont Bay.

A Flora and Fauna Impact Assessment Report and Seagrass Management Plan accompanies the EA. It is concluded that the proposed development would not have an adverse effect on the terrestrial or aquatic habitats. The proposal will improve the terrestrial habitats by restoration of some of the shoreline vegetation, the removal of four swing moorings will allow seagrass re-establishment and the marina extension may in fact result in increased seagrass cover in that area.

Visual Impacts

The site is not prominent by way of its topography, not being situated on a prominent ridge line or the like. However, the visual quality of the overall study area is of medium to high level due to the presence of natural environmental features and the consistent building densities. The presence of the lake and adjoining open space system, including the surrounding vegetated ridgelines assists in creating an overall high visual quality.

The design of the new marina has provided for an extension to the west (rather than to the north or south). This ensures that when viewed from the lake foreshore, the new marina is predominantly screened by the visual

presence of the existing marina in the foreground. The masts of the yachts to be located within the new marina will be predominantly screened by the masts of the existing yachts in the existing marina, when viewed from the lake foreshore. This design solution has been geared towards ensuring the views of residents and users of the foreshore towards the lake, is not compromised by additional structures. Furthermore, given that the masts of the yachts within the marina are not rigged, there will still be filtered views of the lake through these mast structures.

Other than close viewing location, the height of the proposed building does not break the height of the ridgeline backdrop, nor is it excessively obtrusive when viewed from the lake. The most noticeable contrast will be the marina extension screening natural views across the lake and the concentrations of masts against the sky extending further into the lake due to the marina extension. The proposed canopy tree planting to the formalised foreshore based parking area will reduce the effect to the carpark on the scenic quality of the area.

The proposal will have a moderate impact on the scenic quality of the surrounding areas considering proposed landscape treatments, and the existing land use and fabric of the Lake and its surrounds.

Community Land and Public Access

The proposed development will include improvements to community land, being the proposed works within Cullen Park and along the lake foreshore. These works include the formalising of the existing gravel car park in Cullen Park, protection and retention of the existing trees within Cullen Park, the provision of access through the car park to the Council's community facilities (currently Meals on Wheels) within the southern section of Cullen Park, the planting of small native shade trees to the car park area and the rehabilitation of the lake foreshore vegetation with new endemic foreshore planting of sedges and salt tolerant trees. It is also proposed to provide an access footpath/cycleway (1.5m wide) along the foreshore area (between the car park and the foreshore vegetation). This footpath/cycleway will extend south approximately 140 metres past Cullen Park along the foreshore area to the existing small park at Andersons Point. This will substantially improve public access along the foreshore.

Greenhouse Gas Emissions

There is unlikely to be any significant change to C02 from the proposed redevelopment. There is likely to be some marginal increase in C02 emissions through the increased number of vehicles that will visit the site to take advantage of the new facilities. However, it is likely that these vehicles would access alternative facilities in the area even if the new club facility did not proceed. As such the resultant gap in marina facilities would be filled by another site in the area. In other words, removing the GHG emissions from the club facility would not likely result in any decrease in global C02 emissions.

With regard to any increased C02 emissions associated with boat usage, it is relevant to note that a substantial proportion of boats that will occupy the new marina are already in circulation on the Lake. This is demonstrated by the fact that there is a waiting list of around 40 existing boats waiting for a space in the new marina. Furthermore, the remaining spaces within the proposed marina are likely to be taken up by boats moored at other more remote locations within the Lake that would prefer newer facilities and a more central location. As a result, building of the new marina does not in itself result in an increase in overall C02 emissions associated with additional boat usage.

The only substantial change in existing C02 emissions would be those generated by the construction and operation of the new club building, when compared with the existing club. The new club construction is likely to result in some 7,435 tonnes of additional C02 over a 40 year period when compared with the existing club (ie. 186 tonnes per year on average). This is insignificant when compared to the 576 million tonnes of C02 produced in a single year (2006) in Australia.

Contamination

The Phase 1 Environmental Site Assessment undertaken concludes that the site in it's current state is suitable for the development proposed and that no further contamination investigations are required. The assessment recommends that a construction environmental management plan will be required to be prepared and implemented during redevelopment of the yacht club. This would address among other things, procedures for appropriate handling and disposal of disturbed soils.

European Heritage

With regard to European heritage, the Heritage and Archaeological Assessment concludes that the club was established in 1929 with the clubhouse erected in 1934. It is a place of importance to its members and a focal point for members of the local community who have an interest in sailing and boating in general. However, little remains of the original building and the intrusive nature of the renovations have detracted from the significance of the building. While the place is of moderate to high significance within a local context, the building itself is of little significance. The assessment recommends that an archival recording of the clubhouse be undertaken prior to demolition.

Aboriginal Heritage

With regard to Aboriginal cultural heritage, the Heritage and Archaeological Assessment concludes that an Aboriginal site in Cullen Park is of high cultural significance to the local Aboriginal community. However, it is of low to moderate scientific significance as the area is unlikely to contain stratified deposits. There are also Andersons Point deposits that are likely to be part of a continuous site along the relic dune associated with the Cullen Park site. However, these deposits are highly disturbed and of low scientific and high cultural significance.

In terms of the impact of the development on Aboriginal Cultural Heritage, the reconfiguration of the car park adjacent to Cullen Park will have little or no impact on the historic heritage values of the locality. There is a very low probability of archaeological relics in this development zone and any relics are unlikely to be in-situ given the angle of the toe slope. The potential ground disturbance proposed is a small cut in the south eastern corner of the toe slope of the park. This minor cut is the only area of potential impact and it is recommended that Aboriginal stakeholders be invited to monitor excavation of this minor cut. The remainder of the reconfiguration involves importation of fill for garden beds and reapplication of tar over previously tarred areas.

The cycle/pedestrian path that will link the Cullen Park carpark with Andersons Point is unlikely to impact on any historic or Aboriginal heritage. The route of the path follows the sewer main in an area of reclaimed foreshore. The shell midden recorded at Andersons Point is located each side of the existing road and will not be impacted by the proposal.

There are no identified potential impacts that the proposed marina extension may have on Aboriginal or historic archaeological relics.

Stormwater Management and Water Quality

Currently roofwater runoff from the existing clubhouse and the marina drains unmitigated directly into the lake. It is proposed to continue this regime for the marina extension. Stormwater detention for the clubhouse is not required as the building is immediately on the edge of the receiving waters of the lake. The proposed redevelopment will include a rainwater storage tank to collect stormwater runoff from a portion of the new roof, for reuse for landscape irrigation and boat washdown.

Currently stormwater runoff from the foreshore area, including the gravel area at Cullen Park, runs unmitigated into the lake. The proposed development will provide an aggregate filled rock surfaced infiltration/dispersion between the shoreline and the proposed footpath to collect and treat stormwater runoff. The trench will be designed to filter nutrients and fine sediments and trap hydrocarbons and oils, improving the quality of stormwater

running into the lake. The proposed landscaping and turf areas within Cullen Park will also provide additional polishing of stormwater runoff, aiding water quality improvement when compared with the adverse impacts presently associated with this gravel area.

Currently stormwater from the existing bitumen carpark area runs unmitigated into the lake, however, it is proposed to capture and treat stormwater runoff from the carpark to improve the quality of water entering the lake. During the resurfacing of the car park there will be minor regrading works to ensure stormwater falls towards the northern and southern edges to direct runoff into a series of proposed stormwater inlet pits. These inlet pits will be fitted with pollutant traps and filters to treat stormwater, prior to discharging into the lake.

Construction works will be carried out in accordance with the Sediment and Erosion Control Plan and preliminary Construction Management Plan to mitigate adverse impacts on water quality. Site specific protective and preventative measure including sediments fencing, floating bunds and silt curtaining, and the adoption of appropriate construction methods will minimise risks to water quality during construction.

Slipways for boat maintenance and fuel/ chemical storage do not currently take place on site and there will be no change in this regard.

Operational Noise

The proposed outdoor terraces associated with the new Clubhouse have the potential for adverse noise impacts. However, only the terrace on the first floor comprises a new use, whereas the terraces at the ground level are used for existing functions (ie. they will comprise replacement terraces when the new club is built, rather than new noise sources). The noise impact assessment concludes that the combined noise impact from patrons on all outdoor terraces will be compliant with the Liquor Administration Board's Noise Control Guidelines (and therefore the requirements of Council and the Department of Planning) at all nearby residences subject to the erection of appropriate acoustic barriers around the perimeter of the terraces. The restaurant and function room terraces will not be used after midnight, however, the auditorium terraces are expected to be used by patrons after this time. The predicted noise impact at nearest residences (assuming patron numbers will reduce after midnight) will be in the order of 28dB(A)-29dB(A) from these terraces, which is compliant with the most stringent post midnight criteria.

Noise generated by traffic has the potential to create adverse noise impacts. The Noise Impact Assessment assumes that 10-15 small delivery trucks would visit the site each day, although in reality this is likely to be substantially less. The assumption has also been made that the car park would generally be full during peak periods (including night time periods when functions occur) and that 25% of these vehicles would leave in the same hour. The assessment shows the noise impact from traffic movements associated with the development are compliant with Department of Environment, Climate Change and Water's Environmental Criteria for Road Traffic Noise ("ECRTN") during the day (7am-10pm) and night (10pm-7am) for all residences near the site.

Noise generated by vehicles entering, leaving and manoeuvring in the car park also has the potential to cause disturbance to nearby residents. The greatest impact will occur during peak periods when use of both the lake pontoon car park and the foreshore car park coincide with a regatta. The assessment has assessed all potential noise sources from these car parks including reversing, manoeuvring, leaving, car door slamming, trailer unhitching and raised speech. This concludes that the noise activities associated with the car parks are compliant with the criteria during the day and evening at all nearby residences during peak periods.

The general day to day marina operations do not generate any significant or offensive noise levels. The marina activities operate during the day (generally between the hours of 7am and 10pm) and only the boat lift, boat engines and general power tools used for boat repairs are noise generating. The noise sources associated with general boat operations (boat engine) and repairs (drills, sanders, welders, etc) all produce a sound power less than 85dB. Collectively, with up to 3 or 4 sources operating simultaneously on occasion, the sum could be as

high as 90dB. This is at least 10dB below other existing significant sources and therefore they will not contribute or raise the sound level at the nearby receivers.

The majority of mechanical plant will be located on the roof of the Clubhouse or at ground level at the marina. The noise emissions from all mechanical plant on the roof of the Clubhouse will be compliant with the night criterion of 41dB(A) Leq (equivalent continuous noise level) at the nearest residences to the east, providing an acoustic barrier equal in height to the top of the plant is erected along the east edge of the deck. However, it may be the case that the parapet walls or intervening building structures of equivalent height achieve the same purpose.

Construction Noise

The anticipated noise and vibration impacts produced by construction activities were assessed, assuming no noise barriers or acoustic shielding were in place and with each item of plant operating at full power. Only bulk earthworks and pile driving were predicted to exceed the daytime construction noise criteria of 56dB(A) Leq (equivalent continuous noise level) for prolonged periods of time. Noise levels as high as 72dB(A) are predicted during pile driving at nearest residences, however, simultaneous operation of other construction activities is not expected to exceed 65dB(A). Earthworks are expected to occur in the early stages of the construction, with less noise intensive construction activities occurring for the remainder of the time. The construction of temporary barriers of plywood (at least 2m high) would be considered to mitigate some of the construction noise at the nearby residential boundaries. With such barriers in place, the worst case construction noise will be reduced by up to 10dB(A). In any event, these noise levels are expected to occur for a relatively short time and reduce as work progresses to a new area. The potential for undue noise impact is reduced by noting that the daytime LAeq level is above 65dB(A). Noise levels are dominated by passing road traffic and as the character and amplitude of the construction noise will be similar to the existing road traffic noise, it will be less intrusive than an unfamiliar introduced source.

Air Quality

The existing environment benefits from good air quality and the existing operations of the club and marina do not contribute in any significant way to reduced air quality. Air quality impacts during the construction phases are expected to be minor and not of any significant duration. The air quality impacts of the offshore construction activities are considered to be negligible and are in any event well removed from the residences along the foreshore. Appropriate mitigation measures will be put in place as part of the Construction Management Plan to address these potential adverse impacts. These will include the provision of well established erosion and sediment controls, ensuring stockpiles of fine materials are kept moist, the provision of temporary construction fencing incorporating solid (or shadecloth) materials to mitigate against wind erosion and ensuring that trucks entering and leaving the site have canopies secured over their load and their tailgates closed.

Operation air quality impacts will be mitigated to address potential adverse impacts. Such measures will include ensuring that no major boat maintenance activities take place within the marina (other than general repairs). Any additional maintenance activities will take place either off-site or within the designated existing workshop space. Although emissions from vessels are difficult to control by the marina manager, boat owners would continue to be informed and encouraged to improve engine efficiency, reduce fuel use and reduce emissions. Measures that can be adopted include regular maintenance and engine tuning, increased use of catalytic converters and reduced idling time within the marina.

Construction Management

A Preliminary Construction Management Plan has been prepared and will be implemented to manage matters relating to water, dust, road movements, noise, vibration, contaminated soil contingencies, waste minimisation and handling of complaints.

The soils beneath lake bed level within the existing and proposed new clubhouse building footprint are expected to comprise Unit 2 alluvium, comprising variable density sands overlying stiff to hard clays, to greater than 7m depth below the existing car park level. It is therefore recommended that the proposed new clubhouse be supported on pile foundations founded on weathered rock (located beneath the upper layers of fill and variable density alluvium). Suitable pile options include grout injected piles, 'Atlas' screw piles or driven piles.

In terms of the car park widening, pavement design recommendations have been provided in the Geotechnical Assessment. The pavement design of the car park widenings will have a design traffic loading of 7×10^4 equivalent standard axles (assuming a "Local Road – Access Place or Cul-de-sac" street type in accordance with Lake Macquarie City Council guidelines). Subsoil drains are not considered to be necessary provided existing embankment fill materials comprise clean sand or similar.

Utility Services

Service authorities (water, sewerage, electricity, telecommunications and gas) have indicated that existing services are adequate for the existing facility and will be adequate to support the proposed development. Electricity and potable water supply will be extended from the existing marina to service the new marina. The same will apply to the new clubhouse which will adopt energy and water efficient measures and appliances throughout to minimise demand on these services. A rainwater tank is proposed for collection and reuse of stormwater runoff from the clubhouse roof. The tank will be used for garden irrigation and boat washdown purposes.

The marina extension will not require the extension of the sewer network and it is proposed to retain the existing single sewage pump-out point servicing the existing marina. As sewage waste volumes associated with the redeveloped clubhouse are likely to be similar to the current volumes, no major amplification works are proposed. However, existing sewer services may require some relocation to suit the new building layout.

Telecommunication and gas services are not currently part of the marina and are not proposed for the extension. The new clubhouse building will be similar in operational nature to the existing facility and no change to the existing telecommunication and gas services is proposed, other than relocation as required to suit the proposed new building layout.

Crime Prevention

A Safer By Design Report has been prepared and concludes that the club and local area is not considered a high risk crime area and the proposed development is not expected to bring about an increased incidence in crime. The area is well defined although its location makes surveillance from areas outside of the club difficult. However, the marina will only be accessible to users from within the premises of club via locked gates, similar to the existing situation. From the land, users will be required to either be members of the club or guests of members and will be required to sign in at the reception office. Advice from the Police Community Safety Officer indicates that the development would not be a major concern.

The level of risk for crime and anti social behaviour has been assessed as low. The redevelopment of the site is not considered to increase the opportunities for crime or antisocial behaviour. Existing club policies will continue to remain in place including the responsible service of alcohol; monitoring of patrons entering and existing the facility at all times when the club is open; employment of external security contractors at special events and functions; security of the marina and car park areas including lighting of these areas; ongoing monitoring of the site by staff; and acting upon any incidents such as vandalism etc.

Ecologically Sustainable Development

The proposed redevelopment of the club has a significant long term benefit in terms of its environmental, economic and social benefits. The proposal has been designed and developed in accordance with the four key principles of ESD and appropriate mitigation measures have been identified where necessary.

Conclusion

The proposal meets the objectives of the planning framework for the region and is consistent with the relevant statutory planning instruments and controls that apply to the site. The proposal has been designed in response to a comprehensive investigation of the key environmental opportunities and constraints of the site. It has been concluded that the proposed development will have minimal environmental impact provided environmental safeguards identified in the Environmental Assessment are complied with.

1. INTRODUCTION

1.1 Overview

Lake Macquarie Yacht Club ("the applicant") seeks approval under Part 3A of the Environmental Planning and Assessment Act, 1979 ("EP&A Act") for the proposed redevelopment of the club, including a new clubhouse, an extended marina, an extended car park and foreshore improvements to the adjoining Cullen Park. The land the subject of the proposed development is reclaimed Crown land comprising Lots 973, 974, 975 in DP 755233, as well as part of Lake Macquarie and the adjoining Cullen Park being part of Lots 7019 and 7020 DP 1055579 ("the Site"). The site is known as No. 9 Ada Street, Belmont.

The Lake Macquarie Yacht Club ("LMYC") is on the eastern shores of Lake Macquarie within the suburb of Belmont near the intersection of Ada Street and the Pacific Highway. The Pacific Highway links Belmont with the city of Newcastle to the north and Sydney to the south. The LMYC at Belmont extends approximately 100 metres into the lake. Lake Macquarie is Australia's largest coastal saltwater lake and is around 150 kilometres north of Sydney and around 20 kilometres south of Newcastle. The lake has around 150 kilometres of shoreline and is about four times the size of Sydney harbour.

The proposed development includes an extension to the existing marina to accommodate 56 additional wet berths/boats. A total of 140 wet berths will be provided following the extension (excluding temporary day berths and berths used by the LMYC). Four commercial swing moorings licensed to the LMYC will be surrendered which will reduce the number of such swing moorings to 8. The existing two storey clubhouse will be demolished and a new contemporary style two storey clubhouse building will be erected in its place. The footprint of the new clubhouse will be similar to the existing clubhouse. The existing parking area will be reconfigured to accommodate a total of 127 car spaces, including 3 disabled spaces (ie. 33 additional spaces). This existing car park will be extended over the existing rock ballast walls to both the north and south and will comprise a concrete footing/edge beam and a suspended concrete slab. In addition, 24 additional at grade parking spaces and 2 car and trailer spaces will be provided within the existing gravel car park in Cullen Park. This includes the expansion of the LMYC's existing lease area, landscaping of Cullen Park and the provision of public access along the foreshore of Cullen Park. This gravel car park will be built up slightly higher than the existing level using imported road base and provided with a new bitumen seal.

In correspondence dated 24 April 2008, the NSW Department of Planning ("DOP") confirmed that it had determined the proposed development as a "major project" to which Part 3A of the EP&A Act applies. This Environmental Assessment ("EA") has been prepared by de Witt Consulting in accordance with Part 3A of the EP&A Act and the Director General Requirements dated 13 October 2008 (see Appendix 1). It describes the proposal and the environmental implications associated with the key issues of the proposed development of the site. The EA provides a comprehensive assessment of the environmental capacity and suitability of the site to accommodate the marina extension and LMYC redevelopment.

1.2 Consent Authority

The site is located within the Lake Macquarie Local Government Area. The Minister for Planning is the consent authority pursuant to the provisions of Part 3A of the EP&A Act as detailed in Sections 7.8 and 7.9.1.

1.3 Other Approvals Required

Pursuant to Clause 75U of the EP&A Act, authorisation for a Part 3A approved projects is not required under the following Acts:

- the concurrence under Part 3 of the Coastal Protection Act 1979 of the Minister administering that Part of the Act,
- a permit under section 201, 205 or 219 of the Fisheries Management Act 1994,
- an approval under Part 4, or an excavation permit under section 139, of the Heritage Act 1977,
- a permit under section 87 or a consent under section 90 of the National Parks and Wildlife Act 1974,
- an authorisation referred to in section 12 of the Native Vegetation Act 2003 (or under any Act to be repealed by that Act) to clear native vegetation or State protected land,
- a permit under Part 3A of the Rivers and Foreshores Improvement Act 1948,
- a bush fire safety authority under section 100B of the Rural Fires Act 1997,
- a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91 of the Water Management Act 2000.
- Division 8 of Part 6 of the Heritage Act 1977.

In relation to the above, the following is of relevance to the proposed development:

- Approvals would normally be required from the Department of Primary Industries (Fisheries Division) under Section 205 of the Fisheries Management Act 1994 to "cut, remove, damage or destroy marine vegetation on public water land" and Section 219 to "create an obstruction" within a "bay, inlet, river or creek".
- Crown land is exempt from the controlled activity provisions of the Water Management Act 2000. All works within 40 metres of the lake will take place on Crown land rather than freehold land.

Pursuant to Clause 75V of the EP&A Act, an authorisation of the following kind cannot be refused if it is necessary for carrying out an approved project and is substantially consistent with the approval:

- an aquaculture permit under section 144 of the Fisheries Management Act 1994,
- an approval under section 15 of the Mine Subsidence Compensation Act 1961,
- a mining lease under the Mining Act 1992,
- a production lease under the Petroleum (Onshore) Act 1991,
- an environment protection licence under Chapter 3 of the Protection of the Environment Operations Act 1997 (for any of the purposes referred to in section 43 of that Act),
- a consent under section 138 of the Roads Act 1993,
- a licence under the Pipelines Act 1967.

In relation to the above, the following is of relevance to the proposed development:

- The Protection of the Environment Operations Act 1997 relates to pollution management and waste disposal. Schedule 1 of the Act lists marinas and boat repair facilities for 80 or more vessels as requiring an Environment Protection Licence. LMYC holds Licence No. 113399 for which the Scheduled Activity is "Marinas and Boat Repair Facilities" (even though boat repair facilities do not exist or occur on site).

1.4 Scope of Environmental Assessment

This EA accompanies a project application for the proposed development. It has been prepared on behalf of the applicant and addresses the Director General's Requirements dated 13 October 2008 (see Appendix 1). This EA is structured as follows:

- A description of the site is provided in Chapter 2.
- A description of the character of the surrounding area is provided in Chapter 3.
- A description of the project need is described in Chapter 4.
- A description of the proposed development is provided in Chapter 5.
- The relevant strategic planning policies and guidelines are set out in Chapter 6. These include the provisions contained in the following:
    - NSW Coastal Policy 1997.
    - Coastal Design Guidelines for NSW.
    - NSW State Rivers and Estuaries Policy.
    - EIS Guideline – Marinas and Related Facilities (DUAP, 1996).
    - Best Management Practice for Marinas and Boat Repair Facilities (EPA, 1999).
    - Australian Standard Guidelines for Design of Marinas (AS 3962).
    - Lower Hunter Regional Strategy.
    - Lifestyle 2020 Strategy.
    - Lake Macquarie Sea Level Rise Preparedness Adaptation Policy.
    - NSW Government Sea Level Rise Policy Statement.
    - Draft NSW Coastal Planning Guideline: Adapting to Seal Level Rise.
    - Lake Macquarie Mooring Management Plan.
    - Lake Macquarie Estuary Management Plan.
- The relevant statutory planning provisions are set out in Chapter 7. These include the provisions contained in the following:
    - Commonwealth Environmental Protection and Biodiversity Conservation Act
    - Protection of the Environment Operations Act 1997.
    - Crown Lands Act 1989.
    - Threatened Species Conservation Act 1995.
    - Fisheries Management Act 1994.
    - Water Management Act 2000.
    - Environmental Planning and Assessment Act 1979.
    - State Environmental Planning Policies ("SEPPs")
        - SEPP (Major Development) 2005
        - SEPP (Infrastructure) 2007
        - SEPP 14 – Wetlands

- SEPP 44 – Koala Habitat Protection
- SEPP 55 – Remediation of Land
- SEPP 71 – Coastal Protection

  - Lake Macquarie Environmental Plan 2004 ("LEP 2004")
  - Lake Macquarie Development Control Plan No.1 – Principles of Development "DCP 1")
  - Lake Macquarie Scenic Quality Guidelines 2004

- An assessment of the key issues is provided in Chapters 5 and 8.
- A Draft Statement of Commitments is provided in Chapter 9.

The following drawings, documents and technical reports have been attached in support of the DA and are included in the appendices of this EA:

- Director General's Environmental Assessment Requirements (Appendix 1).
- Location Plan (Appendix 2).
- Aerial Photograph (Appendix 3).
- Zoning – Lake Macquarie LEP 2004 (Appendix 4).
- Council's Coastal Zone Map (Appendix 5).
- Crown Plan (Appendix 6).
- Survey Plan prepared by Harper Somers O'Sullivan (Appendix 7).
- Site Analysis and Architectural Drawings prepared by EJE Architecture (Appendix 8).
- Landscape Design Report and Concept Plans prepared by Terras Landscape Architects (Appendix 9).
- Visual Impact Assessment prepared by Terras Landscape Architects (Appendix 10).
- Flora and Fauna Assessment Report prepared by Ecotone Ecological Consultants Pty Ltd (Appendix 11).
- Seagrass Management Plan prepared by Ecotone Ecological Consultants Pty Ltd (Appendix 12).
- Heritage and Archaeological Assessment prepared by Insite Heritage Pty Ltd (Appendix 13).
- Geotechnical Assessment prepared by Coffey Geotechnics Pty Ltd (Appendix 14).
- Phase 1 Environmental Site Assessment prepared by Coffey Environments Pty Ltd (Appendix 15).
- Traffic and Parking Assessment Report prepared by BJ Bradley & Associates (Appendix 16).
- Noise Impact Assessment and Addendum Report prepared by Reverb Acoustics (Appendix 17).
- Social and Economic Impact Assessment prepared by Insite Economic and Social Planning (Appendix 18).
- Consultation Report prepared by Insite Economic and Social Planning (includes car park option plans prepared by EJE Architecture) (Appendix 19).
- Engineering Report prepared by Northrop (Appendix 20).
- Preliminary Construction Management Plan prepared by Northrop (Appendix 21).
- Safer By Design Report prepared by Insite Economic & Social Planning (Appendix 22).
- Plan of Management for Lake Macquarie Yacht Club (Appendix 23).
- Building Code of Australia 2009 Compliance Report prepared by DixGardner Pty Ltd (Appendix 24).

- Waste Management Plan prepared by EJE Architecture (Appendix 25).
- Disability Access Report prepared by Lindsay Perry Access + Architecture (Appendix 26).
- Quantity Surveyors Certificate (Appendix 27).

1.5 Project Justification

The site planning process included a site analysis that determined opportunities and constraints for redevelopment of the existing yacht club facilities in accordance with its 6(2) Tourism and Recreation and 11 Lakes and Waterways zoning. This analysis considered:

- The existing zoning and planning controls.
- The need for new club facilities.
- The increasing demand for marina berths.
- The results of the detailed environmental studies and specialist reports.
- The design of the development in accordance with the constraints and opportunities of the land.
- The best management of marine ecology and water quality controls.
- The service capability and location of the site.
- Existing road access and visual impacts.

The resultant proposal is consistent with the planning controls and environmental constraints that apply to the site.

1.6 Checklist of Director General's Requirements

The following table summarises the KEY issues raised in the Director-General's Environmental Assessment requirements (see Appendix 1) and where they have been addressed in this documentation and the associated Appendices.

Table 1: Director General's Requirements

KEY ISSUES	REPORT REFERENCE
1. STRATEGIC PLANNING	Section 6.
2. DESIGN AND VISUAL IMPACT	
2.1 Consistency with character of existing development.	Sections 2.7, 2.8, 3, 7.11.4 and 8.11 and Appendix 10.
2.2 Consistency with Coastal Design Guidelines for NSW, Coastal Policy 1997 and SEPP 71 – Coastal Protection.	Section 6.
2.3 Provide a Visual Impact Analysis.	Section 8.11 and Appendix 10.
2.4 Address impacts on foreshore amenity, views and cumulative impacts.	Sections 2.7, 2.8, 3, 5.8, 7.11.4, 8.6 and 8.11 and Appendix 10.
3. FORESHORE DEVELOPMENT	

KEY ISSUES	REPORT REFERENCE
3.1 Provide details of the layout of Cullen Park car park and ensure vehicular access to the adjoining community facilities is maintained and significant trees are not disturbed.	Sections 5.2.3, 5.8, 5.11 and Appendices 8 and 9.
3.2 Provide details of proposed public improvement works in Cullen Park included unrestricted public access in a landscaped strip (10-12m wide) along the foreshore from Ada Street south for pedestrians and cyclists.	Sections 5.2.3, 5.8, 5.11 and Appendix 9.
3.3 Outline the existing and future ownership/leasing and management arrangements of Cullen Park and maintenance of any areas of open space.	Sections 2.3, 5.16 and 7.4.
3.4 Address the principles of Crowns Lands management under Section 11 Crown Lands Act 1989.	Section 7.4.
4. INFRASTRUCTURE PROVISION	
4.1 Existing capacity and requirements for upgrading, as well as any staging of infrastructure works.	Sections 2.14, 5.9 and 5.15 and Appendix 20.
4.2 Likely scope of any planning agreement/developer contributions with Council/Government Agencies.	Section 5.16.
5. TRAFFIC AND ACCESS	
5.1 Prepare a Traffic Impact Study in line with relevant RTA and Council guidelines and include traffic counts and SIDRA or similar modelling identifying all relevant traffic routes and intersections for access to and from the subject site.	Section 5.12 and Appendix 16.
6. WATER CYCLE MANAGEMENT	
6.1 Assess the impacts of the proposal on surface and groundwater hydrology and quality during construction and operation.	Sections 2.6.13, 5.18, 8.17 and Appendix 20.
6.2 Provide details regarding the design and maintenance of stormwater drainage, water re-use. Assess the impacts from tidal flushing and installation and maintenance of gross pollutant traps.	Sections 2.6.1, 2.6.6, 5.14, 5.18 and Appendix 20.
6.3 Assess the impacts on water quality (during construction and operation).	Section 8.17 and Appendices 15 and 20.
6.4 Improve the maintenance and water flows through the causeway linking Ada Street to the Club's car park to alleviate ongoing problems of odour and seagrass accumulation.	Sections 5.14, 8.3 and Appendices 11 and 20.
7. HAZARD MANAGEMENT AND MITIGATION	
7.1 Coastal Processes.	Sections 2.6.8, 6.10, 8.2, 8.3, 8.4 and Appendix 20.
7.2 Contamination.	Sections 2.6.12, 7.9.5, 8.14 and Appendix 15.
7.3 Acid Sulfate Soils.	Sections 2.6.10 and Appendix 14.

KEY ISSUES	REPORT REFERENCE
7.4 Geotechnical.	Sections 2.6.13 and Appendix 14.
7.5 Flooding.	Sections 2.6.2, 2.6.8, 6.10, 6.11, 6.12, 8.4 and Appendix 20.
8. HERITAGE AND ARCHAEOLOGY	
8.1 Aboriginal Cultural Heritage and European Heritage.	Sections 2.13, 8.15 and Appendix 13.
8.2 Aboriginal Community Consultation.	Sections 2.13, 8.15 and Appendix 13.
9. FLORA AND FAUNA	
9.1 Potential impacts on threatened species, populations or ecological communities listed in the Threatened Species Conservation Act 1995 and the Fisheries Management Act 1994.	Sections 2.12, 5.20 and Appendices 11 and 12.
9.2 Actions to be taken to avoid or mitigate impacts or compensate or offset for unavoidable impacts of the project on threatened species and their habitat..	Sections 2.12, 5.20 and Appendices 11 and 12.
9.3 Develop a Seagrass Management Plan in association with DPI.	Section 5.20 and Appendix 12.
10. ECONOMIC AND SOCIAL IMPACT	
10.1 Provide an Economic Impact Assessment addressing the demand for additional berths including consideration of proposed developments at Marmong Point and Trinity Point and Lake Macquarie Mooring Management Plan and potential tourism needs.	Sections 3.2, 8.7, 8.8 and Appendix 18.
10.2 Address the social impacts of the proposal, including community consultation, and measures to mitigate any negative impacts,.	Sections 3.2, 8.7, 8.8 and Appendix 18.
11. NOISE AND AIR QUALITY IMPACTS	
11.1 Prepare a Noise Assessment Report.	Section 8.18 and Appendix 17.
11.2 Assess the impacts on air quality, including dust generation during construction activities and on going boat maintenance and repairs.	Section 8.19 and Appendix 20.
12. RIPARIAN/FORESHORE PROTECTION	
12.1 Provide details of construction, clearing, draining, excavation and filling and consider impacts in terms of vegetation, sediment movement, water quality, hydraulic regime and stability of seabed and bank.	Sections 5, 8.2, 8.3, 8.4, 8.6 and Appendices 11 and 20.
12.2 Provide details of design features and measures that can be incorporated to provide a riparian buffer and protect against long-term environmental impacts.	Section 8.6 and Appendices 9, 11 and 20.
13. MARINA IMPACTS	
13.1 Assess the impact of the marina extension, foreshore works	Sections 8.2, 8.3, 8.4 and

KEY ISSUES	REPORT REFERENCE
and any proposed filling on the Lake's ecosystem and hydrodynamic processes, in particular Belmont Bay.	Appendices 11 and 20.
13.2 Address the movement and accumulation of sea-grass wrack and other marine/life habitat and demonstrate minimal impact.	Sections 5.14, 5.20 and Appendices 11 and 20.
13.3 Provide details of how the design of the marina structures/building will minimise shading of seagrass, transfer of wave energy and creation of excess turbulence.	Section 5.20 and Appendices 11 and 20.
13.4 Analyse impacts of marina operations and resultant increase in vessel numbers and operations on water quality, aquatic ecology and recreational amenity.	Sections 5.18, 5.20, 8.3, 8.5, 8.17 and Appendices 11 and 20.
13.5 Address potential environmental impacts from any extractive or dredging activity associated with the construction and on-going operation of the marina.	Sections 5.14, 5.20 and Appendices 11 and 20.
13.6 Assess the impacts on water based traffic and any navigation aids to ensure safety of water users and details of any moorings that will be relinquished or relocated.	Section 8.5.
CONSULTATION	Sections 1.7.2, 1.7.3 and Appendices 19 and 20.

1.7 Consultation

1.7.1 Overview

The proposed development has been the subject of government agency, Council and community consultation since the redevelopment design process commenced in 2006. A consultation program was also implemented by Insite Planning (see Appendix 19) during preparation of the EA to obtain feedback on the proposal. This consultation and involvement program was designed to encourage community involvement during the preparation of the EA and foster interaction between stakeholders and the proponent. Consultation and involvement was designed to allow:

- A two way flow of information.
- The community to express its views about the proposal.
- Stakeholder involvement in the EA process.
- Valuable local knowledge to be obtained from the community.
- For the community to be informed of the proposal.

Details regarding the consultation program are provided in the Consultation Report prepared by Insite Economic and Social Planning (see Appendix 19).

1.7.2 Consultation Activities Conducted

The consultation activities described below were conducted during the preparation of the EA. A chronological summary is provided in Table 2. Key issues raised are summarised in Section 1.7.3. Further details are also provided in the Consultation Report in Appendix 19.

Table 2: Summary of Consultation Activities

Date	Activity
Various dates in 2007 and 2008.	Letters provided to with various NSW Government Agencies, Council Departments and Community Organisations outlining the proposed redevelopment. This included NSW Police Force, Lake Macquarie City Council, NSW Maritime, Belmont Chamber of Commerce, other yacht clubs, Newcastle/Port Stephens Marine Area Command. Letters of support received in this regard are provided in Appendix 19.
26 March 2007	A briefing meeting was held with representatives of the Land and Property Management Authority (the landowner), the NSW Maritime Authority and the NSW Department of Primary Industries (Aquatic Habitat Protection Division). Notes from this meeting are provided in Appendix 19. All agencies were supportive of the proposed redevelopment provided the marina extension did not extend north or south into existing sea grass beds. As a result, the marina extension is planned towards the west, where there are no seagrass or navigational issues. It is also relevant to note that Mr Scott Carter from the NSW Department of Primary Industries has been involved in extensive discussions and site visits with Dr Dan Roberts of Bio-Analysis Pty Ltd and Ecotone Ecological Consultants Pty Ltd during the seagrass assessments that have taken place at the site (see Appendix 11).
26 April 2007	A briefing meeting was held with Lake Macquarie City Councillors who provided general support for the proposed redevelopment, provided parking complied with Council requirements. Notes from this meeting are provided in Appendix 19. It is relevant to note that since this meeting, the car parking area shown on the concept plans prepared by EJE has been increased from an additional 28 spaces to between an additional 55-63 spaces to take into account Council's concerns.
18 February 2008	An additional briefing meeting was held with representatives of the Land and Property Management Authority to discuss the Business Case and Public Interest Tests prepared by LMYC (see Appendix 19). Since this time, LPMA have granted owner's consent to enable the lodgement of the project application with the DOP.
11 March 2008	A briefing meeting was held with surrounding residents who reside along the Pacific Highway, Walter Street and Ada Street, Belmont. This included residences that adjoin the LMYC, including many who have direct views of the LMYC. The notes from this meeting are provided in Appendix 19.
7 March 2008	An initial on-site consultation was undertaken with Bahtabah Aboriginal Land Council in March 08. The Bahtabah Aboriginal Land Council is the custodian of the waters of Lake Macquarie and indicated that it was unlikely that any areas of Aboriginal Heritage significance would be affected by the proposal, subject to a more detailed survey (see Appendix 13).
12 May 2008	A Preliminary Planning Assessment meeting, chaired by the DOP, was held at LMYC. The primary purpose of this meeting was to discuss the reclamation of land to the south of the existing car park that was being considered as an option to facilitate an extended car park. This meeting was attended by representatives of the Department of Planning, Department of Environment and Climate Change, Department of Primary Industries, Lake Macquarie City Council and LMYC. Notes from this meeting are provided in Appendix 19.
10 July 2008	On a further meeting to discuss car parking options and the potential reclamation of land was held with representatives of

Date	Activity
	Council, LPMA and LMYC. Notes from this meeting are provided in Appendix 19. Following this meeting, a car parking option which does not involve the reclamation of land is being pursued (see Section 5.2.3 and Appendix 19).
December 2008 – June 2009	Aboriginal Heritage consultation between Insite Heritage and Department of Environment and Climate Change, Council, Bahtabah Local Aboriginal Land Council, NSW Native Title Services, Awabakal Descendants Traditional Owners Corporation and Awabakal Traditional Owners Aboriginal Corporation (see Appendix 13).
27 January 2009	Consultation with Marks Point Marina.
27 January 2009	Consultation with BIAS Boat Warehouse (Belmont).
29 January 2009	Consultation with Coulin Marine Trim (Marks Point).
3 February 2009	Consultation with NSW Maritime.
4 February 2009	Presentation to Lake Macquarie Estuary and Coastal Management Committee (see details in Appendix 19).
4 February 2009	Consultation with Council's Economic Development Manager.
4 February 2009	Consultation with Belmont Main Street Coordinator.
20 February 2009	Consultation with Gunya Hotel.
20 February 2009	Meeting with Community Safety Officer, Lake Macquarie Local Area Command.
20 February to 20 March 2009	Consultation with various residents in Ada Street, Walter Street, Pacific Highway and Bellevue Road.
17 March 2009	Meeting with Department of Environment and Climate Change (see details in 19).
18 March 2009	Presentation to Lake Macquarie Aquatic Services Committee (see Appendix 19).
18 March 2009	Letter from The Office of the Lake Macquarie & Catchment Coordinator (see Appendix 19).
22 March 2009	Consultation with Newcastle Conference Bureau.
28 and 30 April 2009	Consultation with Hunter Water Corporation regarding developer services. (see Appendix 20).
28 April and 11 May 2009	Consultation with Energy Australia regarding service requirements (see Appendix 20).
28 April and 14 May 2009	Consultation with Telstra regarding service requirements (see Appendix 20).
28 April 2009	Consultation with Jemena regarding gas service requirements (see Appendix 20).

In addition to the above, various discussions have also been held with Officers of the DOP during the preparation of the EA.

1.7.3 Issues Raised During the Consultation

The key issues raised during the consultation are summarised in Table 3 below.

Table 3: Key Issues Raised During Consultation

Issue of Concern	Response
Traffic and Parking Impacts	Refer to Sections 5.11, 5.12 and Appendix 16.
Marine Ecology and Seagrasses	Refer to Section 5.20 and Appendices 11 and 12.

Issue of Concern	Response
Visual Impact	Refer to Section 8.11 and Appendix 10.
Utility Services	Refer to Section 5.15 and Appendix 20.
Silting up of causeway at Ada Street and water quality	Refer to Section 5.14 and Appendices 11 and 20.
Aboriginal Heritage	Refer to Section 8.15 and Appendix 13.
Noise impacts	Refer to Section 8.18 and Appendix 17.
Navigation and impact on water users	Refer to Section 8.5 and Appendix 20.
Marina demand issues	Refer to Section 4 and Appendix 18.
Reclamation of land	Refer to Section 5.2 and Appendix 11.
Sea level rise	Refer to Sections 6.10, 6.11, 6.12 and Appendix 20.
Crime risk	Refer to Section 8.8 and Appendix 22.

Throughout the consultation process, the design of the proposed development has been amended and refined to ensure the various concerns are satisfactorily addressed.

2. THE SITE

2.1 Location

The location of the site is identified in Appendices 2, 3, 4 and 8. The LMYC is on the eastern shores of Lake Macquarie within the suburb of Belmont near the intersection of Ada Street and the Pacific Highway. The Pacific Highway links Belmont with the city of Newcastle to the north and Sydney to the south.

The LMYC at Belmont extends approximately 100 metres into the lake. Lake Macquarie is Australia's largest coastal saltwater lake and is around 150 kilometres north of Sydney and around 20 kilometres south of Newcastle. The lake has around 150 kilometres of shoreline and is about four times the size of Sydney harbour.

The site is adjoined by predominantly residential uses, although there are retail, commercial and recreational uses within close proximity. These include the Belmont 16 Footers Club to the north and various retail and commercial uses along the Pacific Highway, which are associated with the town centre of Belmont.

2.2 History of Lake Macquarie Yacht Club

LMYC has provided around 80 years of service to the Lake Macquarie area. The LMYC is a not for profit community based yacht club. The LMYC has won every major race on the east coast of Australia, including championships at both National and State levels in several classes. Sailors from the LMYC have also represented Australia at the Olympic Games, won various World Championships, represented Australia in the Admirals Cup and competed in both the Americas Cup and the Volvo Round the World races.

The LMYC is also a well-known stopover, being one of the nation's most popular sailing port. The LMYC has a unique location out on the lake in Belmont Bay and is the largest and oldest sailing club outside the Sydney metropolitan area. The LMYC is a regular host to major International and National titles and was the selected venue for the Olympic Selection Trials.

The LMYC is committed to being predominantly a sailing club and has a proud sailing history. The LMYC has been sustained by it's commitment to quality sailing events and genuine community inclusion in its social and junior programs.

The LMYC has around 1,700 members made up of 775 sailing members and 685 social members. The remaining membership is made up of senior, life and junior members.

2.3 Title Details and Ownership

As shown on the Survey Plan in Appendix 7 and Crown Plan in Appendix 6, the site comprises the following lots:

- Lot 973 DP 755233
- Lot 974 DP 755233
- Lot 975 DP 755233

The site also includes part of Lake Macquarie to the west of the above lots and part of Cullen Park to the east. This comprises part of Lots 7019 and 7020 DP 1055579.

The site is generally known as 9 Ada Street, Belmont.

The land and water based components of the site comprise Crown Land under the care and control of the Land and Property Management Authority ("LPMA"). Various Crown leases and licences exist over the site. The Crown leasehold has a 40 year term which expires in 2037.

2.4 Land and Water Areas

The dimensions of the site are clearly shown on the drawings in Appendix 8. The reclaimed land portion of the site, which accommodates the club house, car park and associated hardstand has an approximate area of 5,100 square metres. The water based part of the site comprising the existing marina, occupies an approximate area of 8,700 square metres.

2.5 Easements

No easements are shown on the Certificates of Title for Lots 973, 974 and 975 DP 755233.

2.6 Physical Features

2.6.1 Topography and Drainage

The site comprises flat reclaimed land, with adjoining marina berths.

Drainage over the site is predominantly by overland flow, with some infiltration and subsurface flow. The site, including the gravel car park within Cullen Park, drains into Lake Macquarie. A Council stormwater drain outlet is located near Cullen Park adjacent to the southern end of the gravel car park.

2.6.2 Flooding

The site has been identified as low lying land and as being prone to flooding pursuant to Council records.

2.6.3 Mine Subsidence

The site is not located within a proclaimed mine subsidence district.

2.6.4 Bushfire

The site is not classified as Bushfire Prone Land pursuant to Council's bushfire prone land maps.

2.6.5 Vegetation

There is little vegetation on the LMYC site, consisting of a single raised planter bed filled with low flowering ornamental shrubs and a single Phoenix spp (Phoenix Palm). Cullen Park consists of a mix of grassed areas, gravel car park and a few mature trees.

2.6.6 Water Depths and Ada Street Causeway

Water depths in the vicinity of the site vary from zero at the shoreline adjoining Cullen Park to a maximum of around 2.8 metres at the western edge of the existing marina.

The Ada Street causeway is approximately trapezoidal in section, measuring 500mm at its deepest and roughly 100mm at the edges. It is 20m wide and approximately 40m long. The flows through the causeway are strongly influenced by wind. Flows under tidal influence alone are small and in lengthy non-windy periods, near stagnant water is inevitable. The causeway channel's northern end is at present subject to sedimentation from a Council stormwater outlet, which is substantially reducing flow area. Within the length of the causeway itself, there is also a considerable depth of sediment.

2.6.7 Water Flows and Hydrodynamics

Water flows and hydrodynamics have been comprehensively addressed in the Hydrodynamic Assessment in Appendix 20. Tidal flows have negligible effect on the hydrodynamics of areas that are a considerable distance from Swansea Channel. In Belmont Bay the currents are very small under tidal influence only and most significant motion is wind driven. The north west wind is the dominant wind and has good fetch (ie. the distance across the water which waves are generated by the wind). The longest fetch into Belmont Bay is from the south-west, although winds from this direction are infrequent.

2.6.8 Coastal Processes

Coastal processes have been comprehensively addressed in the Engineering Report in Appendix 20. The sources of wave activity contributing to the wave climate at the site comprise local wind generated waves and boat wake. Ocean swell does not penetrate the main part of the Lake to any significant degree. At the outer edge of the existing marina wave heights are between 0.5 and 0.6m, attenuated inside to about 0.4m. On the downwind side of the marina there is also substantial reduction in wave height to about 0.4m.

Sea level rise will cause a small increase in the lake mean and peak tidal levels above the new mean sea level. The simulations undertaken in the Hydrodynamic Processes Report in Appendix 20 indicates that for the average tide, peaks will be 82.5mm higher due to the increased range in the lake and tidal pumping. This will be additional to sea level rise (see Section 6.10). Significant wave heights in extreme events will only increase marginally.

2.6.9 Water Quality

As detailed in the Phase 1 Environmental Site Assessment prepared by Coffey Environments in Appendix 15, a water sample was collected from the Lake. The ANZECC (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality were considered applicable for the protection of the aquatic ecosystems of the receiving waters. ANZECC (2000) advocates a site specific approach to developing trigger threshold values which are based on such factors such as local biological affects data, the current level of disturbance of the ecosystem, etc. The trigger values are defined as concentrations of key performance parameters below which there is a low risk that adverse biological affects will occur. It is relevant to note that these are not threshold values at which an environmental problem is likely to occur if exceeded. Rather, if the trigger values are exceeded then further action may be required, such as further site specific investigations to determine whether any remedial action is required.

ANZECC (2000) provides low risk trigger values for the protection of 80-99% of species in marine and fresh waters, with the trigger value depending on the health of the receiving waters. Background water quality can be used as a basis for management decisions rather than reliance solely on the exceedance of default trigger values. Marine water trigger values were considered applicable for protection of ecosystems in the receiving waters of the site. The Department of Environment, Climate Change and Water's ("DECCW") policy is that the trigger values for the protection of 95% of aquatic ecosystems should be used except where contaminants are potentially bioaccumulative in which case the trigger values for protection of 99% of species should be used. As a result, trigger values for protection of 95% of marine water species for the majority of contaminants and 99% of

marine water species for bioaccumulative contaminants, were selected by Coffey Environments for initial comparison purposes.

The water sample tested indicated that only some metals (boron, cobalt, copper, selenium, zinc, mercury) slightly exceeded the trigger values adopted. All other concentrations were below the adopted trigger value. It is considered that these concentrations probably represent the background water quality levels in the lake and can be used for comparative purposes during and after the redevelopment of the LMYC.

2.6.10 Acid Sulfate Soils

Council records indicate that the site contains Acid Sulfate Soils ("ASS") Classes 1 and 3. Class 1 soils have the highest risk for ASS, with Class 5 having the lowest risk. Any works on Class 1 soils are likely to expose ASS. However, with Class 3 soils, works beyond 1m below natural ground surface (or works by which the watertable is likely to be lowered beyond one metre below natural ground surface) are likely to expose ASS.

An ASS Assessment for the site was undertaken by Coffey Geotechnics in Appendix 14. This assessment can be summarised as follows:

- Twelve samples were taken from the site and screened for the presence of actual and potential acid sulphate soils using methods 21Af and 21 Bf of the 1988 Acid Sulfate Soils Management Advisory Committee ("ASSMAC") Guidelines.
- The testing indicated that none of the 12 samples tested were actual ASS.
- Results of the SCR technique analysis indicated the percentage of chromium reducible sulphur in all of the samples tested and net acidity in two of the four sample tested exceeded the ASSMAC action criteria and are therefore considered potential ASS.
- A negative net acidity in two of the four samples tested indicated these samples had sufficient in situ neutralising capacity, probably in the form of shell matter, to neutralise the potential acidity.
- Despite ASS being present in bottom sediments below lake water level, the risk of these soils being exposed to oxygen and hence generating sulphuric acid and causing harm to the environment is considered very low given the proposed construction methodology (driving piles into the lake bed).
- An ASS Management Plan for the proposed construction works is therefore not required and sediments will not be excavated from the lake bed.

2.6.11 Hydrogeology

As detailed in the Phase 1 Environmental Site Assessment undertaken by Coffey Environments Pty Ltd (Appendix 15) a search conducted by the DECCW identified a number of groundwater bores within a 2km radius of the site. This included 9 bores located to the south of the site where standing water levels are between 1.5m and 3m. It is anticipated that groundwater on the mainland part of the site would be influenced by the proximity to Lake Macquarie. It is likely that groundwater from surrounding up-gradient locations would also flow through the mainland part of the site into the Lake.

2.6.12 Contamination

In relation to contamination, we understand the following:

- The site is not within land declared to be an investigation area or remediation site under Part 3 of the Contaminated Land Management Act, 1997.
- The site is not subject to an investigation order or remediation order within the meaning of the Contamination Land Management Act 1997.

- The site is not subject to a voluntary investigation proposal, the subject of the Environment Protection Authority's agreement under section 19 or 26 of the Contaminated Land Management Act 1997.
- The site is not subject to a site audit statement within the meaning of Part 4 of the Contaminated Land Management Act 1997.

Notwithstanding the above, a Phase 1 Environmental Site Assessment was undertaken by Coffey Environments Pty Ltd and is included in Appendix 15. The existing conditions within both the land and water based components of the site are summarised below. It is relevant to note that following discussions with DOP and DECCW it was agreed that detailed contamination investigations would only be required where the preliminary investigation indicates that the land is contaminated and a land use change is proposed that has the potential to increase the risk of exposure to contamination. As the proposed development does not involve a change to the land use, it was agreed that the only further testing required would be the sediments beneath the proposed marina and the existing water quality of the Lake (to determine a background level). The following matters were also considered in the assessment:

1. The site has been used as a yacht club with associated marina since about 1954. The yacht club is built on reclaimed land constructed on imported fill of unknown origin. The yacht club building potentially contains asbestos and lead based paints. No testing was undertaken in this area as the LMYC is proposed to be demolished with a new club taking its place.
2. The gravel car park within Cullen Park comprises fill of unknown origin. No testing was undertaken in this area as this area is to be capped.
3. The bitumen car park of the LMYC comprises fill of unknown origin. No testing was undertaken in this area as this area will remain encapsulated.
4. The fenced waste storage compound is located in the south western corner of the bitumen car park and includes a stainless steel cooking oil disposal bin and a bunded above ground motor oil disposal tank. Oil staining on the concrete pavement around the tank and within the bund was apparent. No further testing was undertaken as this area is proposed to be removed and redeveloped as part of the proposal.
5. Sediment sampling of the lake in the area of the proposed marina was undertaken and generally showed concentrations of contaminants below the trigger values adopted.
6. A water sample was collected in the Lake which indicated that metals slightly exceeded the trigger values adopted. It was considered that these concentrations represent existing background water quality levels in the Lake.

Matters relating to contamination have been further addressed in Sections 7.9.5 and 8.14.

2.6.13 Geotechnical Characteristics

2.6.13.1 Overview

The geological characteristics and subsurface conditions of the site have been detailed in the Geotechnical Assessment prepared by Coffey Geotechnics Pty Ltd (see Appendix 14).

The site is underlain by Quaternary aged sand deposits near the base of a hill formation underlain by the Moon Island Beach Subgroup of the Newcastle Coal Measures comprising conglomerate, sandstone, siltstone, tuff and coal.

2.6.13.2 Surface Conditions

The site has been formed by filling into Lake Macquarie and is about 1.0m above lake water level. The existing car park is flat to slightly sloping and is asphalt surfaced. Rock boulders are located around the majority of the perimeter of this area.

2.6.13.3 Subsurface Conditions

The subsurface profiles encountered at the various borehole locations are presented in the Geotechnical Assessment (see Appendix 14). The subsurface conditions can be summarised as follows:

- A total of six boreholes were drilled within the car park and around the LMYC building to a maximum depth of 7.8 metres. These bores generally encountered a top level of fill (generally between 0m and 1m) followed by Alluvial Sand (generally 1m to 5m), Alluvial Clay (2.2m to 7.8m) and then finally weathered rock (5.9m to 7.8m). The subsurface profile is interbedded predominantly Sand, Silty Sand and Sandy Silt, overlying predominantly Clay with thin Sand, Silty Sand and Sandy Silt bands. The exception was one borehole adjacent to the carpark/Clubhouse interface which encountered weathered rock.
- Six hand augured boreholes were drilled within the Lake bed (adjacent to the existing car park) to a depth of 1 metre below the lake bed level. The water depth varied between 0.2m and 1.2m at these borehole locations. These indicated that the sands are generally very loose to loose with depths of between 0.3m below lake bed level at the eastern end of the car park to the limit of testing at depths of up to 2.85m below lake bed level at the western end of the car park.
- Twelve boreholes were drilled in other locations around the site within the lake (around the existing carpark, club and marina) to a depth of 2.85 metres below the lake bed level. These boreholes had similar results to the six hand augured boreholes mentioned above. Drill refusal was encountered at about 0.9m depth below the lake level at the eastern end of the car park, which is most likely weathered rock.

2.6.13.4 Groundwater

As detailed in the Geotechnical Assessment in Appendix 14, no temporary or permanent excavations below lake water level are proposed as part of the development. The piles used during construction will be either driven or screwed below lake water level, but will not involve any excavation. It is therefore highly unlikely that the proposal will have any impact on groundwater levels or quality beneath the site.

2.6.13.5 Site Suitability and Recommendations

The Geotechnical Assessment in Appendix 14 confirms that the site is suitable for the development proposed, subject to compliance with the recommendations made. The soils beneath lake bed level within the existing and proposed new clubhouse building footprint are expected to comprise Unit 2 alluvium, comprising variable density sands overlying stiff to hard clays, to greater than 7m depth below the existing car park level. It is therefore recommended that the proposed new clubhouse be supported on pile foundations founded on weathered rock (located beneath the upper layers of fill and variable density alluvium).

In terms of the car park widening, the detailed pavement design requirements within section 4.2 of the Geotechnical Assessment will be adhered to.

2.7 Existing Development

The LMYC is the premier sailing and racing club in Lake Macquarie and the existing development at the site includes the following:

- A car parking area for around 94 vehicles on reclaimed land, with access off Ada Street.
- A two storey clubhouse which includes meeting rooms, licensed premises with bar and restaurant, office and general amenities. The existing club has a gross floor area of around 738 square metres.
- An 84 berth marina.
- 12 swing moorings licensed to LMYC, which are located around the existing marina.
- A hardstand area adjacent to the car park which accommodates 19 yachts.

The land and water based components of the site comprise Crown Land under the care and control of the LPMA. LMYC has 3 subtenants including the restaurant/bistro, boat brokerage and sailing school.

Photos of the site are provided below, in the architectural drawings in Appendix 8 and the Visual Impact Assessment in Appendix 10.

Photo 1 – View of the Lake Macquarie Yacht Club from Ada Street, looking west.

2.8 Scenic Values

2.8.1 Overview

The Scenic Values of the site and surrounding area are set out in Section 2.1.3 of Lake Macquarie Development Control Plan No. 1 – Principles of Development ("DCP 1") and the Lake Macquarie City Council Scenic Quality Guidelines - 2004 ("Scenic Guidelines").

These Scenic Guidelines provide a method for assessing the scenic quality of the land. This method has been followed in the Visual Impact Assessment in Appendix 10 and is also summarised below:

2.8.2 Landscape Setting Unit Qualities

The site is located in the Belmont Bay Landscape Setting Unit. The Landscape Setting Resource Sheet for Bardens Bay identifies the site as having a "Moderate" Scenic Quality rating. The landscape characteristics of Moderate Rating Units are described in Section 2 of the Scenic Guidelines as follows:

> *"The natural landscape is still dominant but new development is obvious to the viewer. Vegetation diversity and landform ruggedness are moderate. The foreshore and beaches are characterised by a uniform waters edge or some alteration with urban development or structures. Hinterland landscapes have a moderate landform diversity or limited outlooks."*

This resource sheet describes the Land Use in the area as follows:

> *"Recreational use on the foreshore and within the bay, it is popular for boat launching and anchorage with the Yacht Club and the 18' Sailing Club is a focal point. Urban and suburban areas lie around the Bay except at the north where there is attractive bushland from Black Rocks Point to Cardiff Point. The Pacific Highway lies along the lake edge in the central bay."*

The Observation Points are described as "*Yacht Club and 16' Sailing Club, Marks Point, Highway and Esplanade*". The Landscape Appreciation is described as follows:

> *"Belmont Bay offers the first foreground view of the Lake from the Highway when coming from the south. Views across the water are appreciated for their higher degree of naturalness and forested hillside."*

2.8.3 Scenic Quality Objectives of the Belmont Bay Landscape Setting Unit

As the Belmont Bay Landscape Setting Unit is classified as a "Moderate Unit", the following Scenic Quality Objectives are relevant:

> *"To ensure that new development does not diminish the scenic quality of Lake Macquarie landscaped by:*
>
> - *maintaining the dominance of the natural landscapes on ridgelines, Lake foreshore and coastline over urban development,*
> - *retaining vegetation and landscape features that contribute to the landscape character in major viewsheds, and*
> - *ensuring new development does not become prominent or dominate the landscape of its setting."*

2.8.4 Scenic Management Zone of the Site

The Scenic Zone Maps in the Scenic Guidelines identify the site within "Scenic Management Zone B – Moderate". This zone is defined as follows:

"<u>Zone B</u>

"Is assigned to those areas that are highly valued in the City for the maintenance of the scenic quality and identity of the various localities. Zone B areas have a Visual Accessibility rating of Moderate or Low and a Medium Scenic Quality Rating."

The Scenic Management Zone Objectives for Zone B, detailed in Table 3 of the Scenic Guidelines, identify the following location categories:

- Ridgelines and Hillsides;
- Foreshore and Coastline;
- Rural Landscapes
- Forested Hinterland; and
- Urban Areas.

In this regard it is relevant to note that none of the above terms are defined in either the Lake Macquarie Local Environmental Plan 2004 or Development Control Plan No. 1. Nevertheless, it is considered that the site is located on the "foreshore" within an "urban area".

The Scenic Management Zone objectives for "Foreshore and Coastline" are described as follows:

"To maintain the dominant natural character in foreshore and coastline areas while allowing some modification and rehabilitation of areas with diminished scenic quality."

There are no relevant strategies for achieving this objective as those described in Table 3 are only relevant to the 7(4) Environmental (Coastline) zone.

The Scenic Management Zone objectives for "Urban Areas" are described as follows:

"To maintain the desirable character of the area, while allowing some development."

The strategies for achieving this objective described in Table 3 are as follows:

- *"Development considers and enhances the existing desirable character.*
- *The height, form and scale of development is not visually prominent from Significant Features, View Points or Ridgelines."*

2.8.5 Significant Features, Viewing Points and Ridgelines

Section 2.1.2 and Appendix 3 of the Scenic Guidelines identify the Significant Features, Viewing Points and Ridgelines within the local government area. Those that are within view of the site are the following:

- Coal Point (Feature Site No. 25).
- Belmont Bay and Marina (Feature Site No. 42).
- Lake Macquarie Yacht Club (Feature Site No. 43).
- Marks Point (Feature Site No. 45).
- Swan Bay (Feature Site No. 46).

2.9 Existing Employment and Membership

There are currently around 18 fulltime equivalent employees at the site.

The LMYC currently has around 1,700 members.

2.10 Traffic

The existing traffic environment within and surrounding the site has been analysed in the Traffic and Parking Assessment in Appendix 16. Ada Street, Walter Street, Macquarie Street and Victoria Street are the local roads in the vicinity of the site, with access being provided directly off Ada Street (see Section 2.11). Ada Street connects with the Pacific Highway (a State Road) to the east of the site.

Traffic surveys detailing existing conditions were undertaken at various intersections within the locality during the various peak periods, including Saturday morning (generally between 11am and 12noon, weekday mornings (generally 8am to 9am) and weekday afternoons (generally 4pm to 5pm). The SIDRA program was then used to analyse the operation of the various intersections within the locality. The results of these surveys can be summarised as follows:

- The majority of turning movements at the intersection of Ada Street and Pacific Highway experience either a Level A (Good), Level B (Acceptable delays and spare capacity) or Level C (Satisfactory) service at all times. However, the movement from Ada Street turning right onto the Pacific Highway has a Level F (Unsatisfactory) service at all times. However, the volume of traffic performing this turn is relatively low and alternative routes are available for this manoeuvre.
- All the turning movements at the intersection of Walter Street and Ada Street experience a Level A (Good) service at all times.
- All the turning movements at the intersection of Walter Street and Macquarie Street experience a Level A (Good) service at all times.

2.11 Access and Parking

Vehicular access to the LMYC is off Ada Street, which in turn intersects with the Pacific Highway (with a left in left out operation). This intersection is shown on the Location Plan in Appendix 2.

LMYC presently has on-site parking for 94 cars, which is shown in Photo 2 overleaf.

A parking assessment of the existing development has been undertaken by B J Bradley & Associates and is included in Appendix 16. This has been summarised below.

The parking required for the building component of the LMYC is governed by Lake Macquarie City Council's Development Control Plan No. 1 as follows:

- The clubhouse has a total gross floor area of around 738sqm.
- The DCP 1 requirement for Clubs less than 1,500sqm is 1 space, plus 1 space per 15sqm GFA.
- This provides for a total parking requirement of 50.2 spaces (say 51 spaces) for the building component of the LMYC.

Photo 2 – View of existing car park looking east towards Ada Street.

The parking required for the marina component of the LMYC is governed by AS 3962 – 2001 – Guidelines for Design of Marinas as follows:

- AS 3962 – 2001 requires 0.3 – 0.6 spaces per wet berth; 0.2 – 0.4 spaces per dry berth; and 0.3 – 0.6 spaces per swing mooring.
- At any one time, LMYC has less than 50% of the boats involved in racing. As a result, a mid range of the AS 3962 – 2001 requirements has been applied.
- 84 wet berths @ 0.45 spaces per berth require 37.8 parking spaces.
- 19 dry berths @ 0.3 spaces per berth requires 5.7 spaces.
- 12 swing moorings @ 0.45 spaces per mooring requires 5.4 spaces.
- This provides for a total parking requirement of 48.9 spaces for the marina component.

Based on the above, the total parking requirement is 99.1 spaces (say 100 spaces). As a result, the existing LMYC has a parking deficiency of approximately 6 spaces.

There is also a draft agreement with Belmont TAFE on the opposite side of the Pacific Highway for LMYC to use their car park on weekends. LMYC also operates a courtesy bus service where members can park external to the club and are then shuttled to the club.

2.12 Marine Ecology

2.12.1 Overview

A detailed Flora and Fauna Impact Assessment Report of the site and the proposed development has been prepared by Ecotone Ecological Consultants Pty Ltd and is attached in Appendix 11. The report is based on a

combination of literature review and field surveys within the site and surrounding study area. The report addresses the Director-General's Environmental Assessment requirements (see Section 1.6) and includes an impact assessment in accordance with Part 3A of the EP&A Act. The general findings of this assessment are provided below.

The Survey Plan in Appendix 7 identifies all the existing land based trees within the vicinity of the site.

2.12.2 Terrestrial Habitats

The existing terrestrial habitats within and adjacent to the site are substantially modified and degraded as a result of historic land uses. No threatened terrestrial flora or fauna species, populations or ecological communities, listed under either the NSW Threatened Species Conservation Act or the Commonwealth Environment Protection and Biodiversity Conservation Act, were identified within the study area during the survey period and none is expected to occur. The vegetation community mapping of the Lower Hunter & Central Coast Regional Environmental Management Strategy (LHCCREMS) Study 2003 identifies no vegetation communities within the subject land or study area. The part of Cullen Park where the car park is proposed and most of the foreshore is an informal gravel car park with some very small patches of grass around the margins. To the immediate east of the proposed car park works (ie. to the east of the site) there have been previous plantings with a variety of small trees and palms and two large Coral Trees (Erythrina sp.). Within the more elevated parts of Cullen Park, beyond the works area, there are also several very large remnant Forest Red Gum trees with diameters around 180cm at breast height and some hollow limbs. These trees are significant local remnant trees and will be unaffected by the proposed works.

2.12.3 Aquatic Habitats

The aquatic habitats within the study area are in reasonably good condition despite the long term use of the area as a marina. Adjacent aquatic habitats are also in reasonable condition although the seagrass beds have been adversely affected by numerous swing moorings.

No threatened aquatic flora or fauna species, populations or ecological communities, listed under the NSW Threatened Species Conservation Act, the NSW Fisheries Management Act or the Commonwealth Environment Protection and Biodiversity Conservation Act, were identified within the study area during the survey period and none is expected to occur on anything other than a rare visitor basis. However, there is a Proposed Determination from the Fisheries Scientific Committee to list the seagrass *Posidonia australis* in Lake Macquarie and elsewhere as Endangered Populations. Seagrass beds, a protected Fish Habitat under the NSW Fisheries Management Act occur within Belmont Bay and were confirmed as present within the subject site. Targeted surveys of the seagrass beds, within the area potentially affected by the proposed changes to the marina and two reference sites within Belmont Bay were carried out. The results indicate that both Posidonia and *Zostera capricorni* are present within the existing marina area, but their % cover and health is lower in the marina area than elsewhere within Belmont Bay. The numerous private swing moorings located mostly to the north and south of the existing marina in Belmont Bay were found to have completely removed all seagrass within circles up to 10m in diameter.

The % cover of the seagrasses within the area proposed for the marina extension was less than that within the existing marina and this is most likely the result of the reduced water quality from sediment resuspension due to wave back wash from the wave skirts around the existing marina, but increasing water depth may also be a factor. It was estimated that that there was approximately 2,646 square metres of seagrass habitat within the two existing marina bays. *Posidonia australis* cover was estimated to be around 20%, whilst *Zostera capricorni* cover was around 30%. From these figures it was estimated that there was approximately 529 square metres of *Posidonia australis* and 794 square metres of *Zostera capricorni* within the two existing marina bays. Bare sediments make up around 80% of the seabed in the footprint of the proposed extension of the marina bay westward. Approximately 15% of the bottom comprised isolated patches of *Posidonia australis* ranging in cover

from 1-5%, which equates to 19.1 – 95.4 square metres. The *Posidonia australis* seagrass within these patches was not luxuriant and could not be considered healthy, most likely due to it growing at the end of its range in terms of depth and light availability. *Zostera capricorni* also makes up around 5% of the area of the proposed outer bay footprint. This species is growing in isolated patches ranging in cover from 1-10%

Surveys for aquatic fauna concentrating on benthic macro-invertebrates and Syngnathids (seahorses and similar) were also carried out within the area potentially affected by the proposed changes to the marina and at two reference sites within Belmont Bay. The results indicate that there are differences in the structure of the macro-invertebrate assemblages in different parts of Belmont Bay but the species richness and abundance was found to be similar around the existing marina and at the two reference sites. Similarly for the Syngnathids, there was little difference in species richness of abundance around the existing marina and at the two reference sites.

Most threatened terrestrial fauna species and most threatened aquatic fauna species, including all frogs, pelagic birds, all sharks, most waders and most marine mammals, have been excluded from the survey and reporting for the following reasons:

- The site does not contain any open ocean habitat, but rather a small shallow section of coastal estuarine lake and a very small area of modified terrestrial habitat with no freshwater areas and with only a few small cultivated trees.
- While the site includes a small section of modified lake shoreline, it has a very narrow intertidal zone and no mudflats.
- While previous records exist for some marine species on the Lake Macquarie 9231 1:100 000 map sheet, most records are for ocean or open ocean areas.
- For those few above species that have previously been observed within the waters of Lake Macquarie, the species are very rarely recorded and the chances of them being affected by the proposal are miniscule.

2.13 Heritage and Archaeology

2.13.1 Overview

A Heritage and Archaeological Assessment has been prepared by Insite Heritage Pty Ltd and is included in Appendix 13. This assessment includes an overview of the existing European and Aboriginal cultural heritage contexts.

2.13.2 Heritage Council Act 2003 and Environment Protection and Biodiversity Conservation Act 1999

In 2003 the Australian Heritage Commission Act 1975 ("AHC Act"), which established the Australian Heritage Commission and the Register of the National Estate ("RNE"), was repealed. Heritage conservation legislation at a federal level was amended by the Australian Heritage Council Act 2003 together with amendments to the Environment Protection and Biodiversity Conservation Act 1999 ("EPBC Act"). This introduced a new scheme of heritage protection that effectively focuses on national, as opposed to state and territory, heritage concerns. The new regime provides for the continuation of the RNE, however, the RNE is now used as an information resource to which the newly formed Australian Heritage Council ("AHC") is able to add places that it believes meet the prescribed criteria. Under the new regime, two new lists have been created to add to the RNE. These are the National Heritage List ("NHL") and the Commonwealth Heritage List ("CHL"). The AHC is intended to provide independent and expert advice to the minister on conserving and protecting places included in the NHL and the CHL. The AHC is also charged with keeping the RNE.

The site is not listed on the Australian Heritage Commission's RNE, the NHL or the CHL. Furthermore, no adjoining site is listed on these lists.

2.13.3 Heritage Act, 1977

The Heritage Act 1977 was passed to conserve the environmental heritage of New South Wales. The Heritage Act is binding on all State Government agencies, including Councils. Items of heritage significance are protected by the means of Interim Heritage Orders or by listing on the State Heritage Register.

The site is not listed on the State Heritage Register.

Section 139 of the Heritage Act also includes additional special provisions passed to protect "relics". A "relic" is defined as meaning:

> *"relic means any deposit, object or material evidence:*
>
> *"(a) which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and*
>
> *(b) which is 50 or more years old."*

Section 139 states:

> *"1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit."*
>
> *2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit."*

There is no formal register of "relics" held by the NSW Heritage Office. Some of the sites listed on the State Heritage Register or in Local Environmental Plans may either be "relics" or have relics associated with them. As detailed in this submission, the site is not listed on either the State Heritage Register or on any heritage schedule/register in an environmental planning instrument (see below).

2.13.4 Environmental Planning and Assessment Act, 1979

The Environmental Planning and Assessment Act 1979 ("EP&A Act") requires that consideration be given to environmental impacts as part of the land use planning process (including heritage impacts). Pursuant to the provisions of the EP&A Act, Environmental Planning Instruments ("EPI's") including State Environmental Planning Policies ("SEPP's"), Regional Environmental Plans ("REP's") and Local Environmental Plans ("LEP") can be made. Typically, EPI's include provisions that protect items of environmental heritage and have schedules which list heritage items, relics, heritage conservation areas and so on.

With regard to the proposed development on the site, there are a range of EPI's that are relevant. Of these EPI's, only the following contain heritage schedules/lists:

- Hunter Regional Environmental Plan 1989 (Heritage).
- Lake Macquarie Local Environmental Plan 2004.

In this regard it is relevant to note the following:

- The site is not listed as a State Heritage Item, a Regional Heritage Item, a Local Heritage Item, an Item Requiring Further Investigation or a Conservation Area pursuant to the Hunter Regional Environmental Plan 1989 (Heritage).
- The site is not listed as a Heritage Item, a Potential Archaeological Site, a Natural Heritage Item, a Landmark of Aboriginal and European Heritage Significance, a Place of Aboriginal Heritage Significance, a Potential Place of Aboriginal Heritage Significance or a Heritage Conservation Area pursuant to the provisions of Lake Macquarie Local Environmental Plan 2004. We further understand that Lake Macquarie City Council have prepared a Draft Aboriginal Heritage Study Report that is not a public document.

Notwithstanding the above, we understand that the site was listed as item no. BM 02 in the City of Lake Macquarie Heritage Study (1992-93). We understand that this heritage study was undertaken by Council to evaluate which potential heritage items should be protected by listing within the Local Environmental Plan. In the case of the LMYC, the decision was made not to list the item in the Lake Macquarie Local Environmental Plan 2004 (see Section 7.11.2). In any event, the Heritage and Archaeological Assessment prepared by Insite Heritage Pty Ltd (see Appendix 13) has provided an assessment of the historical significance of the LMYC and concludes as follows:

> *"Lake Macquarie Yacht Club is a place of importance to its members – it is a focal point for members of the local community who have an interest in sailing and boating in general. The club was formed in 1929 and the club-house erected in 1934. Since that time the club-rooms have been extended and modified to cope with increasing numbers of members (and boats), and demands for improved member services (for both recreational and social purposes). The club now serves members in a variety of ways including a venue for meetings and social gatherings, bar and restaurant services, race management, boat moorings, equipment storage, car park and commercial services (retail outlets and offices). As a result little remains of the original building and the intrusive nature of the renovations has detracted from the significance of the building. While the place is of moderate to high significance within a local context, the building itself is of little significance."*

The Heritage and Archaeological Assessment prepared by Insite Heritage Pty Ltd also identifies that an electric crane previously located at the LMYC was listed as item BM 06 in the City of Lake Macquarie Heritage Study (1992/93). However, this crane was removed from the LMYC some time ago.

2.13.5 Aboriginal Cultural Heritage

The Heritage and Archaeological Assessment prepared by Insite Heritage Pty Ltd (see Appendix 13) includes a detailed assessment of Aboriginal Cultural Heritage. This has included an Aboriginal Archaeological survey and consultation with the Bahtahbah Local Aboriginal Land Council, Awabakal Descendants Traditional Owners Corporation and Awabakal Traditional Owner Corporation.

The above assessment describes the archaeological context in Section 2.1 as follows:

> *"The study area is located within the Grant given to Rev. L.E Threkeld, to provide missionary services to the Aborigines of the Newcastle / Lake Macquarie area. The original grant comprised several thousands of acres and extended from north Lake Macquarie down to Swansea Channel. The mission itself was located on Belmont Bay, according to recent tradition in the area of Belmont Primary School about one block to the north east of Cullen Park and the study area. Threkeld's map shows the location as sited on 'wretched soil''. The mission was moved after a few years to the western side of the lake and established the Ebenezer Mission at what is now known as Toronto (Insite Heritage 2009 in prep). Cullen Park had a plaque marking the area as the location of the Mission (Frost pers com), although the site is likely to be a few hundred metres north.*

……."

The archaeological record of east Lake Macquarie area has been severely impacted by sand mining and urban development prior to the introduction of archaeological assessments. In general indigenous sites in this area are open camp sites characterised by artefacts made on stone sourced from the Permian tuffs outcropping along the coast to the east ('Nobbys tuff'), cherts, silcrete, quartzite and fossiled wood.

……."

The assessment goes on in Section 2.3 to state the following:

"The archaeological record of East Lake Macquarie has been severely impacted by sand mining and pre-environmental assessment development. In the Belmont area the environment is a narrow strip of land formed by a low ridge with lagoons and wetlands formed behind the dune barrier of Nine Mile Beach.

The area would have provided a rich resource zone with the interface of the residual landscaped, undulating sandsheets, and relic dunes to the east. Each of these soil landscapes provide a different ecological unit thus bringing together a variety of flora and fauna associated with the different ecological niches. The wetlands to the east and Belmont Lagoon would have attracted water birds, and the beach and lake environments an array of shellfish species.

In the area of development potential for Aboriginal archaeology is confined to the margin between the car park and Cullen Park. The current plan terminates the path before it enters the area of limited potential for disturbed in-situ soil at the southern end of the proposed pedestrian cycleway which otherwise traverses fill over a sewer main."

This assessment determined that a recorded Aboriginal site is located in Cullen Park immediately east of the car park area. An additional highly disturbed midden deposit was located adjacent to houses on Anderson Parade. In this regard it is relevant to note that this midden will not be disturbed by the proposed footpath/cycleway as this route is narrow, along a highly modified foreshore and has been previously excavated for a sewer main. As detailed in the draft Statement of Commitments in Section 9, the developer will ensure that if there is any evidence of Aboriginal archaeological content exposed during the construction stage, the developer and any associated contractors will stop work and notify the Aboriginal stakeholders group and Department of Environment, Climate Change and Water. Aboriginal stakeholders will also be invited to monitor excavation of the minor cut in the south eastern corner of the car park and the excavations associated with the proposed cycleway/footpath long the Lake Macquarie Foreshore.

2.14 Services

All necessary services including water, sewer, electricity, gas and telecommunications are presently connected to the site. Discussions with the various service authorities have taken place and copies of this correspondence are provided in the Engineering Report in Appendix 20. Water, sewerage, electricity, gas and telecommunication services are currently provided to the clubhouse building. Only potable water and electricity are provided to the existing marina, with services generally running beneath the decked walkway. An existing single sewage pump-out point services the existing marina and is located at the north western corner of the marina.

3. THE SURROUNDING ENVIRONMENT

3.1 Physical Environment

3.1.1 Overview

Lake Macquarie is Australia's largest coastal saltwater lake. It occupies an area four times the size of Sydney Harbour and is a popular recreation resource for Sydney, the Hunter Region and beyond. The LMYC at Belmont extends approximately 100 metres into the lake. The nature of the surrounding area is clearly shown in the aerial photo in Appendix 3. The site is adjoined by predominantly residential uses, although there are retail, commercial and recreational uses within close proximity. These include the Belmont 16 Footers Club to the north and various retail and commercial uses along the Pacific Highway, which are associated with the town centre of Belmont.

There are five other existing marinas on Lake Macquarie. These are at:

- Toronto Yacht Club at Toronto
- Marmong Point
- Marks Point
- Pelican
- Wyee Point

3.1.2 Land to the North

To the north of the LMYC are the waters of Lake Macquarie, including clusters of swing moorings (see Photo 3 below). The foreshore of Lake Macquarie to the north of the site comprises waterfront dwellings and apartments that gain access off Walter Street, Victoria Street, Cliff Street and Brooks Parade. Further to the north is the Belmont 16 Footers Club.

Photo 3 – View to the north of the Lake Macquarie Yacht Club.

3.1.3 Land to the East

To the east of the LMYC is Ada Street, which intersects with the Pacific Highway around 100 metres to the east of the land/water interface. The land to the east includes a Council Reserve (Cullen Park) and the Gunyah Hotel at the intersection of Ada Street and Pacific Highway. There are also dwellings located along Ada Street and Walter Street which have views of the LMYC. The nature of the land to the east is shown in Photo 4 below.

Photo 4 – View of land to the east from the main entrance to the Club.

3.1.4 Land to the West

To the west of the site are the waters of Lake Macquarie and various swing moorings that are licensed to the LMYC. On the opposite side of the Lake is the foreshore and headland of Coal Point (about 3.5 kilometres to the west of the site).

3.1.5 Land to the South

To the south of the site are the waters of Lake Macquarie, including clusters of swing moorings (see Photo 5 overleaf). The foreshore of Lake Macquarie to the south of the site comprises waterfront dwellings and apartments that gain access off the Pacific Highway. At the southern end of this headland is Andersons Point.

Photo 5 – View of Andersons Point and the dwellings to the south of the site.

3.2 Social Environment

The existing demographic and social profile of Belmont is described in the Social & Economic Impact Assessment in Appendix 8 and can be summarised as follows:

- The immediate population of the residential catchment is 6,467 people, which includes 104 indigenous people.
- Belmont represents 3.5% of the LGA's population of 183,138.
- The service catchment of Belmont is approximately 22,000 people which represents 12% of the LGA's population.
- The median age of the population is 43 years, which is higher than the LGA which has a median age of 40 years. In the Belmont area over 22% of the population are aged 65 years and over, which is much higher than the 16.8% for the LGA. There will be an increase in the proportion of the population aged 65 years and over to 28% in 2031.
- There are 2,731 people in the labour force and 55.5% are employed full time (compared with 56.2% for the LGA). 7.6% of Belmont's population are unemployed which is higher than the LGA which has a recorded unemployment rate of 6.7%.
- The medium weekly individual income is $373 compared to $394 for the LGA.
- Single residential dwellings represent 71.4% of all housing stock with semi-detached residences representing 7.4% and flats representing 13.7%.
- Median rent is $165 per week compared to $185 for the LGA. The median housing loan is $1,517 per month compared with $1,300 for the LGA.

The character of Belmont is described in Section 4.7 of the Social & Economic Impact Assessment as follows:

"The residential character of this area has changed considerably over a number of years. The old characteristic 'seaside town' is still evident, but is giving way to what appears to be a more exclusive lifestyle. Housing is changing from the original single storey fibro style cottages to multi-storey architect style developments which are now features of the landscape, particularly along the waters edge. In saying this however management of the Lake has seen development remain at a scale which retains its landscape and has not become over developed with high rise buildings along the foreshore.

The characteristics of the area and the population changes have been brought about by factors other than the yacht club. These include the proximity of the area to the sub-regional centre of Charlestown and Regional City of Newcastle as well as the Central Coast. The area is well serviced by major infrastructure such as education, medical, transport etc and has a strong and diverse employment base.

The LMYC is a community facility focussed on yachting and boating. In terms of social cohesion, the Social and Economic Impact Assessment states the following:

"The LMYC has been in existence since 1934. Its growth and development over this time has been limited and the proposed redevelopment represents the largest change to the site for many years. The LMYC is well known in the area and is one of a number of yacht clubs, boating clubs, marinas, etc on the Lake.

As previously identified, Lake Macquarie is identified as the '…the Home of Sailing on Lake Macquarie';

With this in mind, the redevelopment of the LMYC is not in conflict with what the areas is known for. Further to this the Belmont Bay area (which LMYC lies within) also hosts a number of moored yachts outside of the marina. Therefore the visual aspect of the Bay is very much featured by boats, in particular yachts."

4. PROJECT NEED

4.1 Project Aims

The proposed redevelopment of the LMYC seeks to achieve the following:

- Improved facilities and amenities for members and the local community including new function rooms, to provide a high quality marina.
- Improved emergency access to and from the waterway for the safety of both members and the community, including a new disabled hoist to get people on/off vessels.
- Improved environmental conditions and compliance with lease/licence requirements.
- Meeting the unmet demand for visiting vessels and cruising facilities on Lake Macquarie, particularly from Sydney, Port Stephens and Queensland based clubs and their members, as well as touring yachts and fleets.
- Improved facilities to ensure continuing encouragement of junior sailing.
- Regional community benefits through improving water access and flow on social and economic benefits.
- Protection of ecologically significant areas within and around the marina.
- Promote and utilise boat business arising from the increased patronage of the LMYC and its conference facilities.
- Opportunities to limit the proliferation of swing moorings (and therefore protect seagrass environments) by providing marina berths at a location where increased mooring pressures are expected.
- Provision of improved foreshore facilities and public access areas adjacent to the LMYC.
- Provide an architectural style for the new clubhouse that is harmonious with the surrounding natural and built environment.

4.2 Project Need

The LMYC was formed in 1929 and officially opened in 1934. Due to the location of the LMYC in the heart of Lake Macquarie, the Marina has the potential to become a significant regional asset. Lake Macquarie is the largest saltwater lake in Australia with arguably the best inland sailing waters in Australia. For 80 years LMYC has been the premium yacht club in the lake and as sailing is becoming a more popular activity there is significant pressure and responsibility to ensure that the LMYC facilities remain available and viable into the future.

The need for the proposed development is reflected by the following:

- There is a general trend for yachts to be increasing in size and keel depth. Anecdotal evidence suggests that approximately 0.6 metres of depth has been lost around the existing marina infrastructure over the last 45 years or so. It is now difficult for yachts with a draught of around 2 metres to navigate into and out of the marina due to insufficient water depths. In addition, during low tides and extreme low pressure systems, these boats within the marina are partially grounded resulting in potential damage and loss of sailing time. LMYC investigated the option of dredging the marina, however, following a seagrass study LMYC was advised that dredging is not an option. Given that LMYC only has 12 swing moorings, it is essential to the LMYC that adequate depth for yachts is maintained in and around the marina. The new marina extension will provide the necessary depth for yachts with a draught over 2 metres.

- The existing marina caters for around 84 boats and is fully subscribed.
- The existing marina does not cater for large power boats, catamarans and deeper draft yachts.
- There is a growing demand for marina berths within Lake Macquarie. The LMYC currently has around 40 names on the marina waiting list. This is a conservative estimate of demand and does not represent latent demand. We understand that this is a situation common to other marina operators in Lake Macquarie.
- The LMYC currently has a restriction on the number of power boats allowed in the marina as its Charter is to promote sailing. There is, however, market pressure to provide additional berths for large power vessels.
- The current parking arrangements adequately cater for club requirements during the week, but can be oversubscribed on weekends, public holidays and during special event days.
- The foundations and structure of the clubhouse are deteriorating. The LMYC is built over a harsh saltwater environment on timber piles on timber joists and bearers. Many of these are rotted out and propped up in a make shift way. Furthermore, the sub floor timber structure has deflected and the foundations are deteriorating. The LMYC is slowing sinking into the lake. The current position of the clubhouse is the optimal position and therefore a replacement facility is required.
- There is a need for the land-based facilities associated with a new marina to be expanded and to be updated to ensure they remain attractive for new boat owners, residents and visitors (including tourists). Such an upgrade is also required to meet the demand associated with the new marina extension and associated increase in club membership. The existing club is also of timber construction and has gas appliances within the restaurant. This increases the fire risks and as a result, insurance has been difficult to secure and will become more difficult as time goes by.
- The proposed expansion would produce economic benefits to the wider community, including employment opportunities during the construction and operational phases. In addition, there will be economic benefits to the wider community of an expanded marina. This includes benefits associated with an increased number of marina berths which will attract additional people and income to the area. Other benefits include improved club facilities which residents can benefit from, the improvement of existing parking arrangements (and associated reduction in impacts associated with parking in surrounding residential streets) the improvement in land values in proximity to the redeveloped yacht club and improved marine safety and environmental outcomes associated with the marina extension.

4.3 Marina Demand

A detailed supply and demand analysis of marina berths has been undertaken in the Social and Economic Impact Assessment in Appendix 18. The NSW Maritime Authority has estimated that Lake Macquarie has over 2,200 moorings, including 400 marina berths. In contrast there are more than 23,000 registered vessels ("*Increased Demand for Berths*", *The Newcastle Herald, 28 December 2006*).

In 2000 NSW Waterways Authority completed a "Mooring Management Plan" for Lake Macquarie. One of the observations of the plan was that over the 10 year period to 2000 there had been an 11% growth in demand for mooring sites in Lake Macquarie. We understand through discussions with NSW Maritime Authority that such growth has continued since 2000. Furthermore, as detailed in Section 4.2, the existing marina has a 100% occupancy rate and the LMYC presently has around 40 names on the marina waiting list. This is a conservative estimate of demand and does not represent latent demand.

It is also understood that power boat registrations in Lake Macquarie have increased 41% in the past 10 years, rising from 15,280 in 1996 to 21,493 in 2006. Furthermore, sailing boat registrations increased 16% from 1,261 to 1,461 over the same period ("*Rebirth for Old Berths", The Newcastle Herald, 15 February, 2008*).

In response to this demand, various marina proposals are presently being considered for Lake Macquarie, including the following:

- A 308 berth marina at Trinity Point (Morisset Park), which will service the demand generated by a new integrated residential and tourist development at this site. (***Note**: We understand that this marina has been reduced in size to 188 berths pursuant to MP06-0309*).
- The expansion of the existing marina at Marmong Point to provide an additional 80 wet berths and 60 dry storage stacks. This will bring the total number of wet berths to around 240 and the total number of dry stack spaces to 110.

There are presently the following 5 other marinas located on Lake Macquarie with permanent berthing and mooring facilities:

1. Royal Motor Yacht Club at Toronto. This marina comprises around 51 berths and 10 swing moorings.
2. Marmong Point Marina. This marina includes around 160 berths, 13 swing moorings and 50 dry storage bays. It is the largest marina on Lake Macquarie and offers ancillary services such as boat repairs, slipway, travel lift and fuel facilities.
3. Wyee Point Marina. This marina comprises around 36 wet berths, 10 dry stack spaces and 4 swing moorings.
4. Pelican Marina. This marina includes 17 wet berths only.
5. Marks Point Marina. This facility includes 62 wet berths and 26 swing moorings. This marina offers extensive ancillary facilities, including boat repairs, slipway and fuel facilities.

The Trinity Point Marina Demand Study states that in areas where modern berthing facilities have been introduced there is an immediate and progressive demand for the marina berths suggesting a latent demand. The study goes on to state that based on the projected population scenarios for the Lake Macquarie Local Government Area and the Hunter Region (including Wyong), the future berth demand on Lake Macquarie for 2011 is between 166 and 398 new berths. At 2016 the demand is projected to be between 221 and 537 new marina berths.

Currently there are around 409 marina berths in Lake Macquarie. Should the proposed developments at LMYC, Marmong Point and Trinity Point proceed, there will be a net increase of 446 new marina berths (***Note**: This net increase may be reduced to around new 326 berths if the Trinity Point Marina proposal is reduced to 188 berths as currently approved pursuant to MP06-0309*).

If, according to the Trinity Point Marina Demand Study, the upper end of the supply and demand analysis is correct at 398 marina berths, there is a potential oversupply of 48 berths at 2011 *(**Note:** This potential oversupply of 48 berths will become an undersupply of 72 berths if the Trinity Point Marina is reduced from 308 berths to 188 berths as currently approved pursuant to MP06-0309)*. However, given the projected demand at 2016, the trend towards increased demand and utilisation of marina berths when they become available and the demand for visiting/short duration berthing requirements, the proposed cumulative supply of marina berths across Lake Macquarie is reasonable. Furthermore, the potential demand from the Sydney market has not been quantified and could easily increase this demand scenario. Marina berths and moorings in Sydney are becoming increasingly difficult to obtain and are expensive, something which has been supported by the NSW Boat

Ownership and Storage Study (Hill PDA, 2008-2009). As a result, additional demand over and above the projected 398 berths in 2011 is more likely.

In addition to the above, it is relevant to note that LMYC has a much more suitable location on the eastern side of the lake than the other proposed marinas. The LMYC is closer to good public transport links; closer to both an established and growing population; closer to existing retail, commercial and recreational facilities; and a short distance from the Sub-Regional Centre of Charlestown and the regional City of Newcastle. As a result, when space becomes available, boat owners are likely to gravitate to LMYC first rather than the other marina options. Furthermore, it is the premier yacht racing club on the Lake and therefore boats moored at different locations (eg Marmong, Toronto, etc) sail here on race days to compete. These boats currently cannot get a mooring near the LMYC, but when the marina is built, these boats may move to LMYC. This represents a latent demand that cannot be quantified but needs to be considered when assessing the demand for new marina berths at LMYC (as opposed to new berths at Marmong Point or Trinity Point).

5. THE PROPOSED DEVELOPMENT

5.1 Overview

It is proposed to redevelop the existing yacht club at Ada Street, Belmont ("the Site") including the extension of the existing marina.

The existing site comprises a car parking area for around 94 vehicles, a two storey club house and a marina with 84 berths. The LMYC also includes around 12 swing moorings adjacent to the marina. The land and water based components of the site comprise Crown Land under the care and control of the LPMA. Various Crown leases and licences exist over the site.

The land based component of the site is zoned 6(2) Tourism and Recreation pursuant to Lake Macquarie Local Environmental Plan 2004 ("LEP 2004"). The water based component of the site is zoned 11 Lakes and Waterways pursuant to LEP 2004. The proposed development is permissible with consent in these zones.

In formulating the proposed expanded use, LMYC has taken a holistic approach to its site planning. The LMYC recognises that a master planning approach is necessary in securing the long term future of the LMYC and successful commercial outcomes. This holistic approach has been driven by EJE Architecture in their consideration of a variety of configurations and options to ensure the site's redevelopment is the best outcome for the LMYC, adjoining residents, the wider community, Lake Macquarie City Council, NSW Government Agencies, the Bahtabah Local Aboriginal Land Council and boat owners.

The formulation of the proposed redevelopment has included an extension consideration of alternative options as detailed in Section 5.2. The redevelopment option now proposed is considered to be the optimal outcome for the LMYC and stakeholders with the least environmental impact which is consistent with the sustainability principles of Ecologically Sustainable Development. The proposal includes an extension to the existing marina to accommodate 64 additional wet berths/boats. A total of 148 wet berths will be provided following the extension (including temporary day berths and berths used by the LMYC). Four commercial swing moorings licensed to the Marina will be surrendered which will reduce the number of such swing moorings to 8. The existing two storey clubhouse will be demolished and a new contemporary style two storey clubhouse building will be erected in its place. The existing parking area will be reconfigured to accommodate a total of 127 car spaces, including 3 disabled spaces (ie. 33 additional spaces). This existing car park will be extended over the existing rock ballast walls to both the north and south and will comprise a concrete footing/edge beam and a suspended concrete slab. In addition, 24 additional at grade parking spaces and 2 car and trailer spaces will be provided within the existing gravel car park in Cullen Park. This includes the expansion of the LMYC's existing lease area, landscaping of Cullen Park and the provision of public access along the foreshore of Cullen Park. This gravel car park will be built up slightly higher than the existing level using imported road base and provided with a new bitumen seal.

5.2 Consideration of Alternatives

5.2.1 Club Development Options Considered

5.2.1.1 Do Nothing

The "do nothing" option would result in lost opportunity for the Lake Macquarie local government area, including both the general community and the sailing community. The clubhouse would continue to deteriorate to a point where it would need to be demolished. This would result in a marina development without any ancillary facilities, with an associated loss of the economic and social benefits that are generated by the LMYC. The opportunity to

continue to utilise a site that is eminently suited to the project for an activity that would otherwise have to rely on existing sites or an alternative site with less obvious advantages, does not present the do nothing option as a viable option.

5.2.1.2 Select an Alternative Site

Any alternative site would need to have the following attributes:

- Water front location and availability of land for club, car parking and support services.
- Availability and capacity of associated land based transport networks.
- Environmental considerations (proximity to residences, marine ecology, transport, etc).
- Strategic planning and permissibility implications.
- Position in relation to member base.
- Local aesthetic implications.
- Deep water marina capacity for yachts with drafts of over 2 metres.
- Good exposure to the lake area of Belmont Bay for regatta sailing and optimal wind conditions.
- Good transport links to ensure good access for regattas, including proximity to the Swansea Channel for visiting yachts.

There are no known alternative sites on Lake Macquarie that could be made available to a non for profit community club organisation such as the LMYC. An alternative site is therefore not a viable option.

5.2.1.3 Refurbish Existing Club

This would require the replacement of pilings and foundations beneath the clubhouse on an as-needed basis. An investment in the fitout of the clubhouse could only be undertaken with an associated upgrading of the structural integrity of the building to ensure it's life span is assured. These ongoing costs over the lifetime of the lease (ie. 27 more years) would be similar to the demolition and construction of a new clubhouse and is therefore not an option that would be able to be supported by either the LMYC or the Crown (the landowner).

Such an option would not meet the long term needs of the LMYC to provide a facility that sets a higher standard providing an attractive destination for visiting vessels and function centre users. The opportunity to provide additional economic and social benefits associated with hosting national and international regattas, business seminars, conventions, weddings, etc would be lost, along with the associated flow on to tourism and local business operators. Such social and economic benefits have been outlined in Sections 8.7 and 8.8 and the Social and Economic Impact Assessment in Appendix 18.

5.2.2 Marina Options Considered

5.2.2.1 Overview

The additional marina berth options considered for the LMYC were influenced by a range of factors, including the following:

- The demand for additional marina berths at LMYC (see Section 4.3).
- The impacts on seagrasses and sensitive ecological environments in the vicinity of the site (see Section 5.20).
- The existing available water depths, as dredging is not proposed due to the environmental impacts associated with such works.

- The retention of existing navigation lines within and around the LMYC lease area for both club and visiting vessels.
- The exposure of the site to wind and waves, particularly winds from the south – west quadrant (see Sections 8.2 and 8.3).
- The visual impact of the proposal (see Section 8.11).
- The design and siting standards for marinas, particularly EIS Guideline – Marinas and Related Facilities (DUAP, 1996) and AS3962-2001 – Guidelines for Design of Marinas (see Sections 6.5 and 6.7, respectively).

5.2.2.2 Options Considered

1. Marina Option 1 – Option 1 involved not providing an extended marina. This "do nothing" option would result in lost opportunity for the Lake Macquarie local government area. As detailed in Section 4.3, there is significant demand for additional marina berths at the LMYC, particularly given it's reputation as the pre-eminent sailing club on Lake Macquarie and it's strategic location on the eastern shores of the lake close the existing population centres. There is also substantial existing marina related infrastructure at LMYC including reclaimed land, existing parking facilities, slipways, marina berths, offices, club amenities, etc. The provision of the additional marina berths required on Lake Macquarie at an alternative location that does not have such facilities, would be a poor use of existing resources and less environmentally sustainable. Furthermore, the provision of an extended marina reduces the pressure to provide additional swing moorings on the lake, with the associated adverse environmental impacts on seagrasses of such swing moorings. The unavailability of modern marina berthing facilities and associated facilities puts pressure on NSW Maritime and the LPMA to release areas for swing moorings. This does not present the "do nothing" approach as a viable option.

   In addition to the above, should the marina not proceed, a number of other community benefits would not be achieved, including the following:

   - Improved berthing, parking, rigging areas and general facilities for state, national and international regattas.
   - Additional employment.
   - Berthing facilities for emergency services.
   - Disabled access provisions.

2. Marina Option 2 – Option 2 involved an extended marina to the north or south. However, this is an area of Belmont Bay which is rich in seagrasses and their associated habitats, including Zostera capricorni and Posidonia australis (which is the subject of a proposed listing from the Fisheries Scientific Committee as an Endangered Population). A new marina in this area would therefore have adverse ecological impacts. Furthermore, this area comprises shallow water of similar depth to the existing marina. As a result it would not meet the need of catering for yachts with a deeper draught. Although a marina in this location would slightly reduce the impact of coastal processes associated with wind and wave action from the south-west quadrant (and would therefore protect existing assets and the foreshore), it would have a more adverse visual impact. Houses along the foreshore which currently have views of the lake (rather than the clubhouse and marina) would have their views interrupted with a new marina. Other localised views in the area would also be adversely affected in this way.

3. Marina Option 3 – Option 3 involved extending the marina to the west in a repeat layout of the existing marina. This was the area supported by the DPI Fisheries (see Section 1.7.2) as the seagrass Posidonia australis covers only around 15% of this area. As a result, it is estimated that only 15% of the new marina piles would coincide with patches of Posidonia. However, with the expected improvement in

water clarity and reduced turbulence (and taking into account the increased shading from moored vessels and walkways within the marina extension area) seagrass cover, including Posidonia, is likely to increase following construction.

An extension to the west of the existing marina also ensures that when viewed from the lake foreshore, the new marina is predominantly screened by the visual presence of the existing marina in the foreground. In other words, the masts of the yachts to be located within the new marina will be predominantly screened by the masts of the existing yachts in the existing marina, when viewed from the lake foreshore. This would ensure the views of residents and users of the foreshore towards the lake, is not compromised by additional structures. Furthermore, given that the masts of the yachts within the marina are not rigged, there would still be filtered views of the lake through these mast structures.

The western expansion of the marina was also identified by NSW Maritime as being appropriate as it ensures the marina occupies a space on the lake currently taken up by swing moorings, and therefore not used for general boating purposes. The position of the marina would therefore not impact on general navigation and boat user areas thereby resulting in minimal interference to competing uses of the surrounding waterway. The western expansion also provides good water depth to meet the needs of yachts with deeper draught. Although this option comprises a slightly increased exposure to the wind and wave action experienced from the south-west quadrant, an appropriate marina design is able to nullify any change to foreshore impacts.

4. Marina Option 4 – Option 4 involved the provision of dry stack boat storage to meet demand in lieu of part of the proposed marina berths. However, this option was quickly discounted due to the space constraints of the available reclaimed and foreshore land, the visual impact of such structures and the fact that dry stack storage generally caters for a different market than that of the existing LMYC (ie. smaller power boats rather than yachts). Dry stack storage also generally has greater impacts on the foreshore in terms of vehicle movements and noise associated with boat loading and unloading via crane systems.

5.2.2.3 Preferred Option

The preferred option following discussions with all stakeholders, including Council and NSW Government Agencies) is Marina Option 3 above. This is the option the subject of this EA.

5.2.3 Car Parking Options Considered

5.2.3.1 Overview

As detailed in Section 2.1, the LMYC has parking for 94 cars, which equates to a historical parking deficiency of approximately 6 spaces. The current parking arrangements adequately cater for club requirements during the week, but can be oversubscribed on weekends, public holidays and during special event days.

With the proposed expansion to the marina and the redeveloped club house, there is a need to provide a total of around 182 car parking spaces (see Traffic and Parking Assessment in Appendix 16).

At the request of the DOP and Lake Macquarie City Council, a thorough review of all the car parking options to cater for this additional demand has been undertaken as part of the concept planning stage. This consideration of options followed the Preliminary PA Meeting held with the DOP, Council and NSW Government Agencies on 12 May 2008, where general opposition to the reclamation of land for additional car parking was expressed (see Appendix 19).

5.2.3.2 Options Considered

Details of the concept car parking options considered by EJE Architecture are provided in Appendix 19. This includes a detailed summary of the advantages and disadvantages of each option. The options considered can be summarised as follows:

1. Car Park Option 1 – This involves the reconfiguration of the existing car park and the reclamation of land to the south of the existing car park (around 25 metres further into the lake) to provide a total of 175 car parking spaces. This provides a surplus of 12 car parking spaces (excluding the historical deficiency). A wet berth generation rate of 0.45 car spaces per berth has been used in this option. This is the car parking option that was the subject of discussion at the Preliminary PA Meeting held on 12 May 2008 (see Appendix 19).
2. Car Park Option 2 – This involves the reconfiguration of the existing car park and a reduced reclamation of land to the south of the existing car park (around 15 metres) to provide a total of 153 car parking spaces. This provides a surplus of 5 car parking spaces (including the historical deficiency). A wet berth generation rate of 0.4 car spaces per berth has been used in this option.
3. Car Park Option 3 – This does not involve any reclamation of land and simply relies upon the reconfiguration of the existing car park. This provides a total of 135 car parking spaces, providing a deficiency of 13 car spaces (including the historical deficiency). A wet berth generation rate of 0.4 car spaces per berth has been used in this option.
4. Car Park Option 4 – This is similar to Car Park Option 3 above, however, also involves a reduction in the gross floor area of the clubhouse and deck area. This provides a total of 139 car parking spaces, providing a deficiency of 5 car spaces (including the historical deficiency). A wet berth generation rate of 0.45 car spaces per berth has been used in this option.
5. Cullen Park Option 1 – This includes Car Park Option 3 above, with the 13 car space shortfall being provided in an underground car park in the adjoining Cullen Park. This underground parking option was put forward by Lake Macquarie City Council at the Preliminary PA Meeting on 12 May 2008 as an option to consider.
6. Cullen Park Option 2 – This includes Car Park Option 3 above, with between 12 and 21 additional at grade parking spaces being provided in Cullen Park.
7. Cullen Park Option 3 – This includes Car Park Option 3 above, with up to around 18 additional at grade parking spaces being provided in a slightly different configuration in Cullen Park.

*(**Note**: All options above include a slight extension of the existing car park to the existing rocks which define the northern and southern lease boundary. Presently the car park does not extend to the lease boundary.*

5.2.3.3 Preferred Option

The various car parking options were discussed with Lake Macquarie City Council and the LPMA (the landowner) on 10 July 2008. Notes from this meeting are provided in Appendix 19. Following this meeting, the following preferred options were agreed upon:

1. Car Park Option 3 is the preferred option to cater for the majority of additional car parking required. It has an acceptable environmental impact as it does not involve any reclamation of land and it does not reduce the economic viability of the project.
2. Cullen Park Option 2 should be pursued to make up the parking shortfall and to provide a community benefit through the improvement of this degraded space. This should include improvements to Cullen Park through landscaping, formalising parking areas and providing public access along the foreshore.

This would include an extension to the existing lease boundary (as would be the case with any reclamation of land option).

5.3 Proposed Development

The proposed development is outlined in the following schedule of drawings which form part of the EA. Copies of the drawings are provided in Appendices 8, 9 and 20.

Table 4: Drawing Schedule

Drawing No.	Drawing Title	Date/Revision
Survey Plan		
25536	Detail Survey	18 November 2008
Architectural Drawings		
A00	Cover Sheet	C
A01	Locality Plan	B
A02	Context Plan (Land Uses)	B
A03	Access Plan	B
A04	Open Space Plan	B
A05	Navigation Plan	B
A06	Aerial Site Photo	B
A07	Stage 1 Works Plan	B
A08	Stage 2 Works Plan	B
A09	Site Plan	B
A10	Car Park Alterations Plan	B
A11	Marina Extensions Plan	A
A12	Clubhouse Ground Floor Plan	B
A13	Clubhouse Level 1 Floor Plan	B
A14	Clubhouse North & East Elevations	B
A15	Clubhouse South & West Elevations	B
A16	Section A-A & Section B-B	B
A17	Photo-Montages 1 & 2	A
A18	Photo-Montages 3 & 4	A
A19	Photo-Montages 5 & 6	A
A20	Shadow Diagrams	B
Landscape Plan		
L01	Cullen Park Landscape Plan	A
L02	Proposed New Foreshore Footpath Cullen Park – Andersons Point	A
Engineering Drawings		
C01 DA	Sediment and Erosion Control Plan	A
C02 DA	Stormwater Concept Plan	A

Drawing No.	Drawing Title	Date/Revision
C03 DA	Pavement Plan	A
C04 DA	Earthworks Plan	A
C05 DA	Existing Services Plan	A
C06 DA	Flood Evacuation Plan	A

The proposal comprises the following key elements, as demonstrated in the above drawings.

- An extension to the existing marina to accommodate 64 additional wet berths/boats (***Note**: 72 new wet berths are to be provided in the new marina extension. However, the existing marina berths are to be reduced to 76 berths with a catamaran configuration*). The marina will be able to cater for larger power boats, catamarans and deeper draft yachts. This marina extension will comprise an approximate area of 13,200 square metres. A total of 148 wet berths will be provided following the extension (including temporary day berths and berths used by the LMYC).
- The surrendering of 4 commercial swing moorings licensed to the Marina which will reduce the number of such swing moorings to 8. In addition, the remaining 8 swing moorings will be replaced with seagrass friendly moorings by the LMYC.
- The demolition of the existing two storey clubhouse and the erection of a new contemporary style two storey clubhouse building. The footprint of the new clubhouse will be similar to the existing clubhouse as detailed in the attached drawings. Photomontages of the proposed development are also attached.
- The reconfiguration of the existing parking area to accommodate a total of 127 car spaces, including 3 disabled spaces (ie. 33 additional spaces – Car Park Option 3 in Section 5.2.3 and Appendix 19). The existing car park will be extended over the existing rock ballast walls to both the north and south. This will include a concrete footing/edge beam and a suspended concrete slab. The new external edge of the car park will be placed over a new concrete edge beam which will be supported on piles, driven or screwed into the Lake bed at approximately 4 metre centres.
- The provision of 24 additional at grade parking spaces and 2 car and trailer spaces within the existing gravel car park in Cullen Park – Cullen Park Option 2 in Section 5.2.3 and Appendix 19). This includes the expansion of the LMYC's existing lease area with the LPMA, landscaping of Cullen Park and the provision of public access along the foreshore of Cullen Park. This gravel car park will be built up slightly higher than the existing level using imported road base and provided with a new bitumen seal.
- The provision of a public pick up/drop off zone and free casual berthing during the day.
- The provision of a hoist for access to boats for people with a disability.
- The setting aside of a dedicated emergency evacuation site.
- Regrading of the existing bitumen car park and the laying of new imported road base and bitumen to raise this level by around 300mm.

The LMYC will continue to employ around 18 people.

The LMYC will continue to have 19 Etchell fleet racing yachts stored on dry berths adjacent to the car park hardstand.

There are presently no hazardous goods or materials that are stored on the existing marina, including fuel storage. This will continue to be the case with the new marina.

Facilities for visiting yachts and people will be significantly improved. This will include berths for disabled sailors, temporary berths for visiting boats and much improved facilities within the clubhouse. Such facilities will include a laundry and 3 en-suites for visiting yachtsmen.

5.4 Proposed Clubhouse

The ground level of the new Club building will accommodate similar uses as the existing Club, including the following:

- Administration area.
- Yacht Club facilities (change rooms, offices, sailing school/broker, etc).
- Gaming area
- Lounge/auditorium areas.
- Bar area
- Restaurant (including alfresco outdoor terrace).
- Outdoor barbecue area.

The ground floor area of the clubhouse will increase from a gross floor area of around 658 square metres to a gross floor area of around 1,067 square metres.

The first floor level of the clubhouse presently accommodates a function and meeting space of around 80 square metres. The proposed first floor level will have a gross floor area of around 654 square metres and will include the following:

- Office and storage areas.
- Kitchen.
- Two function rooms and a pre-function room.
- Outdoor terrace overlooking the marina.

The layout of the proposed clubhouse facilities is shown on the architectural drawings in Appendix 8.

5.5 Operating Hours

The existing operating hours of the LMYC and marina facilities will not change. The marina is generally used by boat owners during daylight hours (generally between 7am and 6pm), although boats arrive and leave the marina outside of these hours on infrequent occasions.

The office and administration activities of the LMYC generally operate between 9.00am to 5.00pm Monday to Friday (to 7pm Thursdays) and 9am to 2pm on Saturdays.

The restaurant operates generally midday to about 11pm every day.

The bar operates 10am to 11pm week days and Sundays, with extended hours to midnight on Saturdays. There are occasions when the bar hours extend to 1am on a Saturday when there is a special function on. All functions and entertainment (weddings, bands, etc) cease by midnight. Only the ground level terraces are to be used past midnight by patrons.

5.6 Building Materials and Finishes

The new LMYC building will be supported on a concrete pile and beam system with a concrete floor decking that may be precast concrete plank system to allow ease of construction. The walls will be precast concrete wall panels. The upper floor will also be concrete, either precast or insitu. The roof structure will be a galvanised steel frame and a metal sheeted roof cladding. The windows and door frames will be powdercoated aluminium and new handrails will be of stainless steel and glass construction.

All new materials will be selected for their ease of maintenance and longevity due the hostile coastal salt water environment. Details in relation to colours and finishes are shown on the Architectural Drawings and Photomontages in Appendix 8.

5.7 Marina Design

Details regarding the marina design are provided in Engineering Report in Appendix 20 and the Architectural Drawings in Appendix 8. The proposed marina extension would be similar in design and appearance to the existing marina at the LMYC. The marina berths would comprise a system of piered walkways, with the berthing pens being created using a system of mooring bollards along the side of the vessels. Piles will be driven or screwed below lake level. The marina construction will require approximately 350 new piles of 330mm diameter. Some of these will be used to support elevated walkways and some will be used for mooring bollards. The widths of walkways and fingers will be similar to those of the existing marina and are as shown on the architectural drawings in Appendix 8. The new marina will be integrated to connect with the existing marina elevated walkways.

In consultation with NSW Department of Primary Industries (Fisheries Division) it has become clear that conventional timber decking would not be acceptable due to the reduced potential for sunlight penetration to the waters below. As a result, the proposed new marina decking will comprise an open mesh product which will include fibreglass walkway panels (either “Wedlock” or “Rigidex II”). This open mesh decking will be installed with the longest openings aligned in a north-south direction to obtain the best transmission of light during winter when the sun is lower in the sky.

The existing wave skirt around the marina consists of 200mm boards separated by 85mm gaps. The boards extend 1200mm below the surface, in water which is around 3.3m deep. The existing marina also has around 430 piles of approximately 330mm diameter in typically 3.3m of water. The proposed marina will have approximately 350 new piles and the north and south sides of the proposed marina will have a skirt depth of 1.8m and 200mm boards spaced at 60mm centres. The proposed western skirt will have a depth of 2.4m and 200mm boards with 18mm gaps. As detailed in Section 8.3, this skirt would reduce approaching wave heights of 1.2m to the acceptable level of 0.6m within the marina basin.

The new marina berths would be provided with water and power as is the case with the existing marina. This includes intermittent 240 volt power supply outlets for docked boats and intermittent tap fixtures for filling water bottles and cleaning of boats. As detailed in the Engineering Report in Appendix 20, these services are readily available and would be extended from the existing marina to service the new berths. Services would be positioned on the underside of the marina walkways, as is presently the case.

As is currently the case, no boat repair or maintenance facilities will be provided at the marina and no fuel/chemical storage occur.

A new starters box for yacht regattas will be located on the south western corner of the proposed marina, as is the case with the current marina. This will replace the existing starters box. Details in this regard are provided in Drawing A11 in Appendix 8.

It is proposed to retain the single pump-out point currently servicing the existing marina.

5.8 Improvements to Cullen Park and Lake Macquarie Foreshore

The improvements to Cullen Park and the Lake Macquarie foreshore are detailed in the Landscape Plan prepared by Terras Landscape Architects (Appendix 19). These works will include the following:

- The formalising of the existing gravel car park in Cullen Park through the provision of 24 at grade parking spaces (Cullen Park Option 2 in Section 5.2.3 and Appendix 19). Two designated spaces for trailers will also be provided in the form of reinforced turf grass. This includes the expansion of the LMYC's existing lease area with the LPMA. This gravel car park will be built up slightly higher than the existing level using imported road base and provided with a new bitumen seal. The car spaces will comprise turf with cell reinforcement beneath. A low retaining wall will be provided along the eastern edge of the car park to prevent any damage to the root structures of the existing trees within the park. Access will be provided through the car park to the Council's community facilities (currently Meals on Wheels) within the southern section of Cullen Park.
- The retention of the existing trees within Cullen Park and the minor re-turfing of the existing park area where it is disturbed by the proposed works.
- The planting of small native shade trees to the car park area. *Cupaniopsis anacardioides* (Tuckeroo) trees will be used in this area as they are a small and hardy native shade tree that is suitable for a coastal situation. They perform well as a street tree and have been identified in the Belmont Town Centre Area Plan (LMCC DCP No. 1) as a street tree recommended for this area.
- Pursuant to the recommendations of the Flora and Fauna Impact Assessment Report in Appendix 11, landscaping will include rehabilitating the lake foreshore vegetation with new endemic foreshore planting of sedges and salt tolerant trees. This foreshore area will also be slightly regraded to provide the correct water levels for the macrophytes.
- The provision of a concrete access footpath/cycleway (1.5m wide) along the foreshore area (between the car park and the foreshore vegetation). This footpath/cycleway will extend south approximately 140 metres past Cullen Park along the foreshore area to the existing small park at Andersons Point.

Cullen Park and the Lake Macquarie Foreshore are currently maintained by Lake Macquarie City Council. Following the above improvement works and the expansion of the LMYC's existing lease area over the new car park, the LMYC will be responsible for the maintenance of the new car park area. The remaining area of Cullen Park and the Lake Macquarie Foreshore will continue to be maintained by Council.

5.9 Staging of Construction

A staged approach to construction is proposed, as detailed in Drawings A07 and A08 in Appendix 8.

It is proposed that the following works will comprise Stage 1 of the construction process:

- The extension of the marina.
- The reconfiguration of the existing car park.

- The public domain improvements to Cullen Park including the provision of formalised parking areas and landscaping improvements.
- The infrastructure and services associated with the above works.

It is proposed that the following works will comprise Stage 2 of the construction process:

- The demolition of the existing clubhouse and the erection of the new clubhouse. This will occur once the new marina is operational and is generating an income stream.
- The provision of the foreshore pedestrian pathway linking Cullen Park to Andersons Point public reserve.
- The infrastructure and services associated with the above works.

It is envisaged that during the construction of the new LMYC, some temporary facilities in demountable buildings will be provided to ensure the basic functions of the LMYC (predominantly sailing related) can continue. The Stage 1 works are likely to take around 4 to 6 months. The Stage 2 works are likely to take around 10 to 12 months.

Notwithstanding the above, a staged DA pursuant to the provisions of the Environmental Planning and Assessment Act, 1979 is not being sought.

5.10 Capital Investment Value

The capital investment value of the project will be around $8,980.000.00 (see Quantity Surveyors Report in Appendix 27).

5.11 Access and Parking Improvements

No change to existing access arrangements is proposed. Access will continue to be off Ada Street as described in Section 2.11. During the construction phase of the development, activities such as construction vehicle movements and haul routes will be subject to Council's standard conditions for movements from construction sites and movement numbers.

As detailed in Sections 5.3 and 5.8, the proposal includes the reconfiguration of the existing parking area to accommodate a total of 127 car spaces (ie. 33 additional spaces) and the provision of 24 additional at grade parking spaces in Cullen Park. The existing car park will be extended over the existing rock ballast walls to both the north and south. This will include a concrete footing/edge beam and a suspended concrete slab. The new external edge of the car park will be placed over a new concrete edge beam which will be supported on piles, driven or screwed into the Lake bed at approximately 4 metre centres. These works will extend the hardstand approximately 3 metres to the north and 3 metres to the south of the current edges, taking them over the existing rock walls. This will provide for a total of 151 car parking spaces (including 3 disabled spaces) to cater for the additional demand for parking generated by the new LMYC facilities and the extension to the marina. However, it will not address the existing historical shortfall of around 6 parking spaces that presently exist at the site (refer to Section 2.11).

The car park will be re-sealed to a general level of between around 0.8 and 1.2 metres AHD (similar to the existing levels). However, the central aisle of the car park (between the access point off Ada Street and the LMYC entry) will be raised to a level of 1.23 metres AHD to comply with Council's requirement for flood free access and egress during an emergency flood event. The proposed reconfiguration of the car park will include

the capture and treatment of stormwater runoff. During the proposed resurfacing and extension works, the car park will be regraded to fall towards its northern and southern edges. New upright kerbs will be constructed along the northern and southern edges to direct stormwater runoff into a series of proposed inlet pits. It is proposed to fit the new inlet pits with appropriate pollutant traps and filters to treat stormwater runoff from the carpark area, prior to discharging into the lake.

There will be no change to the existing agreement with Belmont TAFE on the opposite side of the Pacific Highway for LMYC to use their car park on weekends. LMYC will also continue to operate a courtesy bus service where members can park external to the LMYC and are then shuttled to the club.

With regard to parking, the Traffic and Parking Assessment in Appendix 16 concludes as follows:

- *"The parking requirement associated with the Lake Macquarie Yacht Club will change from 94 spaces to 151 spaces. The existing car parking onsite at the Lake Macquarie Yacht Club will change from a deficiency of 6 spaces to a theoretical deficiency of 31 spaces based on Council's DCP No. 1.*
- *The estimated night-time parking demand is 124 spaces.*
- *Lake Macquarie Yacht Club has arranged a lease agreement with Belmont TAFE to utilise its car parking area on the eastern side of the Pacific Highway for short-term maximum parking events such as during the Saturday afternoon race days during the summer period.*
- *Maximum parking demand at the Lake Macquarie Yacht Club generally occurs when yacht races are in progress. Car parking surveys during the busy December 2008 period indicated that the Club's parking is satisfactory for the existing demand except for short periods on race days when nearby street parking is utilised for overflow parking.*
- *Adjacent streets have a parking capacity of 72 cars excluding the gravel parking area near the Lake shore and the only competition for kerbside parking is local residential development and Gunyah Hotel."*

5.12 Traffic Generation

5.12.1 Overview

The Traffic and Parking Assessment in Appendix 16 provides a detailed assessment of the projected traffic generated by the proposed development and includes a comparison with projected traffic volumes in 2019. SIDRA simulations of the operation of the intersections of Ada Street/Pacific Highway, Ada Street/Walter Street and Walter Street/Macquarie Street were also undertaken. These SIDRA simulations included both the impact of the proposed development as well as the impact of the proposed development plus the 2019 traffic volumes. The findings of this assessment can be summarised as follows:

5.12.2 Ada Street and Pacific Highway Intersection

With the proposed development, the majority of turning movements at the intersection of Ada Street and Pacific Highway will continue to experience either a Level A (Good), Level B (Acceptable delays and spare capacity) or Level C (Satisfactory) service at all times (ie. no change). The movement from Ada Street turning right onto the Pacific Highway will continue to have a Level F (Unsatisfactory) service at all times (ie. no change). Again, the volume of traffic performing this turn will be relatively low and alternative routes are available for this manoeuvre.

For the projected 2019 traffic volumes (without the development) all turning movements at all times will experience a Level A (Good) service, apart from the following:

- Drivers will experience unacceptably high average delays for right-turns into Ada Street when travelling southbound on the Pacific Highway. This will be a Level D (Near capacity) service during the Saturday midday peak and a Level E (At capacity) service during the weekday am peak. During the weekday pm peak, this movement will have a Level B (Acceptable delays) service.
- Drivers will experience unacceptably high average delays during the weekday am peak turning left onto the Pacific Highway from Ada Street. This will be a Level F (Unsatisfactory) service. However, during the Saturday midday peak this will be a Level C (Satisfactory) service and during the weekday pm peak this will be a Level B (Acceptable delays) service.
- Drivers turning right from Ada Street onto the Pacific Highway will continue to experience a Level F (Unsatisfactory service).

If the projected traffic generated by the proposed development is added to the estimated natural increase in traffic volumes in 2019, then all turning movements at all times will experience a Level A (Good) service, apart from the following:

- The right-turn movement into Ada Street when travelling southbound on the Pacific Highway will change from a Level D (Near capacity) service to a Level E (At capacity) service during the Saturday midday peak. However, this movement will remain at a Level E (At capacity) service during the weekday am peak and a Level B (Acceptable delays) service during the weekday pm peak.
- The left turn movement from Ada Street onto the Pacific Highway will continue to experience a Level F (Unsatisfactory) service during the weekday am peak, a Level C (Satisfactory) service during the Saturday midday peak and a Level B (Acceptable delays) service and during the weekday pm peak.
- Drivers turning right from Ada Street onto the Pacific Highway will continue to experience a Level F (Unsatisfactory service).

Pursuant to the above assessment, drivers will experience unacceptably high average delays at the junction of Pacific Highway and Ada Street for projected 2019 traffic volumes for right turns into Ada Street and the right turn movement out of Ada Street onto the Pacific Highway. Average delays will increase with the additional traffic with the average delay for right turn into Ada Street likely to increase from 42.6 seconds per vehicle to 60.1 seconds per vehicle and Level of Service changing from D to E. However, some treatment will be required at this junction for the Saturday midday peak traffic volumes even if the LMYC redevelopment did not proceed.

However, it is important to realise that the SIDRA simulations do not replicate the large gaps in the southbound platoons that are created by the traffic signals at Macquarie Street, George Street and also Victoria Street. Drivers do experience difficulty turning right out of Ada Street during the midday Saturday period, however, average delays would be unacceptable but lower than those shown in the simulation. Drivers tend to use the short-cut from Macquarie Street via Walter Street and Ada Street to alleviate certain delays at the traffic signals at Pacific Highway and Macquarie Street and also Pacific Highway and George Street and Pacific Highway and Victoria Street. When peak flows exist on the Pacific Highway, drivers have the choice of accessing the Pacific Highway at the traffic signals at Macquarie Street and also at Victoria Street.

The Traffic and Parking Assessment states that it may be desirable to consider altering the geometry of the junction slightly by banning the right-turn from Ada Street onto the Pacific Highway and retaining all other movements. This would prevent accidents from impatient drivers. SIDRA simulation indicate that the existing southbound right turn bay on the Pacific Highway will be adequate even for 2019 traffic volumes as the 95% back of queue length will increase from 29 metres to 46 metres with the additional traffic generated by the LMYC redevelopment in 2019.

5.12.3 Water Street and Ada Street Intersection

With the proposed development, all the turning movements at the intersection of Walter Street and Ada Street will continue to experience a Level A (Good) service at all times (ie. no change). This will continue to be the case when the projected traffic generated by the proposed development is added to the estimated natural increase in traffic volumes in 2019.

5.12.4 Walter Street and Macquarie Street Intersection

With the proposed development, all the turning movements at the intersection of Walter Street and Macquarie Street will continue to experience a Level A (Good) service at all times (ie. no change). This will continue to be the case when the projected traffic generated by the proposed development is added to the estimated natural increase in traffic volumes in 2019.

5.12.5 Conclusion

With regard to traffic generation and intersection performance, the Traffic and Parking Assessment in Appendix 16 concludes as follows:

- *"SIDRA simulations indicate that the additional traffic generation from the proposed development of the Lake Macquarie Yacht Club will have no significant impacts on the operation of adjacent intersections, even for projected 2019 traffic volumes.*
- *The SIDRA simulations indicate that average delays for the right-turn movement out of Ada Street onto the Pacific Highway are unacceptable during the 2009 Saturday mid-day peak and also the 2009 morning and evening peaks regardless of the redevelopment of the Lake Macquarie Yacht Club. It may be necessary to consider physically banning the right-turn from Ada Street onto the Pacific Highway as alternative routs are available to compensate for the manoeuvre.*
- *The SIDRA simulation indicate that the existing southbound right-turn storage bay on the Pacific Highway will be adequate to cater for the increased right-turn movements into Ada Street that are likely to result from the proposed redevelopment of the Lake Macquarie Yacht Club."*

5.13 Plan of Management

The Plan of Management for the LMYC is included in Appendix 23 and will continue to apply to the proposed development. This Plan of Management includes the following components:

1. Operational Management Plan which deals with issues such as general operations, complaint resolution and noise amelioration.
2. Security Management Plan.
3. The House Policy, which deals with the responsible service of alcohol policies and strategies

As is the case at present, the Club Manager and management team will, at all times, undertake all due care and attention to ensure that the business activities of LMYC do not cause adverse impacts to the neighbouring areas or residents. In this regard the Plan of Management will continue to be implemented and will be reviewed every 12 months.

5.14 Maintenance of Ada Street Causeway

Details in relation to the existing conditions of the Ada Street causeway are provided in Section 2.6.6 and the Engineering Report and Hydrodynamic Assessment in Appendix 20. At present, water flows through the causeway linking Ada Street to the LMYC car park. This area of water is shallow with poor water circulation, due to reliance on winds rather than tidal or current flows (see Section 8.3). However, sediment builds up during rain events making it even shallower due to the following:

1. Presently the lower part of Cullen Park comprises an unsealed gravel car park. During rain events, sediment from the area flows uncontrolled into the Lake.
2. A Council stormwater pipe runs down Ada Street and discharges stormwater directly into this causeway area. This deposits sediment into this area exacerbating the situation (see Section 5.18.3).

As a requirement of the existing LMYC's Crown Lease, there is an existing obligation to dredge this causeway on a regular basis to improve water flows. This requirement is set out in Addendum 1 of the Crown lease under the heading Special Conditions and states the following:

> *"The Holder shall provide and maintain an open ventilation channel (free of dead sea grasses and siltation) to a width of 9.145 metres from the lease boundary and have a minimum depth of 0.6 metres below mean high water mark (0.5 metres below the zero of the Australian Height Datum) subject to the issue of a Permit under the Fisheries management Act 1994 and obtaining the necessary consents from the lessor and any other relevant statutory authorities."*

Investigations into options for alleviating seagrass accumulation and unpleasant odours at the causeway have been undertaken. Potential solutions identified included changing the geometric configuration of the causeway to promote better self flushing, installation of water quality treatment measures for the nearby Council stormwater pipe and improvement of manual maintenance programs. Hydrodynamic modelling undertaken by Econalysis for multiple geometric configurations of the causeway indicates negligible change to water flow velocities or volumes can be achieved under any practical scenario. Without increased flow velocities of volumes, improved self-flushing of the area under wave action is not likely to occur.

Installation of a gross pollutant and sediment trap immediately upstream of the existing stormwater pipe discharging at the causeway could provide improvement in conditions at the pipe outlet, which may contribute to alleviating odours. This option would need to be adopted by Council who are the asset owners of the pipe and associated stormwater infrastructure. This would require a regular manual maintenance program for emptying debris from any trap installed.

As detailed in the Hydrodynamic Assessment prepared by Econalysis P/L, the proposed development will not adversely impact upon the existing situation. In fact, the sealing of the lower part of Cullen Park and the foreshore landscape works (which include the provision of a salt marsh) will improve water quality and reduce sediment deposits. The Hydrodynamic Assessment in Appendix 20 also makes the following recommendation in relation to the maintenance of the Ada Street causeway.

> *"The effect of the causeway is useful, but it would be difficult to argue that it would be worthwhile to expand it. In my opinion, accumulation of sea-grass wrack on the shore-line is unlikely to be greatly reduced by changes to the causeway. On the other hand, the causeway could be easily maintained to provide a significantly greater flow by regular dredging, thereby improving odour issues in otherwise nearly stagnant water."*
>
> *……..*
>
> *The causeway cross-section area could nearly be doubled by dredging the centre to 0.8m below MSL and the edges to 200mm. A geotechnical assessment may allow even further deepening. In*

any case, an assessment of good foundation condition should be made prior to the commencement of dredging. Dredging would increase flow slightly more proportionally to the area, i.e. almost doubling the effective flushing with the suggested dimensions, which should provide useful dilution and re-aeration of water deoxygenated by decomposition of wrack."

In addition to the above, the sealing of the lower part of Cullen Park and the foreshore landscape works (which include the provision of a salt marsh) will improve water quality and reduce sediment deposits within the causeway.

Although there is an existing requirement to dredge the Ada Street causeway under the existing Crown Lease, it is proposed to amend these lease terms to reflect the above recommendations of the Hydrodynamic Assessment. This is reflected in the Draft Statement of Commitments in Section 9 and can be incorporated as a condition of any consent granted.

5.15 Utility Services and Infrastructure

5.15.1 Overview

All necessary services including water, sewer, electricity, gas and telecommunications are presently connected to the site. Discussions with the various service authorities have taken place and copies of this correspondence are provided in the Engineering Report in Appendix 20. Water, sewerage, electricity, gas and telecommunication services are currently provided to the clubhouse building. Only potable water and electricity are provided to the existing marina, with services generally running beneath the decked walkway.

The relevant authorities responsible for the utility services have advised that all services required by the development can be either extended or upgraded to service the proposed needs of the development. The developer will be responsible for all funding associated with the provision of utility services.

5.15.2 Sewerage

The proposed marina extension will not require extension of the sewer network. It is proposed to maintain the single sewage pump-out point currently servicing the existing marina. The increase in wet berths is likely to result in only a minor increase in sewage waste from the marina, if any, as many of the wet berths will be occupied by boats that already use the marina's sewage pump-out system. Should it be required in the future, the pump-out system could be upgraded or replaced to cater for additional sewage loads.

The new clubhouse will be similar in operational nature to the existing facility and no significant increase to sewage waste volumes is expected. Water efficient appliances, including taps and toilets, are proposed within the new clubhouse which could result in some reduction in sewage waste generation from the building. It is likely sewage waste volumes for the redevelopment will be very similar to the current volumes from the site. The existing sewer services will require some relocation to suit the proposed new clubhouse layout. An application for a Section 50 Certificate will be made to Hunter Water Corporation ("HWC") seeking their formal requirements for the development in this regard in due course.

5.15.3 Water

Potable water is currently available to the marina via intermittent tap fixtures for filling of water bottles and hosing of boat decks. It is proposed to extend the potable water supply along the new marina (beneath the marina walkways as is presently the case) to provide tap fixtures at intervals similar in nature to the services currently supplied.

The new clubhouse will adopt water efficient measures and appliances throughout to minimise demand on these services. A rainwater storage tank is proposed for collection and reuse of stormwater runoff from a portion of the proposed clubhouse roof. The tank water will be used for garden irrigation and for boat washdown, reducing demand on mains water for these activities. Reuse of collected roofwater is not proposed internally for toilet flushing, as it is likely to have a high salt content due to the lake environment and a subsequent high potential to corrode fittings and fixtures over time.

Correspondence received from HWC (see Appendix 20) indicates recycled water is not proposed for this area and therefore installation of a dual main is not proposed for the proposal.

With energy and water efficient measures and appliances to be incorporated within the new clubhouse, and only minor additional demands on potable water expected from the new marina, it is likely the demand on these services following the development will be similar to the current demand at the site. An application for a Section 50 Certificate will be made to HWC seeking their formal requirements for the development in this regard in due course.

5.15.4 Electricity

Electricity usage within the existing marina is currently limited to lighting, intermittent temporary 240 volt power supply outlets for docked boats and power to the sewage pump-out system. It is proposed to extend electricity services along the underside of the proposed marina (as is presently the case with the existing marina) for lighting and temporary 240 volt power supply for docked boats. Electricity will also be provided to the proposed new starter box for lighting and 240 volt power supply as required.

The new clubhouse will adopt energy efficient measures and appliances throughout to minimise demand on these services. It is anticipated that only minor additional demands (if any) on electricity use is expected from the replacement clubhouse. Demand on these services following the development are likely to be similar to the current demand at the site.

5.15.5 Communications

The new clubhouse will be similar in operational nature to the existing facility and no change to existing telecommunications services is proposed, other than relocation as required to suit the proposed new clubhouse layout.

Telecommunication services are not currently part of the marina structure and are not proposed for the extension.

5.15.6 Natural Gas

The new clubhouse will be similar in operational nature to the existing facility and as such a significant increase in demand for gas is unlikely. Should upgrade to gas supply services be required, Jemena have advised this could likely be achieved in consultation with the Club's gas retailer. Relocation of gas services is likely to be required to suit the proposed new clubhouse layout.

Gas supply is not currently provided to the marina structure and is not proposed for the extension.

5.16 Developer Contributions and Funding

Lake Macquarie Section 94 Contributions Plan No. 1 – City Wide applies to the site, however, does not include a contribution rate for non-residential development. Furthermore, the Lake Macquarie City Council Section 94 Contributions Plan No. 4 – Commercial Centres, does not apply to this part of Belmont. There are no other Section 94 Contribution Plans that are relevant to the site. In any event, the proposed development is not one

that would generate the need for any additional demand for Council facilities such as libraries, parks, road upgrades and other services. It is not a development that would generate any additional population within the LGA. As detailed in the Traffic and Parking Assessment in Appendix 16, the additional traffic generation from the proposed development will have no significant impacts on the operation of adjacent intersections, even for projected 2019 traffic volumes. As a result, no intersection upgrading works would be required as a result of the proposal. Currently the average delays for the right-turn movement out of Ada Street onto the Pacific Highway are unacceptable during the 2009 Saturday mid-day peak and also the 2009 morning and evening peaks (ie. regardless of the redevelopment of the LMYC). It may therefore be necessary to consider physically banning the right-turn from Ada Street onto the Pacific Highway as alternative routs are available to compensate for the manoeuvre. This matter can be dealt with as a conditions of consent (ie. works in kind) rather than any developer contribution.

All works will be funded by the applicant. These works include works in kind along the lake foreshore and within Cullen Park, which comprises Crown land under the care and control of Lake Macquarie City Council. These public domain improvements are detailed in Section 5.8.

The applicant will be responsible for the funding of all required utility services in association with the relevant service authorities (see Section 5.15).

5.17 Disabled Access

As detailed in the Disability Access Report in Appendix 26, the proposed redevelopment has catered for access for the disabled throughout the new building, within the car park and to the marina. Three disabled access parking spaces will be provided within the car park adjacent to the building entrance. An accessible path of travel is provided from the accessible carparking spaces to the building entrance. A ramp has been provided from the carparking area to the floor level of the club building. The main entrance of the building will comprise a double swinging door and a lift will be provided in the building to provide access to both levels.

Access to the marina extension is from the carparking area with an accessway provided on the southern side of the building which provides an accessible path of travel to the whole marina. A davit style crane is to be provided on the northern side of the building to facilitate access for persons with a disability to boat/vessels.

An accessible toilet facility will be provided on each level of the building adjacent to the proposed conventional facilities. The facility at ground level will include a shower.

5.18 Water Cycle Management

5.18.1 Surface and Groundwater Hydrology

As detailed in the Geotechnical Assessment in Appendix 14, no temporary or permanent excavations below lake water level are proposed as part of the development. The piles used during construction will be either driven or screwed below lake water level, but will not involve any excavation. It is therefore highly unlikely that the proposal will have any impact on groundwater levels or quality beneath the site.

As detailed in the Engineering Report in Appendix 20 and Section 5.18.2, implementation of the proposed stormwater management concept for the redevelopment will improve surface water quality and conveyance from the site. The existing clubhouse, marina and bitumen carpark extend out across the permanent water of Lake Macquarie and as such have negligible impact on groundwater hydrology and quality. The proposed development will not alter this scenario.

The proposed foreshore landscaping works, infiltration trench and reinforced turf areas will likely increase the amount of water discharging to the groundwater table, compared to the existing compacted gravel surface. The works will filter and treat stormwater prior to it entering the ground water table, improving existing conditions.

A site specific Sediment and Erosion Control Plan is included in Appendix 20 as Drawing C01 DA, outlining the appropriate protective and preventative measures to be adopted for the duration of the redevelopment works. Construction works will be carried out in accordance with the Sediment and Erosion Control Plan (see Section 5.19) and the Preliminary Construction Management Plan for the project to minimise deposition of sediment and other materials into the lake.

5.18.2 Stormwater Management and Water Quality

Stormwater management and water quality matters have been addressed in the Engineering Report prepared by Northrop (see Appendix 20). A site specific, holistic Water Cycle Management Strategy will be implemented for the proposed redevelopment based on the principles of Water Sensitive Urban Design and in accordance with Lake Macquarie City Council guidelines.

Currently roofwater from the existing clubhouse and marina drains unmitigated directly into the lake. Stormwater detention if not required for the clubhouse as the building is immediately on the edge of the receiving water of the lake. Notwithstanding, a new rainwater storage tank will be provided to collect stormwater runoff from a portion of the new roof, for reuse for garden irrigation and boat washdown. No change is proposed for marina stormwater management as the existing system is considered appropriate. The decking is a pedestrian only thoroughfare, with no vegetation and no upstream catchment and therefore subject to negligible pollutant loads that do not warrant the use of water quality treatment devices. Furthermore, the existing and proposed decking materials are highly permeable, making collection of runoff impractical.

Currently stormwater runoff from the existing bitumen carpark area runs unmitigated into the lake. The proposed development provides the opportunity to capture and treat stormwater runoff from the carpark, to improve the quality of water entering the lake. During the proposed resurfacing and extension works, the car park will be regraded to fall towards its northern and southern edges. New upright kerbs will be constructed along the northern and southern edges to direct stormwater runoff into a series of proposed inlet pits. It is proposed to fit the new inlet pits with appropriate pollutant traps and filters to treat stormwater runoff from the carpark area, prior to discharging into the lake. The proposed traps and filters will be proprietary items that will be easy to maintain.

In terms of foreshore stormwater management, this is presently uncontrolled. Stormwater runoff from the foreshore area, including the gravel section of Cullen Park used for informal car parking, runs unmitigated into the lake. The proposed redevelopment provides opportunities for water quality treatment of stormwater runoff from the foreshore area and for slowing and dispersing runoff to reduce potential erosion of the shoreline. It is proposed to provide an aggregate filled rock surfaced infiltration/dispersion between the shoreline and proposed footpath to collect and treat stormwater runoff. The trench will be designed to effectively filter nutrients and fine sediments and trap hydrocarbons and oils, improving the quality of stormwater running into the lake. The proposed landscaping and reinforced turf areas will provide for additional polishing of stormwater runoff, aiding water quality improvement. The proposed works will also serve to stabilise and seal the foreshore area, reducing the potential for erosion due to wind and rain.

Construction works will be carried out in accordance with the project's Sediment and Erosion Control Plan (see Appendix 20) and Preliminary Construction Management Plan (see Appendix 21) to mitigate adverse impacts on water quality. Site specific protective and preventative measures including sediment fencing, floating bunds and silt curtaining and the adoption of appropriate construction methods (see Section 5.19) will minimise risks to water quality during construction.

It is proposed to maintain the existing sewerage pump-out system currently servicing the marina and no operational change to the management of sewerage waste from vessels is proposed. The sewer pump-out system pumps straight into the Hunter Water Corporation mains. This is no holding tank or pits so the system is able to continuously pump. It only has one nozzle so is restricted to one vessel at a time.

Fuel and chemical storage does not currently take place on site and are not proposed as part of the redevelopment. These practices will therefore not impact on surface or ground water quality.

A slipway for boat maintenance and cleaning is not currently located at the site and is not proposed as part of the redevelopment. Slipway management practices will therefore not impact on surface or groundwater quality.

Overall, water quality will be substantially improved within and around the marina as a result of the proposed development when compared with the existing operations. As a result, no ongoing water quality monitoring is proposed or considered necessary.

5.18.3 Water Flows

As detailed in the Hydrodynamic Assessment in Appendix 20, the proposed marina development will result in insignificant impacts on existing hydrodynamic processes. However, the reduced wave climate within the marina will reduce stresses on the bottom of the Lake. Turbulence will be low within the new marina as the structure reduces currents and wave action. Immediately adjacent to the flow obstacles associated with the new marina the wakes from local effects (such as the piles of the new marina) will dissipate quickly in the low velocity fields. There will be some resistance to flows into and within the marina but this has been minimised by focussing wave attenuation on the western side of the marina, which is parallel to the major flow directions which are north south (parallel to the shore).

Sea grass wrack movement will not change greatly due to the fact that water dispersion and shoreline wave climates will be very similar to that existing. The impact of the new marina on mixing and flow is negligible and is expected to have no discernable impact on wrack movement in the area, apart from situations where wrack is prevented from motion by the wave skirt on the marina itself. However, indications at the existing marina skirt are that trapped wrack eventually simply falls to the bottom beneath the skirt where it decomposes.

The impact of the development on water flows through the Ada Street causeway has been dealt with in Section 5.14.

Further assessment of water flows associated with coastal process (wind, waves, sea level rise, climate change, coastal erosion, etc) is provided in Sections 8.2, 8.3 and 8.4.

5.19 Erosion and Sediment Control

Construction works will be carried out in accordance with the project's Sediment and Erosion Control Plan (see Appendix 20) and Preliminary Construction Management Plan (see Appendix 21) to mitigate adverse ecological and water quality impacts. Site specific protective and preventative measures including sediment fencing, floating bunds and silt curtaining and the adoption of appropriate construction methods (see Section 8.20) will minimise potential adverse risks. The proposed works will not significantly alter the predominant natural landform or drainage patterns of the site.

5.20 Flora and Fauna Protection and Seagrass Management

The impacts of the proposed development on terrestrial and aquatic flora and fauna are detailed in the Flora and Fauna Impact Assessment Report in Appendix 11. The impacts of the proposed development can be summarised as follows:

1. There will be only minor impact on previously disturbed terrestrial habitats for the car park extension into Cullen Park. The proposal will improve the terrestrial habitats by restoration of some of the shoreline vegetation.
2. The reconfiguration to the existing hardstand/car park area will involve extensions over the existing rock ballast walls and therefore there will be no seawall to potentially create back-wash or resuspend sediments. No direct impacts on seagrasses are expected from this component of the project, but special measures such as a silt curtain may be required in order to prevent any spills of silt or contaminated runoff entering the bay during any construction works near the perimeter of the hard stand area.
3. The marina extension area supports patchy seagrass beds with approximately 20% overall seagrass cover comprising 15% Posidonia cover and 5% Zostera cover. It is anticipated that only 20% of the proposed 350 new marina piles (with 330mm diameter) will coincide with patches of seagrass. Due to the very sandy substrate of Belmont Bay, minimal silt disturbance is expected during the installation of the piles.
4. In order to reduce the shading from the horizontal marina decking and encourage seagrass growth, it is proposed to use an open mesh product such as Rigidex II or similar. This open mesh decking would be installed with the longest openings aligned in a north-south direction to obtain the best transmission of light during winter when the sun is lower in the sky.
5. There are currently no threatened terrestrial or aquatic flora or fauna species, populations or ecological communities listed under the NSW Threatened Species Conservation Act or the NSW Fisheries Management Act that could potentially be impacted by the proposal. However, there is a Proposed Determination by the Fisheries Scientific Committee to list as Endangered Populations, those populations of the seagrass *Posidonia australis* within Lake Macquarie and within other parts of the central coastal area of NSW. Both the seagrasses *Zostera carpicorni* and *Posidonia australis* were identified as present within the area of the existing and proposed marina. The "Threatened Species Assessment Guidelines – The Assessment of Significance" (DECC August 2007) specify the use of the 7-part test of Section 5A of the EP&A Act for the assessment. The only threatened species, population of ecological community which requires assessment is therefore the seagrass *Posidonia australis*. A 7-part test has therefore been applied to this population as a precautionary measure. In this regard, the population of Posidonia within Lake Macquarie is extensive and there is a more or less continuous seagrass bed within Belmont Bay. The proposed redevelopment has incorporated the advice received from DPI Fisheries to ensure the seagrass habitat disturbance is minimised and that acceptable construction methods are adopted. In addition, a separate Seagrass Management Plan (see Appendix 12) has been prepared in order to minimise adverse impacts on both Posidonia and Zostera. A viable population of Posidonia is not likely to be placed at risk of extinction as a result of the LMYC redevelopment and indeed a net increase in Posidonia density is predicted within the area proposed for the marina extension. No Recovery Plans or Threat Abatement Plans relate to Posidonia since it is only currently listed as a Proposed Determination.
6. Within the proposed location of the 350 new marina piles (ie. to the west of the existing marina), Posidonia cover is only around 15%, so it is estimated that only 15% of the new piles would coincide with patches of Posidonia. It is proposed in the Seagrass Management Plan to remove the seagrass that coincides with the new piles and replant it into bare sand areas. In addition it is proposed to remove 4 existing swing moorings within seagrass habitat areas which will further enable regrowth and/or

replanting. It is further considered that with the expected improvement in water clarity and reduced turbulence (and taking into account the increased shading from moored vessels and walkways within the marina extension area) seagrass cover, including Posidonia, is likely to increase following construction.

7. None of the Key Threatening Processes listed under the NSW Threatened Species Conservation Act or the NSW Fisheries Management Act relate to the redevelopment proposal, seagrasses or to Posidonia.
8. No critical habitat, endangered or critically endangered ecological communities listed under the NSW Threatened Species Conservation Act or the NSW Fisheries Management Act were detected or are considered likely to occur within the study area.
9. None of the species, populations, communities, key threatening processes or critical habitat listed in the Schedules of the Commonwealth Environment Protection and Biodiversity Conservation Act are relevant to the habitats or actions proposed for the redevelopment. Given the relatively small size of the project and the extent of habitat degradation (both terrestrial and aquatic) that has occurred historically within the subject site, it is considered that the proposal does not require referral to the Department of Environment, Water, Heritage and the Arts ("DEWHA") on the grounds of flora or fauna issues.
10. The site does not comprise Core or Potential habitat for koalas pursuant to the provisions of State Environmental Planning Policy No. 44 – Koala Habitat Protection.
11. In addition to listed Threatened Species, Populations, Ecological Communities, Critical Habitat and Key Threatening Processes, the NSW Fisheries Management Act 1994 also provides for protection of specific Fish Habitats, including Mangrove habitats and Seagrass habitats under Fish Habitat Protection Plans. In this regard, the Flora and Fauna Impact Assessment Report concludes as follows:

    - There are no mangroves in the Belmont Bay locality, so there will be no impact on mangrove habitat.
    - There are known seagrass beds within the existing and proposed marina areas, which continue into Belmont Bay. The impacts on these habitats has been dealt with above. The proposal is likely to result in increased seagrass cover and habitat to support the families of benthic macroinvertebrates and Syngnathids (seahorses) found in the study area.
    - There are no recognised recreational, commercial fishing grounds or aquaculture farms near the LMYC.
    - There are no freshwater areas on the subject site.
    - No dredging, bridges, breakwaters or earthworks within the aquatic parts of the site are proposed.
    - No changes to hydrology or sediment transport within the Belmont Bay area are expected (refer to Hydrodynamic Processes Report in Appendix 20).
    - The design of the LMYC marina extension and the construction procedures to be adopted, have been developed in consultation with DPI Fisheries Officers and meet the objectives of DPI Fisheries' "Fish Habitat Protection Plan No. 2 – Seagrasses". No adverse impacts on the aquatic habitat of Belmont Bay are expected. The additional piles required for the marina extension may provide additional areas of substrate for colonisation by algae, sponges, crustaceans and other aquatic organisms and lead to greater numbers of fish in the area.

Minor impacts on the local natural environment are therefore expected from the proposal and various mitigation and habitat improvement measures to minimise impact on the aquatic environment, that have been recommended during the course of preparation of the proposal, have already been incorporated into the design, construction and operational phases of the project. The following additional recommendations from the Flora and Fauna Impact Assessment Report are proposed to be adopted:

- Any large scale removal of seagrass wrack should be avoided.
- The allocation of moorings at the redeveloped marina should be based on the draught of the boat. The shallow draught boats should be moored to the east (shallow water) and deeper draft boats to the west (deeper water).
- The source of the seagrass loss along the outside of the existing marina should be investigated in order to avoid it in the future.

The Flora and Fauna Impact Assessment is accompanied by a Seagrass Management Plan which is provided in Appendix 12. This plan is designed to achieve no net loss of seagrass and to potentially achieve an increase in seagrass around the LMYC site.

5.21 Waste Management

A Waste Management Plan has been prepared by EJE Architecture and is included in Appendix 25.

Provided below is a summary of the wastes presently generated by the operation of the LMYC, and the associated waste management regime.

Table 5: Waste and Waste Management

Waste Presently Generated	Waste Classification	Existing Waste Management
Sewage Waste from the Clubhouse (toilets, basins, showers).	Liquid Waste	Domestic sewage is discharged into the Hunter Water sewer system.
Sewage pump-out and chemical toilet wastes from vessels.	Liquid Waste	Existing sewer pump out facility located in north western corner of the marina to service boats. This pump out station transports waste to the Hunter Water sewer system.
Waste from the Marina operations.	General Solid Waste from boats – Non-Putrescible	Bins for the solid waste – recycled and non-recycled and collected by the Council.
Waste from Club operations (office, bar, kitchen, function rooms, etc)	General Solid Waste – Non - Putrescible	Bins for the solid waste – recycled and non-recycled and collected by the Council.
Grease trap waste resulting from the preparation of food in the restaurant.	General Solid Waste – Non - Putrescible	Dry basket arrestors in sinks and on floor wastes with wastes draining to grease trap.

Although it is anticipated that the amount of waste will increase as a result of the new development, it is proposed that the existing waste management practices will remain the same.

The management of waste during the construction process is outlined in the Waste Management Plan in Appendix 25 and the PCMP in Appendix 21. Waste generated during the construction phase would be limited to building materials such as concrete, timber, masonry, pipes, etc. Careful planning of construction activities would ensure that the volume of surplus materials was minimised. The Waste Management Plan and the Preliminary Construction Management Plan include various measures to reduce impacts, including:

- Segregation of waste and waste minimisation.
- Use of recycled materials and recycling.
- Containment of liquid waste in appropriate sealed containers.
- Use of garbage bins with lids that contain general garbage and are emptied regularly off-site within a licensed landfill site.

- Recycling of green waste.
- Maintaining a register of waste disposal receipts as a record of appropriate waste disposal.

5.22 Building Code of Australia

A Building Code of Australia 2009 Compliance Report has been prepared by DixGardner Pty Ltd and is included in Appendix 24. This report concludes as follows:

> *"This report contains an assessment of the architectural documentation for the proposed development against the deemed-to-satisfy provisions of the Building Code of Australia 2009 (BCA).*
>
> *It is considered that the proposed development can comply with the BCA provided the compliance issues identified in sections 3.0 & 4.0 of this report are addressed prior to the issue of a construction certificate or during the works, as necessary."*

The non-compliance issues identified in the above BCA reports are minor design development matters that can be addressed during the preparation of the construction documentation.

6. STRATEGIC PLANNING, POLICIES AND GUIDELINES

6.1 Overview

This chapter sets out the existing planning framework that affects the site. In accordance with the requirements of the Director General dated 13 October 2008, this chapter:

- Demonstrates consistency of the proposal with the broader planning objectives.
- Demonstrates consistency of the proposal with strategic planning provisions.
- Addresses the nature and extent of variation from specified planning policies and guidelines.

6.2 NSW Coastal Policy 1997

The NSW Coastal Policy 1997 ("Coastal Policy") brings together many individual policies to create a new coordinated management system to protect the coast. The Coastal Policy applies to the Coastal Zone which has been mapped by Lake Macquarie Council and includes the site (see Appendix 5).

The Coastal Policy is essentially focussed on recognising the need to reconcile the rapid population growth currently being experienced in coastal areas with the need to conserve what remains of valuable ecosystems. Implementation of the goals and objectives of the Coastal Policy is through the strategic actions identified in Appendix B of the Policy. These strategic actions primarily involve direction to State agencies and local government in the carrying out of their established functions. Of particular relevance is the requirement of agencies and Councils to assess the impacts of development proposals pursuant to the goals and objectives of the coastal policy and in particular the following:

- The protection, rehabilitation and improvement of the natural environment.
- To recognize and accommodate natural processes and climate change.
- To protect and enhance the aesthetic qualities of the coastal zone.
- To protect and conserve cultural heritage.
- To promote ESD and use of resources.
- To provide for appropriate public access and use.

The proposal has considered each of the above goals to create a development that continues to provide for sustainable coastal development. The proposal:

- Is consistent with the zoning of the land and the strategic framework for tourism and recreation uses on Lake Macquarie (see Sections 6.9 and 7.11).
- Has been designed in consideration of the ecological features of the site (see Section 5.20), the potential for Aboriginal significance (see Section 8.15), the impact of coastal processes (see Sections 8.2, 8.3 and 8.4) and the existing capacity of infrastructure, including the road network (see Sections 5.12 and 5.15).
- Incorporates contemporary architectural design, significant foreshore improvements and landscaping to contribute to the aesthetics and visual qualities of the area (see Sections 5.4, 5.8 and 8.11).

- Incorporates best practice stormwater and water quality management by providing a rainwater tank and water quality control devices. (see Section 5.18).
- Provides for improved public access and use of facilities, including an improved foreshore, new function facilities, a new restaurant, etc (see Sections 5.3, 5.4 and 5.8).

With regard to these goals, it is relevant to note that many of the strategic actions formulated in the Coastal Policy, are the responsibility of Council to implement when pursuing the rezoning of the land (through Section 117 Directions). These are obviously not relevant to the redevelopment now proposed.

The key principles, goals, objectives and strategic actions outlined in the Coastal Policy will not be undermined by the development. It provides for the redevelopment of the existing LMYC and a marina extension that will protect important and sensitive coastal environments.

6.3 Coastal Design Guidelines for NSW

The Coastal Design Guidelines for NSW were prepared by the Coastal Council of NSW, Urban Design Advisory Service and Tourism New South Wales in 2003 to provide design principles for coastal developments. These guidelines are divided into the following three parts:

I. Part 1 deals with determining a hierarchy of settlements and the identification of settlement types at both a regional and local level. This hierarchy ranges from coastal cities to isolated coastal dwellings.

The site is removed from the coast and is located on Lake Macquarie. The site in turn forms part of the Coastal Town of Belmont, which in turn forms part of the larger City of Lake Macquarie. As a result, it is most likely defined as forming part of a "Coastal Town" pursuant to the Guidelines. A typical coastal town is described as follows:

> *"Coastal towns are small centres that vary in size and have a population ranging from 3,000 to 20,000 people. Coastal towns offer a range of services and facilities which may include:*
>
> - *a commercial, retail town centre and suburbs*
> - *parks, playing fields and caravan parks*
> - *a main street*
> - *churches and education institutions*
> - *medical facilities"*

Coastal town centres are identified as offering opportunities for consolidation and future growth by accommodating growth impacts and taking pressure off more sensitive coastal locations.

II. Part 2 provides design principles for coastal settlements and also provides relevant case studies. The five principles are as follows:
    - Principle 1: Defining the footprint and boundary of the settlement.
    - Principle 2: Connecting open spaces.
    - Principle 3: Protecting the natural edges.
    - Principle 4: Reinforcing the street pattern.

- Principle 5: Appropriate buildings in a coastal context.

In relation to Principles 1 and 2, the footprint of the LMYC and its relationship to open spaces and surrounding development will remain unchanged (apart from the marina extension). The marina extension will occur on a part of the Lake already used for swing moorings and will therefore not alter existing user patterns of the Lake or encroach into unused waters of the Lake (see Section 8.5). The site has also been zoned by Council to accommodate the redevelopment proposed (see Section 7.11.2).

Principle 3 has similarly been defined by the zoning of the land and the fact that no further land will be reclaimed as part of the redevelopment. The natural edge of the Lake where the water joins Cullen Park will be significantly improved, as detailed in Section 5.8.

Principle 4 has been satisfied by ensuring there will be no change to the existing street patterns.

Principle 5 has been satisfied by ensuring the new LMYC building has a similar footprint and scale to the existing building that it will replace (see Section 5.4).

6.4 NSW State Rivers and Estuaries Policy

The policy was prepared by the then NSW Water Resources Council and adopted in 1993. It applies to the waters of Lake Macquarie. The policy aims to provide overall strategic direction for management of riverine and estuarine systems, including management of:

- Water quality (refer Section 5.18);
- Flow volumes (refer Sections 5.14, 5.18 and 8.3);
- Vegetation; (refer Sections 5.8 and 5.20);
- Flora and fauna habitat (refer Section 5.20); and
- Riparian zone conservation (Sections 5.8 and 5.20).

The broad aims and objectives of the policy are primarily relevant to the preparation of environmental planning instruments. These matters have also been addressed in the various chapters of the EA.

The policy also references a number of component policies, including the NSW Estuary Management Policy and the NSW Wetlands Policy.

The general aim of the Estuary Management Policy is to achieve an integrated, balanced and ecologically sustainable use of the State's estuaries. Specific objectives include the protection of estuarine habitats and ecosystems as well as the maintenance of the necessary hydraulic regime. The use of estuarine resources for recreational boating use is considered to be consistent with this policy and environmentally sustainable, as detailed in this EA.

The general aim of the Wetlands Policy is the ecologically sustainable use, management and conservation of the wetlands in NSW. To achieve this aim, a number of principles are adopted including that water entering wetlands is of sufficient quality not to degrade wetlands. The policy also highlights the importance of wetland vegetation in protecting foreshore areas from erosion and degradation. As detailed in Section 5.18, the proposal is considered to have a positive impact on water quality of the lake and therefore any wetlands that form part of this ecosystem.

6.5 EIS Guideline – Marinas and Related Facilities (DUAP, 1996)

This document, published in September 1996 by the then Department of Urban Affairs and Planning (DUAP – now the Department of Planning) contains advice on matters to be considered when preparing an EIS (now an EA) for marinas and related facilities. The Table 6 below outlines the key headings relevant to environmental assessment contained in the EA guideline and details how the proposal has considered these matters.

Table 6: Consideration of EIS Guideline – Marinas and Related Facilities

The Environmental Issues	Relevant Chapter of the EA
Land surface issues	Refer to Sections 2 and 5.20
Hydrological issues	Refer to Sections 5.14, 5.18 and 8.3
Water quality and waste management issues.	Refer to Section 5.18
Air quality	Refer to Section 8.19
Noise	Refer to Section 8.18
Visual Impact	Refer to Section 8.11
Flora issues	Refer to Section 5.20
Fauna issues	Refer to Section 5.20
Social issues	Refer to Section 8.8
Land transport and parking issues	Refer to Sections 5.11 and 5.12
Water transport issues	Refer to Section 8.5
Heritage issues	Refer to Sections 2.13 and 8.15
Economic issues	Refer to Section 8.7

6.6 Best Management Practice for Marinas and Boat Repair Facilities (EPA, 1999)

The Best Management Practice for Marinas and Boat Repair Facilities ("Best Management Practice Policy") was prepared by the Environment and Protection Authority (now DECCW) in 1999. The policy provides guidance for the planning, design and operation of marina and boat repair facilities to ensure that the potential impacts of these facilities on the environment are reduced. Marinas are defined as the buildings, wharves and surroundings in which vessels are stored and maintained (adjacent to water). The proposal falls within this definition.

Part One of the policy identifies the need to eliminate the potential for marinas and boat repair facilities to affect on the environment. Part One also highlights the need to obtain certain environmental protection licences for certain works and activities associated with marinas and boat repair facilities. Sections 5.20 and 7.3 address these requirements.

Part Two of the policy details best practice methods for vessel maintenance and repair operations. The proposed development does not include any vessel maintenance or repair operations.

Appendices 1 and 2 of the policy also set out the appropriate regulatory authorities and the approvals that may be required when developing marinas. These matters are dealt with in Sections 1.3 and 7.

Operations would be undertaken substantially in accordance with the Best Management Practice Policy guidelines.

6.7 Australian Standard Guidelines for Design of Marinas (AS 3962)

The Australian Standard-Guidelines for Design of Marinas (the Standard) was prepared by the Standards Australia Committee in 2001. The objective of the standard is to provide designers, manufacturers and operators of marina and vessel berthing facilities with a set of guidelines for recreational marinas and on-shore facilities such as dry boat storage and associated facilities.

The standard has been used as a guide in informing the design of both the land and water-based components of the proposal.

6.8 Lower Hunter Regional Strategy

The DOP prepared the Lower Hunter Strategy ("the Strategy") in October 2006. The Strategy was identified as a priority action as part of the Greater Sydney Metropolitan Strategy of which a key focus is to strengthen the Lower Hunter and Illawarra regions. Lake Macquarie comprises a key element of the Lower Hunter Region. The Strategy has the following aims:

- To promote Newcastle as the regional city, with a hierarchy of urban centres.
- To provide for a forecast population increase of 160,000 by 2031.
- To identify new release areas.
- To ensure an adequate supply of employment land.
- To focus a higher proportion of new housing in existing centres.
- To enable the release of rural land for a series of new communities and extensions to existing urban areas.
- To ensure that Greenfield land is released in a co-ordinated way, with improved neighbourhood design and more efficient use of infrastructure.
- To ensure the protection of bio-diversity through a Regional Conservation Plan.

The Strategy focuses on employment and population growth and its distribution within the Lower Hunter. It does not specifically address recreation or tourist development.

6.9 Lifestyle 2020 Strategy

6.9.1 Overview

The Lifestyle 2020 Strategy ("Lifestyle 2020") is the major planning initiative for Lake Macquarie that provides the strategies necessary to manage the population and employment growth expected to occur in the local government area until the year 2020. It underpins the land use strategy on which the Lake Macquarie Local Environmental Plan 2004 and the complementary suite of development control plans (particularly DCP No.1) are based.

Lifestyle 2020 is a policy document that establishes guidelines for further development within the Council area and includes visions, goals and strategic directions across the local government area. It includes strategic plan

maps and statements of intent which identify the preferred pattern and location of development. Lifestyle 2020 repealed the Lake Macquarie City Council Housing and Residential Development Strategy which previously provided the strategic direction for future residential development in the local government area.

6.9.2 Aims

Lifestyle 2020 sets out the following aims in Section 4:

- "*To provide the community with a realistic expectation about the future development patterns of the City, while retaining flexibility for land use decision making in the longer term.*
- *To reinforce and strengthen Centres so that a wide range of commercial and community services may be provided in a timely and accessible manner.*
- *To provide local employment opportunities for residents and to promote economic development consistent with the City's natural, vocational and community resources.*
- *To guide the development of urban communities which are compact, distinct and diverse with a range of housing types and activities.*
- *To achieve a strong sense of positive community identity, through the development of local communities which are safe and liveable and offer a diversity of use, economic opportunity and ready access to services.*
- *To develop an attractive urban setting for the City which reflects its physical and natural environment, and visual character.*
- *To manage the City's natural environment so that its ecological functions and biological diversity are conserved and enhanced, and contribute to the City's overall well being.*
- *To manage the City's heritage and economic resources in a way that protects the value of these resources and enhances the City's character.*
- *To integrate land use with the efficient provision of public and private movement systems."*

It is considered that the proposed expansion of the marina and new clubhouse will be entirely consistent with the aims of Lifestyle 2020 for the following reasons:

- Lifestyle 2020 identifies the site as forming part of the "Urban Area" of the Belmont Town Centre as well as "Aquatic Habitat" along the foreshore. The site is presently used and zoned to accommodate the activities of the LMYC which in turn provides the community with a realistic expectation of the likely future development patterns for the site.
- Lifestyle 2020 identifies the Belmont Town Centre as a focus for future growth and development. The proposed development will reinforce and strengthen this centre and enable the continued economic viability of the retail, commercial and community services provided.
- As detailed in Section 5.3, the proposed development will continue to ensure local employment opportunities are provided by LMYC. As detailed in Sections 8.7 and 8.8, the development will result in positive social and economic impacts.
- The proposal will facilitate the logical and compact expansion of the existing LMYC utilising the existing reclaimed land. The site forms part of the Belmont Town Centre and is located within close proximity to all existing services. The redevelopment will ensure the LMYC continues to contribute in providing a range of activities and services to the community.

- The LMYC already makes a significant positive contribution to the community identity of Lake Macquarie and the Belmont Town Centre. The proposed redevelopment and improvement of the LMYC facilities will ensure this contribution is long term.
- As detailed in the EA, the proposal will not result in any significant adverse impacts on the natural environment or visual character of the area.
- As detailed in Section 5.20 there will be no significant adverse impacts on the ecology of the area. This will ensure that the ecological function of both the land and water based components of the site will not be significantly disturbed. On the contrary, the foreshore and other improvements proposed (eg. water quality controls, new seagrass habitat provided by the marina extension, removal of swing moorings, etc) will all result in positive environmental impacts.
- As detailed in Section 8.15, the City's heritage resources will be protected by the proposed development.
- The site is strategically located with respect to the existing public and private movement systems within the area. The proposed development will ensure continued support for public transport systems in the locality and will not place any undue burden on the existing road network.

6.9.3 Strategic Directions

Section 5 of Lifestyle 2020 sets out the strategic directions required to achieve these aims. Those that are relevant to the proposed development are dealt with below.

Strategic Direction 5.1 – A City Responsive to its Environment

It is considered that the proposed development will be consistent with this strategic direction for the following reasons:

- The proposal will protect and enhance the City's biodiversity in accordance with the findings and recommendations of the Flora and Fauna Impact Assessment Report (see Appendix 11).
- The aquatic ecology and water quality will be protected as detailed in Sections 5.20 and 5.18, respectively.
- The development will include the improvement and protection of the lake foreshore as detailed in Section 5.8.
- The proposal will comprise the most efficient and effective use of existing reclaimed land without any additional filling of the Lake.
- The physical and natural environment will be capable of sustaining the proposed development as detailed in this EA. In particular, the proposal has been designed to adapt to future sea level rise and storm surges (see Sections 6.10, 8.2, 8.3 and 8.4). The site is suitable for the development proposed, and there are no significant constraints by way of stability, contamination etc as detailed in Section 2.
- The scenic qualities of the area will not be adversely affected as detailed in Sections 2.8, 8.11 and Appendix 10.
- The site is located in close proximity to the existing centre which will minimise travel by private vehicle and the resulting air pollution. The development will also provide additional support for existing public transport services.

Strategic Direction 5.2 – A Well Serviced and Equitable City

It is considered that the proposed development will be consistent with this strategic direction for the following reasons:

- The proposal will ensure that the development occurs on land that is already developed and is within the Belmont Town Centre. The water based component of the development will take place on an area already occupied by swing moorings licensed to the LMYC. This will maximise accessibility.
- The site already accommodates the uses proposed and as a result, the basic infrastructure is in place to ensure an efficient and ecologically sustainable form of development.
- The proposal will provide much improved foreshore public open space areas and a foreshore footpath.

Strategic Direction 5.3 – A Well Designed and Liveable City

It is considered that the proposed development will be consistent with this strategic direction for the following reasons:

- As detailed in the Visual Impact Assessment in Appendix 10, the proposal will protect the scenic amenity of this part of the local government area.
- The development will not have an impact on the green system identified in Lifestyle 2020. As detailed in Section 8.6 the foreshore open spaces areas will be improved.
- The continuation of the marina and yacht club uses on the site will be compatible with the character of the adjoining land. The use of the site by the LMYC dates back to the 1930's and therefore pre-dates the majority of the existing dwellings along the foreshore. As a result existing residents have chosen their residential location with the knowledge and expectation of the continuation of the marina and yacht club operations.
- The development will not result in any significant loss of views or privacy from surrounding properties (see Section 8.11).
- The redevelopment of the LMYC results in a substantially improved architectural outcome when compared with the existing club.
- The redevelopment of the LMYC will further encourage social interaction within the community by providing a new facility and encouraging people to come together for social interaction, community events, functions and recreation.
- As detailed in Section 8.15 the proposal will not adversely impact upon places of cultural or heritage significance.

Strategic Direction 5.4 – A City of Progress and Prosperity

It is considered that the proposed development will be consistent with this strategic direction for the following reasons:

- The proposal will enable the growth of an existing facility at its existing location within the Belmont Town centre, which will in turn support the function and capacity of the existing movement system and public infrastructure.
- The proposed marina expansion and improved club facility will facilitate multiplier effects related to the increased economic viability of businesses within Belmont, particularly those related to the marine industry, food, beverages, etc. This is likely to result in business expansion, employment growth and the long term viability of the centre.
- As detailed in the Social and Economic Impact Assessment in Appendix 18, the proposal will result in a range of positive social and economic impacts, including job creation during the construction phases.
- The LMYC is an existing facility which contributes to the economic and social base of the City. The proposed marina expansion and club redevelopment will result in the long term continuation of these social and economic benefits.

Strategic Direction 5.5 – An Easily Accessible City

It is considered that the proposed development will be consistent with this strategic direction for the following reasons:

- The proposal will enable the growth of an existing facility at its existing location within the Belmont Town centre. It will promote an efficient, accessible and environmentally responsible pattern of development through the development of an existing site that is interconnected with the existing town centre. It will also ensure additional support for, and ongoing viability of, the public transport system.
- The proposal will improve access for disabled persons throughout the development, including the marina and the upper levels.
- The site already forms part of the existing road network and the basic infrastructure is in place to ensure an efficient and ecologically sustainable form of development.

6.9.4 Urban Structure

The Urban Structure map in Lifestyle 2020 identifies the land based component of the site as forming part of the "Urban Area" and the "Belmont Town Centre". Urban areas are described as the most "modified areas of the City". Town Centres are described as the focus for retail, commercial, social and community facilities which serve the surrounding area.

6.9.5 Green System

The Green System Map in Lifestyle 2020 identifies the water based component of the site as comprising "Aquatic Habitat" as well as "Water Bodies and Waterways". With regard to "Water Bodies and Waterways", Lifestyle 2020 states the following:

> *"The Lake and coastline and the creeks, lagoons, channels and beaches which combine to form these water bodies and waterway systems are outstanding assets for the City.*
>
> *The ecological, scenic and recreational qualities of these water bodies and waterways are to be protected from the impact of pollution and detrimental development so that the remain in a healthy state for the benefit of all living things that rely upon and enjoy them.*
>
> *It is intended to increase public access to waterways and water bodies. However, because parts of these corridors are held in private ownership, public access might not be available. Where possible, development proposals that benefit from a water frontage are to enhance public access to the water body or waterway, while protecting the habitat values associated with these assets."*

As detailed in the Flora and Fauna Impact Assessment Report in Appendix 11, the ecological impacts of the development will not be significant and may actually increase seagrass growth.

As detailed in the Visual Impact Assessment in Appendix 10, the visual and scenic impacts of the development will be acceptable.

As detailed in the Engineering Report in Appendix 20 and the Phase 1 Environmental Site Assessment in Appendix 15, the water quality of the Lake will not be adversely affected in any significant way and are likely to be improved.

As detailed in Section 5.8, the proposal will involve foreshore improvements to ensure better public access and use of the Cullen Park and adjoining foreshore land by the community. This will include the provision of a formal public access path along the foreshore from Cullen Park to Andersons Point.

6.10 Lake Macquarie Sea Level Rise Preparedness Adaptation Policy

6.10.1 Overview

In August 2008, Lake Macquarie City Council resolved to adopt the Lake Macquarie Sea Level Rise Preparedness and Adaptation Policy ("Sea Level Rise Policy"). The key elements of the Policy are as follows:

- Council has adopted the NSW DECCW's projected upper sea level rise (and lake level rise) figure for the year 2100 of 0.91 metres to assist Council Officers with risk assessment and development decisions. This calculation assumes a high greenhouse gas emissions scenario and errs on the side of "reasonable caution".
- Council will monitor and review and monitor the above figure in the light of new scientific evidence that the NSW Government adopts.
- Floor levels for new buildings around the lake foreshore will be adjusted to take into consideration the risk from sea level rise and higher flood levels.
- Each DA will be considered on a case by case basis with the Sea Level Rise Policy being used as a guideline. Developers must be able to justify any lower level proposed using site specific studies.

The Sea Level Rise Policy fixes the following requirements:

1. Adopts a 0.91m high level ocean impact sea level by 2100 (ie. a linear increase of 1 cm per year).
2. Follows the upper level of rainfall increase by 2100 of 30% from the DECCW's "Practical Consideration of Climate Change (2007)", resulting in a calculated rise in lake levels in respect of 1% ARI rainfall and storm volume.
3. Add those values in 1 and 2 above to the value of 1.88m (which represents the 100-year ARI design flood level of 1.38m and 0.5m freeboard buffer).
4. Discount an amount of 0.2m for climate change uncertainty already incorporated in the freeboard.
5. Assume a building life of 50 to 100 years depending on the building type or use.

6.10.2 Proposed Adaptation to Sea Level Rise

6.10.2.1 Overview

Table 7 below summarises the above requirements of Council. It also compares the requirements of the Sea Level Rise Policy with Council's 1:100 year flood level previously applied pursuant to the Lake Macquarie Flood Study (1998). Furthermore, the table provides details of the existing level of the club and the proposed level following redevelopment.

Table 7: Finished Ground Floor Level (GFL) Considerations

Item	Description	Current Clubhouse GFL	Previous Policy 100yr Design Life	Current Policy 50yr Design Life	Current Policy 100yr Design Life	Proposed GFL
1	100yr Flood Level (as defined by the 1988 Lake Macquarie Flood Study)	-	1.38m	1.38	1.38	1.38
2	Freeboard (model uncertainty)	-	0.2m	0.2m	0.2m	0.2m
3	Freeboard (climate change uncertainty)	-	0.2m	0.2m	0.2m	-
4	Freeboard (wave action)	-	0.1m	0.1m	0.1m	-
5	Temporal increase in Rainfall Intensity (DECC estimates 30% increase by 2100)	-	-	0.1m	0.18m	-

Item	Description	Current Clubhouse GFL	Previous Policy 100yr Design Life	Current Policy 50yr Design Life	Current Policy 100yr Design Life	Proposed GFL
6	Sea Level Rise (IPCC and CSIRO reports)	-	-	0.49m	0.99m	-
7	Discount for Freeboard (climate change uncertainty) already included in Item 3 above	-	-	-0.2m	-0.2m	-
8	Wave Action at Clubhouse	-	-	-	-	0.4m
	Minimum Habitable GFL (AHD)	1.2m (approx)	2.28m	2.27m	2.85m	1.98m

The Sea Level Rise Policy adopts a 50 year building life for proposed developments. In other words, the redevelopment of the LMYC in say 2010 would require a floor level of around 2.27 metres AHD. Although the Council policy has been named an "adaptation policy", discussions with Council Officers have indicated that Council prefer the LMYC to be built to the 50 year level now and then to wait until the sea level rises accordingly. In addition, Council Officers have advised that the existing car park should be designed for a 20 year design life and should be raised to 1.23 metres AHD (Note: This level represents a 20 year flood level of 0.97m AHD + 0.2m Climate Change Factor + 0.06m for increase rainfall intensity). This requires raising the existing car park by between 0.03 and 0.43 metres (Note. The current car park level varies between 0.8 and 1.2 metres AHD).

The alternative position proposed by LMYC is to design the new club at an appropriate level that would allow the ground floor level to be increased over time as required by sea level change. This is the preferred position of the LMYC for the reasons outlined below.

6.10.2.2 The Raising of the Floor Level Over Time

The Sea Level Rise Policy requires the LMYC to be constructed at the predicted 50 year level now (ie. 2.27m AHD). This 50 year level is a requirement regardless of the fact that LMYC only have a lease for 27 more years. This would result in a yacht club building (and associated car park which is also used extensively for boat launching) to be built above the lake level and wait for the water level to rise to it. This may be appropriate for buildings on the land, however, is extremely problematic for a yacht club facility that needs to relate to the water.

To enable the LMYC to continue to have it's relationship to the water, it is proposed to design the new club at an appropriate level that would allow the ground floor level to be increased over time as required by sea level change. This would enable the clubhouse when built, to relate to the water level, but then to be adapted over time as the need arises. This is a similar concept to designing residential buildings so that they can be adapted in the future for disabled persons, if required.

The proposed level of the ground floor at construction would be 780mm higher than the current floor level. In this regard it is relevant to note that in both the "Signa" storm in the 1970's and the recent "Pasha Bulker" storm surge in 2007, water did not enter the club building.

The new clubhouse would comprise a new concrete slab with a ground floor level of 1.98 metres AHD. When required, an additional concrete slab would be laid above the existing concrete slab to provide a 0.29 metre higher floor level. The ceiling height of the ground floor would be adequate to allow the ground floor to be built up over time as required. Doors would be made higher initially to allow an increased floor level with the substructure being designed to allow for the additional weight. Services (where possible) would be brought down through the ceiling rather than up through the floor. Although new fit out works at the ground level would be required within the clubhouse following the raising of the floor level, this can be timed with the general fit out works that are common within club buildings every 10 to 15 years or so. It is likely that only one floor level addition would occur during the next 50 years and this would be co-ordinated with one of the aforementioned club fitouts.

With regard to the car park, it is proposed that there would be no change to its existing level at the time of construction of the clubhouse. However, the central aisle of the car park (between the access point off Ada Street and the LMYC entry) will be raised to a level of 1.23 metres AHD to comply with Council's requirement for flood free access and egress during an emergency flood event. Furthermore, as the club building floor level is raised in response to the rise in Lake level, the car park level would be raised accordingly.

With regard to the above adaptive approach, it is relevant to note that the Council's "Sea Level Rise Policy Fact Sheet" states the following:

> *"Council has adopted a 'high emissions' scenario as it fits most closely with the observable changes in temperature and sea level. It is easier to 'relax' from an over-pessimistic predication than it is to 'catch up' with an over-optimistic prediction. Council will regularly review the scientific predictions and the policies developed by State and Commonwealth Governments, and adjust the predicted levels in Lake Macquarie in the light of new information."*

The above statement indicates that an adaptable approach of raising the building over time (as proposed by LMYC) is consistent with the intentions of Council's Policy. It will enable the rise in sea level to be monitored, with the building and car park adapted as required.

6.10.2.3 The Club's Relationship with the Water

LMYC is built on possibly the most unique site in the Lake Macquarie City Council area and there are few buildings of its type built over water in Australia. It comprises a clubhouse built over the water with very little relationship to the land. The Board of LMYC is endeavouring to ensure that the facility of LMYC and its ambiance is transferred to the new building. The ambiance and appeal of the LMYC building comes from its location and how its current design addresses that location. The building freely flows from inside to outside enhancing the relationship with the Lake. The higher the floor level the less opportunity there is to maintain both the flow between inside and outside and the relationship with the water. This, in turn, compromises the functionality of the LMYC.

The marina obviously has a direct relationship with the water to the vessels moored on it and there is no option but to maintain this relationship. The car park also has a direct relationship to the water as it is also a hardstand for large trailer mounted yachts that are craned in and out of the water each week. Additionally, parts of the car park are used for boat launching. This includes a boat ramp for launching motor vessels and a ramp adjacent to the dinghy racks for owners to get to their moored vessels where they regularly load and unload heavy and bulky items from their cars and dinghies. As a result, all the facilities need to be as low to the water as possible.

It is therefore imperative that the ground floor level of the new building be as low as possible to maintain the ambiance, amenity and functionality the LMYC requires. To achieve this, the LMYC needs to take an adaptive approach to the possibility of sea level rise. For such a unique building there is no sense in building a building with a 50 year floor level and waiting for the water level to rise up to it.

The other important reason why the building level needs to be kept low is to continue to provide satisfactory disabled access from the car park, into the LMYC building and then onto the marina (without having to build a series of extensive ramps at the interfaces between the clubhouse and car park and the clubhouse and marina).

6.10.2.4 Jacking up the Building vs Raising the Floor Level

The concept of progressive adaptability over time and the method of progressively building up the floor level is the LMYC's preferred method of dealing with the sea level rise design issue. Building up the floor level over time is a very simple and cost effective concept and is easy to deal with from both an engineering design and a building point of view. Jacking the building up is a much more difficult concept especially given the location of the

building over water. Jacking up a timber framed dwelling built on solid land is relatively easy but the Lake bed provides significant difficulty.

Preliminary advice from Northrop Engineers has indicated that jacking up the building would require some form of steel frame under the whole of the building so that the whole building can be lifted at the one time. The concept of lifting the whole building will require significant structural infrastructure put into the building when it is initially constructed as it will be difficult to install later. This engineering infrastructure will need to last for decades in a very hostile marine environment before it is likely to be used.

Building the floor up requires little initial extra cost and can be done at a later time without the need to build any of it from the water. This is far easier from an engineering point of view, more logical and substantially more cost effective. Although new fit out works would be required within the LMYC following the raising of the floor level, this can be timed with the general fit out works that are common within club buildings every 10 to 15 years or so.

6.10.2.5 Conclusion

As justified above, the adaptation to sea level rise proposed by the LMYC can be summarised as follows:

1. The ground floor level of the new LMYC building will be built at 1.98 metres AHD. However, the building will be designed to enable this floor level to be raised by the provision of a new concrete slab when required. This can be dealt with as both a condition of development consent and a requirement within the amended Crown Lease (which can then also be enforced by the Crown).
2. The car park will be re-sealed to a general level of between around 0.8 and 1.2 metres AHD. However, the central aisle of the car park (between the access point off Ada Street and the LMYC entry) will be raised to a level of 1.23 metres AHD to comply with Council's requirement for flood free access and egress during an emergency flood event. This will provide for the evacuation of people from the LMYC to land during a flood event.

6.11 NSW Government Sea Level Rise Policy Statement

The NSW Government Sea Level Rise Policy Statement ("Policy Statement") prepared by the DECCW outlines the Government's objectives and commitments to sea level rise. It adopts a sea level rise planning benchmark of an increase above 1990 mean sea levels of 40cm by 2050 and 90cm by 2100, which is similar to the levels adopted by Council (see Section 6.10).

This Policy Statement is again an adaptive one that will be continually refined and amended over time to react to actual changes in seal levels and new scientific evidence. In this regard the Policy states the following:

> *"The NSW Government will promote an adaptive, risk-based approach to managing the impacts of sea level rise. The adaptive risk-based approach recognises that there are potentially significant risks from sea level rise and that the accuracy of sea level rise projections will improve over time.*
>
> *……*
>
> *The NSW Government has adopted sea level rise planning benchmarks to support this adaptive risk-based approach. These benchmarks will enable the consistent consideration of sea level rise within this adaptive risk-based management approach. The primary purpose of the benchmarks is to provide guidance to support consistent considerations of sea level rise impacts, within applicable decision-making frameworks. This will include strategic planning and development assessment under the Environmental Planning and Assessment Act 1979 and infrastructure planning and renewal.*

……..

The sea level rise planning benchmarks will support consistent consideration of the influence of sea level rise on any coastal hazards and flooding risks that may influence a development of redevelopment site. The benchmarks are not intended to be used to preclude development of land that is projected to be affected by sea level rise. The goal is to ensure that such development recognises and can appropriately accommodate the projected impacts of sea level rise on coastal hazards and flooding over time, through appropriate site planning, design and development control.(our emphasis)."

The adaptive approach proposed by LMYC is therefore entirely consistent with the objectives and intentions of the Policy Statement (see Section 6.10) which is supportive of an adaptive risk-based approach.

6.12 Draft NSW Coastal Planning Guideline: Adapting to Sea Level Rise

The Draft Coastal Planning Guideline: Adapting to Sea Level Rise ("Draft Guideline") accompanies the NSW Government Sea Level Rise Policy Statement and aims to provide practical advice to coastal councils on how sea level rise should be considered in future land use planning and development assessment in coastal NSW. It was placed on public exhibition until 11 December 2009. It again establishes the sea level rise planning benchmarks of 40cm by 2050 and 90cm by 2100 (above 1990 mean sea levels). As with the Policy Statement, it encourages a risk-based approach to strategic land use planning and development assessment taking into consideration these benchmarks.

The Draft Guideline provides a clear direction to consent authorities for development assessment in coastal areas, outlining how proposals should be considered based on their location in the coastal risk area, in particular that:

- Proposed development within the immediate hazard line should be avoided.
- Proposed development seaward of the current 2100 hazard line should be assessed against strict planning criteria and be portable in the event of coastal erosion.
- Proposed development seaward of the 2100 hazard line with sea level rise projections should be assessed against the strict planning criteria.

The Draft Guideline states that eight planning criteria should be considered when assessing proposals in a coastal risk area. These criteria state that the proposal should not impact on natural coastal processes, not increase coastal risks around the site and should protect coastal ecosystems from development impacts.

As detailed in Section 6.10, the concept of progressive adaptability over time and the method of progressively building up the floor level is the LMYC's preferred method of dealing with the sea level rise design issue. This is also consistent with the adaptive risk based approach of the NSW Government. With regard to the eight planning assessment criteria, it is relevant to note the following:

- The redevelopment will be progressively built above the existing sea level to ensure it retains its existing relationship with the water. This will ensure that it provides for the safety of workers, users and occupants from risks associated with coastal processes.
- As detailed in Section 8.3, the Hydrodynamic Assessment has confirmed that sea level rise and the associated increase in depths in the lake would have only a small impact on the wave climate and negligible impacts on the foreshore conditions. As a result, the proposed development would not increase coastal risks to properties adjoining the site. In addition, waterfront access and amenity will be improved as part of the development.

- Building up the floor level over time is a very simple and cost effective concept and is easy to deal with from both an engineering design and a building point of view. Infrastructure, services and utilities on site will be protected from coastal processes.
- The adaptive approach accommodates coastal processes as they arise. Safe exit routes to land will continue to be provided.
- As detailed in the Flora and Fauna Impact Assessment Report, the proposal will protect coastal ecosystems from adverse impacts.

The proposed development is therefore consistent with the provisions of the Draft Guideline.

6.13 Lake Macquarie Mooring Management Plan

The aim of this plan is to ensure that future mooring management practices support NSW Maritime's marine safety and environmental sustainability goals. The purposes of this plan are to ensure the following:

- Integrated decision making by NSW Maritime, state and local government agencies, particularly to ensure the appropriate location of moorings and appropriate land based infrastructure to service them.
- Fair and equitable access to the Lake for all users within the region.
- An increased level of public participation in the decision making process for which NSW Maritime is responsible.
- A strategic plan is in place in anticipation of further urbanisation which is likely to bring an increased demand for moorings.

The plan sets out a number of general conditions for the location of moorings, protection of the environment and provision of boating facilities, including the following:

- The provision of an appropriate level of vessel shelter from wind and wave action. This issue is dealt with in Sections 8.2, 8.3 and 8.4.
- Minimal interference to competing uses for the surrounding waterways. This issue is dealt with in Section 8.5.
- Adequate space between the shoreline and/or structures (wharves or jetties) adjacent to public and private lands. This issue is dealt with in Section 5.8.
- Safe boating requirements such as speed restrictions, navigation marks and no wash areas for vessels using waterways in or adjacent to designated mooring areas. This matter is dealt with in Section 8.5.
- Protection of key fish habitats and promotion of ecologically sustainable development. This matter is dealt with in Sections 5.20.

With regard to Belmont Bay, points noted in the plan include the following:

- Belmont Bay has some of the State's most significant beds of the seagrass, "Posidonia australis". This matter is dealt with in Section 5.20 and the Flora and Fauna Impact Assessment Report in Appendix 11.
- This waterway is used intensively by vessels in organised races and regattas, with the Belmont 16 Sailing Club and LMYC using the waterway intensively (refer to discussion in Section 8.5).
- Belmont Bay is very exposed to westerly breezes (refer to discussion in Sections 8.2 and 8.3).

- The cumulative effect of concentrated moorings between Belmont Public Jetty and Andersons Point has resulted in the mooring area being constrained to its present boundary. Once the popular mooring areas within Belmont Bay are full, no new moorings will be allocated in these areas. Moorings will not extend beyond their current limits (refer to discussion in Section 8.5).
- There is a high demand for car parking spaces during summer (refer to discussion in Sections 5.11 and 5.12).
- Belmont public jetty has a sewage pump out facility for local and visiting boats.
- For the community at Belmont Bay, boating is an integral part of their lifestyle both as participants and spectators (refer to discussion in Section 8.5).

6.14 Lake Macquarie Estuary Management Plan

The Lake Macquarie Estuary Management Plan defines a series of actions which, if implemented, would maintain and improve the Lake's environmental and socio-economic values and develop a greater awareness and understanding of the benefits of lake management actions within the community. This, in turn, is intended to enhance recreation, tourism, community attitudes, commercial opportunities and the general well being of the Lake.

The objectives of the Lake Macquarie Estuary Management Plan are as follows:

- Define management strategies and select actions which will help maintain and improve the estuary's environmental values.
- Describe and justify selected actions.
- Prioritise selected actions in terms of their need and the practical limitations of their implementation.
- Provide indicative cost estimates for each action and summarise these costs.
- Identify potential funding sources.

The management action plans relevant to new foreshore development and marina facilities can be summarised as follows:

- Enforce sediment and erosion controls requirements on construction sites. This is addressed in Section 5.19).
- Require water sensitive urban design techniques in new development areas and infill areas. This is addressed in Section 5.18).
- Provide boat sewage discharge facilities around the Lake. The existing facility at the marina will be retained as part of the development.
- Liaise with relevant government agencies and boat owners to ensure that all new moorings are of a type that would not damage seagrasses. The proposal will involve the removal of swing moorings, rather than their increase.
- Create riparian buffer zones. The proposal will include improvement of the foreshore along Cullen Park to provide a better buffer between the lake and the land.
- Enhance and maintain foreshore vegetation. This is addressed in Sections 5.8 and 5.20.

7. STATUTORY PLANNING

7.1 Overview

This chapter sets out the existing planning framework that affects the site. In accordance with the requirements of the Director General dated 13 October 2009, this chapter:

- Demonstrates consistency of the proposal with the broader planning objectives.
- Demonstrates the permissibility of the project and consistency with statutory provisions.
- Addresses the nature and extent of variation from specified environmental planning instruments.

7.2 Commonwealth Environmental Protection and Biodiversity Conservation Act

The Commonwealth Environmental and Biodiversity Conservation Act (1999) ("EPBC Act") encompasses an assessment and approvals system for:

- Actions that have a significant impact on matters of National Environmental Significance ("NES").
- Actions that have a significant impact on the environment of Commonwealth land; and
- Actions carried out by the Commonwealth Government.

Matters of NES under the EPBC Act are:

- World Heritage Areas.
- Wetlands protected by international treaties (ie. the Ramsar Convention).
- Nationally listed threatened species and ecological communities.
- Nationally listed migratory species.
- All nuclear actions.
- The environment of Commonwealth marine areas.
- Additional matters of national significance.

The Administrative Guidelines for the EPBC Act contain criteria for determining whether a proposed action is likely to have a significant impact on a matter of NES. These Guidelines were consulted in determining the level of impact of the proposed development.

Under Section 68 of the EPBC Act, a proponent must refer a proposal to the Commonwealth Minister for the Environment if it believes an approval under the EPBC Act is required. In this regard, the potential impacts of the proposed development against each of the matters of NES listed in the EPBC have been considered as follows:

- The proposed works will not affect a World Heritage property.
- The proposed works will not affect a wetland of international significance (including Ramsar Wetlands).
- No listed threatened species of ecological communities will be adversely affected (refer to Appendix 11).
- No listed migratory species protected under international agreements will be affected.

- No commonwealth marine area will be adversely affected by the proposal.
- The development does not comprise a nuclear action.
- The proposal does not involve actions prescribed by the EPBC Regulations 2000.

The redevelopment of the LMYC will take place on an existing hardstand. The extension of the marina will take place over the existing lake bed and a Flora and Fauna Assessment has been prepared by Ecotone Ecological Consultants to assess the impacts of this component of the development. This assessment has concluded that there will be no impact on matters of NES. Accordingly no referral has been made to the Commonwealth Minister for the Environment.

7.3 Protection of the Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 ("POEO Act") relates to pollution management and waste disposal in NSW. The POEO Act also establishes licensing of certain activities which are listed in Schedule 1 of the Act. Marinas and boat repair facilities for 80 or more vessels are listed within Schedule 1 and would therefore require an Environment Protection Licence from the DECCW to operate the facility.

LMYC holds Licence No. 113399 for which the Scheduled Activity is "Marinas and Boat Repair Facilities" (even though boat repair facilities do not exist or occur on site).

The DECCW has been consulted during the preparation of the Environmental Assessment to ensure the proposed development is designed in accordance with their requirements.

7.4 Crown Lands Act 1989

The Crown Lands Act 1989 ("CL Act") provides a regime for the ownership and management of Crown land within NSW. Both the land and water based components of the development will take place on Crown land administered by the LPMA.

Clause 11 of the CL Act sets out the principles for the management of Crown land as follows:

> *"For the purposes of this Act, the principles of Crown land management are:*
>
> *(a) that environmental protection principles be observed in relation to the management and administration of Crown land,*
>
> *(b) that the natural resources of Crown land (including water, soil, flora, fauna and scenic quality) be conserved wherever possible,*
>
> *(c) that public use and enjoyment of appropriate Crown land be encouraged,*
>
> *(d) that, where appropriate, multiple use of Crown land be encouraged,*
>
> *(e) that, where appropriate, Crown land should be used and managed in such a way that both the land and its resources are sustained in perpetuity, and*
>
> *(f) that Crown land be occupied, used, sold, leased, licensed or otherwise dealt with in the best interests of the State consistent with the above principles."*

The above principles have been addressed in this EA and can be summarised as follows:

- The environmental impacts of the proposed development have been comprehensively addressed in the EA and supporting specialist reports. There will be no significant environmentally impacts on either Lake Macquarie or the affected foreshore area. There will be significant foreshore and water quality improvements as detailed in Sections 5.8 and 5.18, respectively.
- The public use and enjoyment of this Crown land will continue. In addition, the foreshore improvements will result in a benefit to the community and encourage increased and better use of this area.
- The proposal will continue to ensure that multiple uses are catered for (competitive sailing, social use of club facilities, recreational sailing/boat use, functions/tourism, passive foreshore use, etc).
- There will be no additional reclaimed land and therefore all proposed marina structures on the lake will not compromise the resource of Lake Macquarie as they would be able to be removed if required. The proposed foreshore improvements will ensure improved land management and conservation of this resource.
- The Crown has undertaken a "public interest" assessment of the proposal and will determine in due course whether the proposal is in the best interests of the State consistent with the above principles. The LMYC will continue to offer a range of facilities for community users of the Lake.

An amended Crown lease is proposed to be issued to LMYC prior to the commencement of the project. This will have a similar term to the existing lease (see Section 2.3).

7.5 Threatened Species Conservation Act 1995

Protection of listed threatened species and ecological communities in NSW falls under the provisions of the *Threatened Species Conservation Act 1995* ("TSC Act"). Initially, the seven matters listed under Section 5A of the EP&A Act must be taken into account in deciding whether there is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats ("7-Part Test"). The TSC Act provides a list of threatened species, populations and ecological communities and key threatening processes.

A Flora and Fauna Impact Assessment Report has been conducted as a component of preparing this EA and is further discussed in Section 5.20.

7.6 Fisheries Management Act 1994

The Fisheries Management Act 1994 ("FM Act") provides a regime in NSW for the conservation, sharing and development of fishery resources, including marine vegetation and fishes.

Across the State, approvals are required from the Department of Primary Industries (Aquatic Habitat Division) under Section 205 of the FM Act to "cut, remove, damage or destroy marine vegetation on public water land" and Section 219 to "create an obstruction" within a "bay, inlet, river or creek".

However, Section 75U of the EP&A Act 1979 stipulates that such approvals under the FM Act is not required for an approved Part 3A project.

Notwithstanding the above, the aims and objectives of the FM Act and associated regulation (including matters relating to seagrasses, fish and their habitats) have been comprehensively addressed in the EA, the Flora and Fauna Impact Assessment Report in Appendix 11 and the Seagrass Management Plan in Appendix 12.

7.7 Water Management Act 2000

The Water Management Act 2000 ("WMA") is the main piece of water legislation for NSW ensuring that water is provided for the environment and more secure access to water users. The provisions of this Act are being progressively implemented in NSW. Across the entire State, works within 40 metres of a river, lake (such as Lake Macquarie) or estuary require a controlled activity approval under this Act. However, controlled activities are exempt for activities carried out in accordance with any lease, licence, permit or other right in force under the Crown Lands Act 1989 pursuant to the WMA and Water Management Amendment (Controlled Activities) Regulation 2008. Furthermore, Section 75U(1)(h) of the EP&A Act 1979 stipulates that an activity approval under Section 91 of the WMA does not apply for an approved Part 3A project.

Notwithstanding the above, the aims and objectives of the WMA and associated regulation (including matters relating to water quality, stormwater management, groundwater and riparian/foreshore protection) have been comprehensively addressed in the EA.

7.8 Environmental Planning and Assessment Act, 1979

The Environmental Planning and Assessment Act, 1979 ("EP&A Act") regulates environmental planning and assessment in NSW.

The objects of the EP&A Act are set out in Clause 5. The consistency of the proposed development with these objects is dealt with in the table below:

Table 8: Objects of the EP&A Act

Objects of the EP&A Act		Consistency
(a)	*to encourage:*	
(i)	*the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*	The proposed LMYC redevelopment will take place on land currently used and zoned for such purposes. The water based marina extension will take place adjacent to an existing marina on part of the lake presently used for swing moorings licensed to the LMYC. As detailed in the EA, it will not result in any significant adverse environmental impacts on the natural environment. The social and economic welfare of the community is best served by development which is permissible under the relevant planning regime and predominantly in accordance with the prevailing planning controls. This is the case with the proposed development. As detailed in Sections 8.7 and 8.8 and Appendix 18, there will be positive social and economic impacts resulting from the proposal.
(ii)	*the promotion and co-ordination of the orderly and economic use and development of land,*	The orderly and economic use of land is best served by development which is permissible under the relevant planning regime and predominantly in accordance with the prevailing planning controls. The development comprises a permissible and complying development which is consistent with the statutory and strategic planning controls. As detailed in the EA, the proposal will not result in any significant adverse environmental impacts.
(iii)	*the protection, provision and co-ordination of communication and utility services,*	Refer to Section 5.15 and Appendix 20.
(iv)	*the provision of land for public purposes,*	Refer to Section 5.8.
(v)	*the provision and co-ordination of community services and facilities, and*	Refer to Section 5.
(vi)	*the protection of the environment, including the*	As detailed in the EA, the proposal will not result in any significant

Objects of the EP&A Act		Consistency
	protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and	adverse environmental impacts. Refer to Section 5.20 and the Flora and Fauna Assessment in Appendix 11.
(vii)	*ecologically sustainable development, and*	The proposal is consistent with ESD principles as detailed in Section 8.23.
(viii)	*the provision and maintenance of affordable housing, and*	N/A to the proposal.
(b)	*to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and*	As detailed in Sections 7.8 and 7.9.1 of the EA, the proposal is subject to the provisions of Part 3A of the EP&A Act where the Minister is the consent authority.
(c)	*to provide increased opportunity for public involvement and participation in environmental planning and assessment.*	Any relevant public representations will need to be considered by the DOP during the processing of the project application.

The EP&A Act and the Environmental Planning and Assessment Regulation 2000 ("EPAR") have been amended to include Part 3A, which provides a streamlined assessment and approval process for development that is defined as a Major Project. Pursuant to Section 75B of the EP&A Act, Part 3A of the EP&A Act applies to:

> *".....the carrying out of development that is declared under this Section to be a project to which this Part applies:*
>
> *(a) by a State environmental planning policy, or*
>
> *……"*

The development is declared a major project under State Environmental Planning Policy (Major Development) 2005 and this is outlined in Section 7.9.1 of this EA.

In a letter dated 24 April 2008, the DOP confirmed that the proposal is a "Major Project" to which Part 3A of the EP&A Act applies. The Minister for Planning is the consent authority for the project.

This EA report considers the likely impact of the project on the environment and has been prepared in accordance with Clause 75(F) of the EP&A Act.

Pursuant to Clause 75R(1) of the EP&A Act, parts 4 and 5 of the Act do not apply to this DA. As a result, the provisions of Part 4 relating to, inter alia, integrated development approvals, state significant development and designated development do not apply.

Under Clause 75(R) of the EP&A Act, environmental planning instruments ("EPI's") (other than State Environmental Planning Policies) do not apply to a "Major Project". An overview of the applicable State Environmental Planning Policies is provided in Section 7.9.

7.8.1 Designated Development

Part 4 of the Act - "Development Assessment" governs the type of development known as "Designated Development". Schedule 3 of the Environmental Planning and Assessment Regulation, 2000 ("the Regulation") defines what forms of development are defined as "designated development". Clause 23 relates to marinas and states the following type of development is designated:

> *"(1) Marinas or other related land or water shoreline facilities that moor, park or store vessels (excluding rowing boats, dinghies or other small craft) at fixed or floating berths, at*

freestanding moorings, alongside jetties or pontoons, within dry storage stacks or on cradles on hardstand areas:

(a) that have an intended capacity of 15 or more vessels having a length of 20 metres or more, or

(b) that have an intended capacity of 30 or more vessels of any length and:

(i) are located in non-tidal waters, or within 100 metres of a wetland or aquatic reserve, or

(ii) require the construction of a groyne or annual maintenance dredging, or

(iii) the ratio of car park spaces to vessels is less than 0.5:1, or

(c) that have an intended capacity of 80 or more vessels of any size."

In relation to the above, we have concluded as follows:

- There will be no vessels (existing or proposed) over 20m in length.
- An additional 64 marina berths/vessels is proposed bringing the total number of marina wet berths to 148. This exceeds the 80 threshold (which we understand relates to both existing and proposed berths).
- Lake Macquarie comprises tidal waters and the marina is not within 100m of a wetland or aquatic reserve.
- Annual dredging will not form part of the proposal.
- The ratio of car park spaces to vessels will not be less than 0.5:1.

(Note: If the total number of new and existing marina berths and car parking spaces is calculated, this gives a ratio of 1.08:1. If only the additional marina berths and car parking spaces is calculated, this gives a ratio of 1:1. If the existing marina berths and car parking spaces is calculated, this gives a ratio of 1.1:1).

Pursuant to the above, it can be concluded that the proposed development will comprise designated development.

However, as detailed in Section 7.9.1, the proposed development has been declared a Major Project by the Minister for Planning to which Part 3A of the Act applies. As a result, pursuant to Clause 75R(1) of the EP&A Act, the provisions of Part 4 (which relates to designated development) would not apply to the proposal.

7.9 Relevant State Environmental Planning Policies

7.9.1 State Environmental Planning Policy (Major Development) 2005

State Environmental Planning Policy (Major Development) 2005 ("SEPP 2005") identifies which projects are identified as "major projects" and require assessment under Part 3A of the Act. Such projects require, inter alia, the preparation of an EA and the Minister for Planning (rather than Lake Macquarie City Council) is the consent authority.

Schedule 1 of SEPP 2005 identifies that the following marina facilities are defined as Part 3A Projects:

"(1) Development for the purpose of marinas or other related land or water shoreline facilities that moor, berth or store vessels (excluding dinghies and other small craft) at fixed or

floating berths, at freestanding moorings, alongside jetties or pontoons, within dry storage stacks or on cradles in hardstand areas and that:

(a) moor, berth or store more than 30 vessels in Sydney Harbour, Middle Harbour, North Harbour, Botany Bay, Port Hacking, Broken Bay or associated tidal waters, or

(b) moor, berth or store more than 80 vessels in other waters, or

(c) are located in environmentally sensitive areas of State significance,

but excluding any development that, in the opinion of the Minister, is only of local environmental planning significance.

(2) A reference in this clause to the number of vessels moored, berthed or stored includes a reference (in the case of an existing facility) to the additional number of vessels moored, berthed or stored at the facility."

In relation to the above, we have concluded as follows:

- The marina is outside of the tidal waters associated with Sydney Harbour and surrounding area.
- The new marina will berth less than 80 vessels.
- The marina is not located within an environmentally sensitive area of State significance.

(Note: "Environmentally Sensitive Areas of State Significance are defined in Clause 3 of SEPP 2005. We have reviewed this definition and it does not appear to apply to the site. In this regard it is relevant to note that the "Assessment of Seagrass Meadows at the Lake Macquarie Yacht Club (prepared by Bio-Analysis in July 2005 and February 2008) and the Flora and Fauna Assessment Report (prepared by Ecotone Ecological Consultants in January 2010) does not identify the site as being critical habitat under the Threatened Species Conservation Act 1995 or Part 7A of the Fisheries Management Act, 1994).

Notwithstanding the above, at the time of consideration of the proposed project by the Minister for Planning pursuant to Clause 6 of SEPP 2005 in April 2008, Schedule 2 of SEPP 2005 also listed certain sites that are defined as Part 3A projects. Schedule 2 (as it stood at that time) included marinas in the coastal zone that are designated development and within a sensitive location and stated the following:

"1 Coastal areas

(1) Development within the coastal zone for any of the following purposes:

……

(d) marinas that are designated development and that are wholly or partly in a sensitive coastal location,

A "sensitive coastal location" is defined as follows in Schedule 2:

*"**sensitive coastal location** means any of the following which occur within the coastal zone:*

(a) land within 100m above mean high water mark of the sea, a bay or an estuary,

(b) a coastal lake,

(c) a declared Ramsar wetland within the meaning of the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth,

(d) a declared World Heritage property within the meaning of the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth,

(e) land declared as an aquatic reserve under the Fisheries Management Act 1994,

(f) land declared as a marine park under the Marine Parks Act 1997,

(g) land within 100m of any of the following:

(i) the water's edge of a coastal lake,

(ii) land to which paragraph (c), (d), (e) or (f) applies,

(iii) land reserved under the National Parks and Wildlife Act 1974,

(iv) land to which State Environmental Planning Policy No 14—Coastal Wetlands applies,

(h) residential land (within the meaning of State Environmental Planning Policy No 26—Littoral Rainforests) that is within a distance of 100m from the outer edge of the heavy black line on the series of maps held in the Department and marked "State Environmental Planning Policy No 26—Littoral Rainforests (Amendment No 2)".

In relation to the above, we have concluded as follows:

- The proposed marina is designated development as detailed in Section 7.8.1.
- The proposed development will take place in a sensitive coastal location, being Lake Macquarie (a coastal lake which is referred to in Schedule 1 of State Environmental Planning Policy No. 71 – Coastal Protection).

Pursuant to the above, it can be concluded that the proposed development falls within Schedule 2 of SEPP 2005, as it stood at the time of consideration by the Minister.

In February 2008, a submission was lodged with the DOP requesting the Minister to determine whether the proposed development was a major project that would require assessment under Part 3A of the Act.

On 24 April 2008, the Minister determined that the proposed development was a Major Project.

7.9.2 State Environmental Planning Policy (Infrastructure) 2007

Schedule 3 of State Environmental Planning Policy (Infrastructure) 2007 (Clause 104) identifies traffic generating development that requires referral to the Roads and Traffic Authority ("RTA") for comment. The proposed redevelopment includes parking for 151 vehicles (including the spaces provided at Cullen Park) and therefore is not of a type listed in Column 2 of Schedule 3. Furthermore, the site is not within 90 metres of the intersection of a classified road (the Pacific Highway being more than 100m away) and therefore the proposal is not of a type listed in Column 3 of Schedule 3. As a result, the proposed development does not require referral to the RTA for comment.

7.9.3 State Environmental Planning Policy No. 14 - Wetlands

The proposed redevelopment is not in proximity to any SEPP 14 Wetland (with Belmont Lagoon to the east being located in a different catchment).

7.9.4 State Environmental Planning Policy No. 44 – Koala Habitat Protection

State Environmental Planning Policy No. 44 – Koala Habitat Protection ("SEPP No. 44") applies to the Lake Macquarie local government area and aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas. Although SEPP No. 44 does not apply to project applications made under Part 3A of the EP&A Act, the relevant matters have been considered below.

As detailed in the Flora and Fauna Impact Assessment Report in Appendix 11, the site does not comprise Core or Potential habitat for Koalas and no further consideration of SEPP 44 is required.

7.9.5 State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy No. 55 – Remediation of Land ("SEPP No. 55") provides a Statewide planning approach to the remediation of contaminated land. SEPP 55 requires consent authorities to consider contamination and remediation when determining applications. Although SEPP No. 55 does not apply to project applications made under Part 3A of the EP&A Act, the relevant matters have been considered below.

With regard to the provisions of SEPP No. 55 it is relevant to refer to Section 3.4.1 of the "Managing Land Contamination: Guidelines" prepared by NSW DOP and NSW DECCW. This states the following in paragraph 2:

> *"Stage 2 - Detailed Investigation. A detailed investigation is only necessary when a preliminary investigation indicates that the land is contaminated or that it is, or was, formerly used as an activity in Table 1 **and** (our emphasis) a land use change is proposed that has the potential to increase the risk of exposure to contamination."*

Both the requirements of SEPP No. 55 and the contamination requirement of the EAR's were discussed with DOP and DECCW during the preparation of the EA. In correspondence with the DOP on 16 March 2009, advice was received that detailed contamination investigations would only be required where the preliminary investigation indicated that the land was contaminated and a land use change was proposed that had the potential to increase the risk of exposure to contamination. As the proposed development would not involve a change to the land use, it was agreed that the only further testing required would be the sediments beneath the proposed marina and the existing water quality of the Lake (to determine a background level). This approach was confirmed in a meeting with Mr Peter Hughes of DECCW on 17 March 2009 where the applicant was advised that generally if there was no change in land use and/or the land/water was not to be disturbed, then no contamination reporting would be required. DECCW advised that the main area of potential disturbance (where there is a change of land use) was the lake bed beneath the proposed marina. There were no other parts of the site that were going to be disturbed via a land use change and therefore no testing of the existing marina, existing car park or Cullen Park would be required. However, the removal of any hazardous materials when the clubhouse is demolished would need to be dealt with as a condition of consent.

Based on the above advice, the Phase 1 Environmental Site Assessment in Appendix 15 provided an assessment of the potential sources of contamination at the site and undertook an assessment of the sediments in the area of the proposed marina and the background quality of the Lake. The various components of the site and the findings of the Phase 1 Assessment have been summarised below:

1. The LMYC is built on reclaimed land constructed on imported fill of unknown origin. The LMYC building potentially contains asbestos and lead based paints. No testing was undertaken in this area as the LMYC is proposed to be demolished with a new clubhouse taking its place. The demolisher will be required to prepare a Hazardous Materials Assessment before demolition. These issues can be dealt with as conditions of any consent granted.
2. The gravel car park within Cullen Park comprises fill of unknown origin. No testing was undertaken in this area as no land use change is proposed and this area is to be capped using imported road base with a new bitumen seal.
3. The bitumen car park of the LMYC comprises fill of unknown origin. No testing was undertaken in this area as no land use change is proposed. The existing bitumen paving/seal will be removed and this car park will be built up in height by approximately 300mm using imported road base which will be encapsulated with a new bitumen seal.
4. The fenced waste storage compound is located in the south western corner of the bitumen car park and includes a stainless steel cooking oil disposal bin and a bunded above ground motor oil disposal tank. Oil staining on the concrete pavement around the tank and within the bund was apparent. No further testing was undertaken as this area is proposed to be removed and redeveloped as part of the proposal.

5. The existing marina will not be altered in any way. The Lake bed in this area supports meadows of Posidonia australis sea grass. This sea grass is a protected species and grows readily in the sediment within and around the marina. The proposed development will not disturb these sea grass meadows. No further testing was undertaken in this area as no change is proposed and any testing would disturb the existing sea grass beds.
6. Sediment sampling of the lake in the area of the proposed marina was undertaken and generally showed concentrations of contaminants below the trigger values adopted.
7. A water sample was collected in the Lake which indicated that metals slightly exceeded the trigger values adopted. It was considered that these concentrations represent existing background water quality levels in the Lake and can be used for comparative purposes during and after the redevelopment of the LMYC.

Pursuant to the above, the Phase 1 Environmental Site Assessment concludes that further contamination assessments are not required.

7.9.6 State Environmental Planning Policy No. 71 – Coastal Protection

7.9.6.1 Overview

State Environmental Planning Policy No. 71 – Coastal Protection ("SEPP 71") applies to land, either all or part of, which is within the "coastal zone". The coastal zone is defined in the Coastal Protection Act 1979 and has been mapped for the Lake Macquarie local government area (see Appendix 5).

It is relevant to note that as the site is located within the "coastal zone", the provisions of SEPP 71 apply. The site is also defined as a "sensitive coastal location" pursuant to the provisions of SEPP 71 as it forms part of a "coastal lake" (Clause 3) and as "significant coastal development" as it comprises development within 100m below the mean high water mark (Clause 9).

7.9.6.2 Clause 2 – Aims of the Policy

The aims of SEPP 71 set out in Clause 2 can be summarised as follows:

(a) To protect and manage the natural, cultural, recreational and economic attributes of the New South Wales coast. These matters are dealt with throughout the EA.

(b) To protect and improve existing public access to and along coastal foreshores to the extent that this is compatible with the natural attributes of the coastal foreshore. These issues are dealt with in Section 5.8.

(c) To ensure that new opportunities for public access to and along coastal foreshores are identified and realised to the extent that this is compatible with the natural attributes of the coastal foreshore. These issues are dealt with in Section 5.8.

(d) To protect and preserve Aboriginal cultural heritage, and Aboriginal places, values, customs, beliefs and traditional knowledge. These issues are dealt with in Section 8.15.

(e) To ensure that the visual amenity of the coast is protected. This issue is dealt with in Section 8.11.

(f) To protect and preserve beach environments and beach amenity. No beaches will be adversely affected by the proposal.

(g) To protect and preserve native coastal vegetation. This issue is dealt with in Section 5.20.

(h) To protect and preserve the marine environment of New South Wales. This issue is dealt with in Section 8.

(i) To protect and preserve rock platforms. No rock platforms will be adversely affected by the proposed development.

(j) To manage the coastal zone in accordance with the principles of ecologically sustainable development (within the meaning of section 6 (2) of the Protection of the Environment Administration Act 1991). This matter is dealt with in Section 8.23.

(k) To ensure that the type, bulk, scale and size of development is appropriate for the location and protects and improves the natural scenic quality of the surrounding area. These issues are dealt with in Sections 5.4, 5.6 and 8.11.

(l) To encourage a strategic approach to coastal management. Strategic issues are dealt with in Section 6.

7.9.6.3 Clause 8 - Matters for Consideration

Clause 7 of SEPP 71 states that the matters for consideration set out in clause 8 are to be taken into account by a consent authority when it determines a development application to carry out development on land to which SEPP 71 applies. The relevant matters outlined in Clause 8 have been summarised in the table below and compliance of the proposed development with these matters has been commented on accordingly:

Table 9: SEPP 71 Matters for Consideration

Clause 8 Matters for Consideration	Consistent?	Comment
"(a) - The aims of SEPP No. 71 set out in Clause 2,	Yes	The proposed development is consistent with these aims as it comprises a development with no significant impacts on the coastal zone (Refer to Section 7.9.6.2).
"(b) existing public access to and along the coastal foreshore for pedestrian or persons with a disability should be retained and, where possible, public access to and along the coastal foreshore for pedestrians or persons with a disability should be improved,	Yes	As detailed in Section 5.8, the proposed development will improve existing public access and useability of the foreshore.
(c) opportunities to provide new public access to and along the coastal foreshore for pedestrian or persons with a disability,	Yes	(as above).
(d) the suitability of development given its type, location and design and its relationship with the surrounding area,	Yes	As detailed in the EA, the nature and zoning of the site along with its surrounds make it suitable for the development being proposed.
(e) any detrimental impact that development may have on the amenity of the coastal foreshore, including any significant overshadowing of the coastal foreshore and any significant loss of views from a public place to the coastal foreshore,	Yes	Visual impacts and view loss are dealt with in Section 8.11. No adverse overshadowing impacts will be created by the proposal.
(f) the scenic qualities of New South Wales coast, and means to protect and improve these qualities,	Yes	The visual amenity of the coast will not be affected in any significant way as detailed in Section 8.11. The visual impact of the development from the surrounding public areas will be minimal as it will be consistent with the existing scale and impact of the LMYC (Refer to Appendix 10).
(g) measures to conserve animals (within the meaning of the Threatened Species Conservation Act 1995) and plants (within the meaning of that Act), and their habitats,	Yes	As detailed in the Flora and Fauna Impact Assessment Report in Appendix 11, the proposal will have no significant impact on the flora and fauna of the area. This proposal will not affect any threatened species or their habitats. A 7-part significance test was conducted on the relevant species that may be possibly affected by the proposed development and found that the proposal would not

Clause 8 Matters for Consideration	Consistent?	Comment
		threaten any of the species life cycle to cause an extinction.
(h) measures to conserve fish (within the meaning of Part 7A of the Fisheries Management Act 1994) and marine vegetation (within the meaning of that Part), and their habitats	N/A	As detailed in the Flora and Fauna Impact Assessment Report in Appendix 11, the proposed development will not compromise the health of any fish, marine vegetation or their habitats. Options for storm water management have been investigated and allowances made to accommodate future development (see Section 5.18 of the EA).
(i) existing wildlife corridors and the impact of development on these corridors,	Yes	The site does not form a part of any existing or potential wildlife corridor.
(j) the likely impact of coastal processes and coastal hazards on development and any likely impacts of development on coastal processes and coastal hazards,	Yes.	These matters have been dealt with in Sections 8.2, 8.3 and 8.4 and the Engineering Report in Appendix 20.
(k) measures to reduce the potential for conflict between land-based and water-based coastal activities,	Yes	These matters have been dealt with in Sections 5.20 and 8.5.
(l) measures to protect the cultural places, values, customs, beliefs and traditional knowledge of Aboriginals	Yes	The site has been subject to a detailed Heritage and Archaeological Assessment as detailed in Section 8.15 and Appendix 13.
(m) likely impacts of development on the water quality of coastal waterbodies,	Yes	The proposed development will not compromise the water quality of the coastal water body. Options for storm water management have been investigated and allowances made to accommodate the development (see Section 5.18 and Appendix 20).
(n) the conservation and preservation of items of heritage, archaeological or historic significance,	Yes	No items of significant historic significance are located on site or on any neighbouring sites (see Section 8.15 and Appendix 13).
(o) only in cases in which a council prepares a draft local environmental plan that applies to land to which this Policy applies, the means to encourage compact towns and cities,	N/A	N/A
(p) only in cases in which a development application in relation to proposed development is determined: *(i) the cumulative impacts of the proposed development on the environment, and* *(ii) measures to ensure that water and energy usage by the proposed development is efficient.*	Yes	The will be no significant adverse cumulative impacts on the environment as a result of this proposed development, as detailed in this EA. The proposal accommodates provisions to ensure the water quality is maintained and energy usage is efficient.

7.9.6.4 Clause 14 – Public Access

Clause 14 of SEPP No. 71 states the following:

> *"A consent authority must not consent to an application to carry out development on land to which this Policy applies if, in the opinion of the consent authority, the development will, or is likely to, result in the impeding or diminishing, to any extent, of the physical, land-based right of access of the public to or along the coastal foreshore."*

As detailed in Section 5.8, the proposal includes substantial improvements to public access along this part of the Lake Macquarie foreshore.

7.9.6.5 Clause 16 – Stormwater

Clause 16 of SEPP No. 71 states the following:

> *"The consent authority must not grant consent to a development application to carry out development on land to which this Policy applies if the consent authority is of the opinion that the development will, or is likely to, discharge untreated stormwater into the sea, a beach, or an estuary, a coastal lake, a coastal creek or other similar body of water, or onto a rock platform."*

A stormwater management plan has been prepared by Northrop (Appendix 20) and provides details of stormwater quality control measures.

7.10 Relevant Regional Environmental Plans

7.10.1 Overview

Regional environmental plans and strategies that apply to the site but do not limit development in a Part 3A application pursuant to Section 75R of the EP&A Act, have been identified below.

7.10.2 Hunter Regional Environmental Plan 1989

The Hunter Regional Environmental Plan 1989 ("Hunter REP") was recently repealed and therefore no longer applies to the site.

7.11 Local Environmental Plans and Development Control Plans

7.11.1 Overview

Local plans and policies that apply to the site, but that do not limit development in a Part 3A application pursuant to Section 75R of the EP&A Act, have been identified below.

7.11.2 Lake Macquarie Local Environmental Plan 2004

7.11.2.1 Zoning and Permissibility

The land based component of the site is zoned 6(2) Tourism and Recreation pursuant to Lake Macquarie Local Environmental Plan 2004 ("LEP 2004"). The water based component of the site is zoned 11 Lakes and Waterways pursuant to LEP 2004.

Within the 6(2) Tourism and Recreation zone, "car parking facilities", "clubs", "marinas", "restaurants" and "earthworks" are all permissible with development consent. These uses are defined as follows:

> *"**car parking facility** means a building or place used for parking vehicles, whether operated for gain or not, and any manoeuvring space and access to that building or place, but does not include car parking ancillary to a permissible use."*
>
> *"**club** means premises registered under the Registered Clubs Act 1976 that are also licensed to serve alcohol under the Liquor Act 1982."*
>
> *"**earthworks** means a work involving the addition or removal of any solid matter on, to or from land, or any other work that will significantly alter:*
>
> *(a) the level of the land from the existing ground level, or*
>
> *(b) the character of the surface of that land, or*

(c) the drainage of the land."

*"**marina** means a pontoon, jetty, pier or similar structure operated for commercial gain and designed or adapted to provide moorings for boats used primarily for pleasure or recreation and may include ancillary works such as slipways, facilities for the hire, repair and maintenance of boats and the provision of fuel, accessories and parts for boats and foodstuff."*

*"**restaurant** means a building or place, principally providing food to seated paying customers and may include take-away, footway dining, kiosk and drive-through services."*

Within the 11 Lakes and Waterways zone, all types of development are permissible with development consent.

The various components of the proposed development are therefore permissible with consent in these zones.

Clause 16(b) of LEP 2004 states that consent must not be granted for development unless the consent authority is satisfied the development being proposed is consistent with the relevant objectives for that zone. These matters are addressed below.

7.11.2.2 Clause 15 - Objectives of the 6(2) Tourism and Recreation

Clause 15 of LEP 2004 states the objectives of the 6(2) Tourism and Recreation Zone are as follows:

"(a) provide land primarily for commercial recreation and tourist uses, and

(b) encourage good quality design within the zone, and

(c) provide land for good quality tourist development, and

(d) provide land for function and entertainment centres, and

(e) encourage tourism development that is sensitively designed to complement its location and minimise any adverse impacts on the environment, and

(f) provide for sustainable water cycle management."

The proposed redevelopment of the LMYC on the 6(2) zoned land will be consistent with the above objectives as follows:

- The current use of the land will not change and will continue to provide for recreation and tourist uses.
- The new club building will substantially improve the quality of building design.
- The new LMYC will continue to provide space for functions.
- The new LMYC has been sensitively designed to complement its location and minimise any adverse impacts on the environment (see Section 8).
- As detailed in Section 5.18, the proposal will provide for sustainable water cycle management.

7.11.2.3 Clause 15 – Objectives of the 11 Lakes and Waterways Zone

Clause 15 of LEP 2004 states the objectives of the 11 Lakes and Waterways Zone are as follows:

"(a) recognise the importance of Lake Macquarie and its waterways as an environmental asset, not only to Lake Macquarie City, but to the Hunter and Central Coast Regions, and

(b) ensure that development of the Lake and its waterways occurs in a manner that is consistent with the principles of ecologically sustainable development, and

(c) ensure development does not adversely affect the ecology, scenic values or navigability of the Lake or its waterways, and

(d) ensure that aquatic and terrestrial habitats and their interface are protected and enhanced and are not adversely affected by the recreational use of the Lake or its waterways, and

(e) provide for sustainable and viable economic use of the Lake and its waterways, and

(f) provide for sustainable water cycle management."

The proposed marina extension on the 11 zoned land will be consistent with the above objectives as follows:

- The environmental qualities of Lake Macquarie will not be altered in any significant way, as detailed elsewhere in this EA.
- As detailed in Section 8.23, the proposed development will be consistent with the principles of ecologically sustainable development.
- Matters relating to ecology (Section 5.20), scenic values (Section 8.11) and navigability (Section 8.5) have been addressed in the EA.
- As detailed in Sections 5.8 and 5.2, aquatic and terrestrial habitats and their interface will be protected and potentially enhanced.
- The proposal will ensure that the existing clubhouse and marina can remain a sustainable and viable economic use on the Lake, without compromising the existing use of this waterway.
- As detailed in Section 5.18, the proposal will provide for sustainable water cycle management.

7.11.2.4 Clause 16 – Lifestyle 2020 Strategy

Clause 16(a) of LEP 2004 states that consent must not be granted for development unless the consent authority is satisfied it is consistent with the vision, values and aims for the Lifestyle 2020 Strategy. This matter is dealt with in Section 6.9.

7.11.2.5 Clause 17 – Provision of Essential Infrastructure

Clause 17(a) of LEP 2004 states consent must not be granted for development of any land unless the consent authority is satisfied that adequate arrangements have been made for the provisions of essential infrastructure to the development including water supply, energy, sewage and telecommunications.

Clause 17(b) requires the consent authority to consider the impacts of the provisions for infrastructure on the land being developed.

As detailed in Section 5.15 and Appendix 20, the relevant authorities responsible for the utility services have advised that all services required by the development can be either extended or upgraded to service the needs of the proposed development.

7.11.2.6 Clause 22 – Foreshore Building Line

Clause 22 of LEP 2004 refers to Clause 7 of the Environmental Planning and Assessment Model Provisions 1980 that allows Council to set a foreshore building line from the Deed High Water Mark ("DHWM") and sets out the effect of such a line.

The site of the proposed development is generally located below the DHWM and is therefore not affected by the foreshore building line. The proposed foreshore improvements (see Section 5.8) will substantial improve the existing natural features and vegetation where the land meets the high water mark.

7.11.2.7 Clause 23 - Foreshore Development and Development Below DP High Water Mark

Clause 23 of LEP 2004 allows development below DP high water mark with development consent provided the consent authority is satisfied:

- All existing structures and works below DP high water mark will be removed before or within a reasonable time after development is carried out; or
- That it is unreasonable or unnecessary in the circumstances of the case for that removal to occur.

LEP 2004 defines "DP high water mark" as the "mean high water mark shown on the current plan."

It is considered unreasonable and unnecessary for the existing clubhouse, marina and car park to be removed. This facility has existed on the site since the 1930's. Furthermore, the current Crown Lease for the LMYC runs for another 27 years until 2037. It is considered that the LMYC provides substantial social and economic benefits to the Lake Macquarie local government area that justify not only it's continuing operation but its improvement and expansion.

7.11.2.8 Clause 25 - Demolition

Clause 25 of LEP 2004 states that demolition requires development consent. As detailed in Section 5.3 demolition works will form part of the proposed redevelopment. All demolition will take place in accordance with Australian Standard AS 2601-2001, *Demolition of Structures* with no explosive methods to be used. The demolition does not include any heritage items pursuant to LEP 2004 nor is it adjacent to any heritage item.

7.11.2.9 Clause 29 – Building Heights

Clause 29 deals with building heights and states the following:

> *"(1) (Repealed)*
>
> *(2) In considering an application for consent to the erection of a building the whole or part of which exceeds 8 metres, the consent authority must take into consideration whether that height is compatible with the heights of other buildings in the immediate vicinity or locality and is compatible with:*
>
> *(a) the site attributes, and existing or proposed uses of the land to which the application relates, and*
>
> *(b) the other requirements of this plan and the provisions of any relevant development control plan.*
>
> *(3) In the instance of development in proximity to an airport, the heights of buildings must comply with the applicable Obstacle Limitation Surface."*

Matters relating to building height and it's scenic impact have been dealt with in Section 8.11 and the Visual Impact Assessment in Appendix 10. The relevant provisions of Council's Development Control Plan No. 1 – Principles of Development have been addressed in Section 7.11.3.

7.11.2.10 Clause 30 - Control of Pollution

Clause 30 of LEP 2004 states that consent must not be granted for development unless the consent authority is satisfied that all reasonable and practical control measures are implemented to minimise pollution likely to arise from carrying out the development.

It is anticipated that the recommendations outlined in the Noise Impact Assessment Report (see Section 8.18 and Appendix 17) will be enforced as conditions of consent to ensure compliance. As detailed in the Engineering Report in Appendix 20, the implementation of the Preliminary Construction Management Plan will ensure appropriate recommendations and restrictions will control water and air (dust) pollution during the construction of the development and will be enforced by Council's supervising officer to ensure compliance.

7.11.2.11 Clause 31 - Erosion and Sediment Control

Clause 31 of LEP 2004 applies to development that gives rise to the exposure of the surface soil of land to the action of wind or water, caused by earthworks, the removal of vegetation or development in general. Clause 31(2)(a) requires the Council to be satisfied that all reasonable and practicable control measures will be carried out to prevent or minimise the effects of erosion and sediment.

Clauses 31(2)(b) and (c) provide specific requirements relating to developments where the area of soil surface exposure will be greater than 250 and 2,500 square metres respectively.

As detailed in Section 5.19 and Appendix 20, an Erosion and Sediment Control Plan in accordance with Council requirements has been prepared and will be implemented prior to any work commencing on the site. This will involve the use of reasonable measures to control erosion and sediments within the development zone, including but not limited to the installation of sediment control fences and silt curtains. Measures will be undertaken to minimise any potential erosion and sediment issues that might occur as a result of this proposal.

7.11.2.12 Clause 32 – Flood Prone Land

Clause 32 deals with flood prone land and states the following:

> *"(1) Despite any other provision of this plan, a person must not erect a structure or carry out a work on flood prone land without development consent.*
>
> *(2) Before granting consent required by this clause, the consent authority must:*
>
> *(a) consider the contents of any flood management plan or development control plan applying to the land that has been prepared in accordance with the principles contained in the flood management manual, which is available from the office of the Council, and*
>
> *(b) be satisfied that to carry out the development in accordance with the consent would be consistent with flood hazard and levels of risk that are acceptable to the community.*
>
> *(3) The consent authority may, by a condition of consent to the carrying out of development referred to in subclause (1), require all floors or levels of the structure or work to be at a height sufficient, in the opinion of the consent authority, to prevent or reduce the incidence of flooding of that structure or work, or of adjoining land."*

These matters have been addressed in Sections 6.10 and 8.4.

7.11.2.13 Clause 35 – Acid Sulfate Soils

Clause 35 deals with acid sulfate soils and states the following:

> *"(1) For the purpose of this clause, **works** means:*
>
> *(a) any disturbance of more than one tonne of soil (such as occurs in carrying out agriculture, the construction or maintenance of drains, extractive industries, dredging, the construction of artificial water bodies (including canals, dams, and detention basins), foundations and flood mitigation works), or*

(b) any other works that are likely to lower the water table, or

(c) routine maintenance.

(2) A person must not, without development consent, carry out works described in the following Table on land of the class specified for those works, except as provided by subclause (3).

Class of land as shown on Acid Sulfate Soils Planning Maps	*Works*
1	*Any works.*
2	*Works below the natural ground surface. Works by which the watertable is likely to be lowered.*
3	*Works beyond 1 metre below the natural ground surface. Works by which the watertable is likely to be lowered beyond 1 metre below natural ground surface.*
4	*Works beyond 2 metres below the natural ground surface. Works by which the watertable is likely to be lowered beyond 2 metres below natural ground surface.*
5	*Works within 500 metres of adjacent Class 1, 2, 3 or 4 land which are likely to lower the watertable below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land.*

(3) This clause does not require consent for the carrying out of those works if:

(a) a copy of a preliminary assessment of the proposed works, undertaken in accordance with the Acid Sulfate Soil Manual, has been given to the Council, and

(b) the Council has provided written advice to the person proposing to carry out the works confirming that the results of the preliminary assessment indicate the proposed works need not be carried out pursuant to an acid sulfate soils management plan prepared in accordance with the Acid Sulfate Soil Manual.

(4) Consent required by this clause must not be granted unless the consent authority has considered:

(a) the adequacy of an acid sulfate soils management plan prepared for the proposed development in accordance with the Acid Sulfate Soil Manual, and

(b) the likelihood of the proposed development resulting in the discharge of acid water, and

(c) any comments from the Department received within 28 days of the consent authority having sent that Department a copy of the development application and the related acid sulfate soils management plan.

……"

This matter has been addressed in Section 2.6.10 and the Geotechnical Assessment in Appendix 14. Despite ASS being present in bottom sediments below lake water level, the risk of these soils being exposed to oxygen and hence generating sulphuric acid and causing harm to the environment is considered very low given the proposed construction methodology (driving piles into the lake bed). An ASS Management Plan for the proposed construction works is therefore not required and sediments will not be excavated from the lake bed.

7.11.2.14 Clause 50 - Development affecting places or sites of known or potential Aboriginal heritage significance.

Clause 50(1) states that the consent authority must not grant consent for the development that is likely to have an impact on a place of Aboriginal heritage significance or a potential place of Aboriginal heritage significance, or that will be carried on a site of a relic that has Aboriginal heritage significance, unless the consent authority has considered a heritage impact statement detailing how the proposed development would affect the place or relic of significance.

As detailed in Section 8.15 and Appendix 13, detailed Aboriginal Archaeological Surveys and Community Consultation have been undertaken in relation to the proposal. This assessment determined that a recorded Aboriginal site is located in Cullen Park immediately east of the car park area and outside of the proposed development zone. An additional highly disturbed midden deposit was located adjacent to houses on Anderson Parade. In this regard it is relevant to note that this midden will not be disturbed by the proposed footpath/cycleway as this route is narrow, along a highly modified foreshore and has been previously excavated for a sewer main.

7.11.3 Lake Macquarie Development Control Plan No. 1 – Principles of Development

DCP 1 provides guidance to the development of land under LEP 2004 and is intended to act as an integrated planning document in conjunction with LEP 2004. The primary objective of DCP 1 is to implement the Lifestyle 2020 Strategy by facilitating Ecologically Sustainable Development (see Section 8.23). DCP 1 adopts a performance approach to managing development and is represented in the following 3 key components:

- Intent Statements - outlining the underlying purpose of the Council requirements.
- Performance Criteria - detailing what outcomes need to be met to achieve the intent.
- Acceptable Solutions - the means, recommended by Council, of satisfying the performance criteria.

In addition, DCP 1 includes Area Plans which provide detailed place-specific requirements with statements of Desired Future Character and specific design advice. However, no such Area Plan has been prepared which includes the site.

DCP 1 is an extensive document, parts of which will be relevant to the proposed development. DCP 1 provides detailed planning guidelines which development proposals should comply with, the relevant provisions of which have been dealt with in the table overleaf.

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
Section 2.1 – Environmental Responsibility & Land Capability				
2.1.1 – Ecological Values	To conserve the biodiversity of the City and the Region	P.1 – Impacts on native fauna and flora is avoided and minimised.	A.1 – Development is located and designed to avoid or minimise impacts on native vegetation.	Yes. Refer to Flora and Fauna Impact Assessment Report in Appendix 11, the Seagrass Management Plan in Appendix 12 and Section 5.20.
		P.2 – Native Ecological Assessment Reports are conducted with sufficient detail.	A2.1 – Ecological Assessment Reports are prepared and lodged in accordance with Council's guidelines. A2.2 – When native vegetation or fauna habitat is to be affected, the Ecological Assessment Report must address Section 5A of the Act . A2.3 – The Ecological Assessment Report and the "Significance Test" is sufficient to determine whether there is likely to be a significant affect on threatened species, populations or ecological communities or their habitats. A2.6 – Any relevant recovery plans or management plans are appropriately addressed in the flora and fauna assessment. A2.7 – All impacts of the proposed development are detailed on a Site Development Plan and assessed by the Ecological Assessment Report.	(as above)
		P3. – Significant habitat is protected and enhanced on and/or adjoining the site.	A3.1 – Development is designed to avoid impacts on significant habitat. A3.4 – Measures are put in place during construction to preserve habitat. A3.5 – A management plan for retention of	(as above)

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
			significant habitats is prepared. A3.6 – Degraded or areas affected by development are rehabilitated.	
		P7. – Significant habitat in and around the site is protected from external influences.	A7.1 – The development is designed to respect and address the areas to be maintained in their natural condition. A7.2 – A suitable buffer is established between development and areas of significant habitat. A7.4 – Buildings/structures, roads, driveways, parking, fences, infrastructure, drainage, bushfire APZ's, etc are located outside significant habitat areas. A7.6 – Measures are taken to define the physical footprint of the development to make ongoing maintenance efficient and to prevent introduced species.	(as above)
2.1.3 – Scenic Values	To protect and maintain scenic values in the local government area, whether being viewed by land or water.	The Scenic Zone Maps in DCP 1 identify the site within Zone B which is defined as follows: *"Zone B – Is assigned to areas highly valued in the City for the maintenance of the scenic quality and identity of the various localities."* Performance Criteria P1.1 requires development to complement rather than detract from the landscape. Performance Criteria P1.2 requires development visible from/adjoining Lake Macquarie to maintain/ enhance the scenic value of these features.	A1.1 - In Zones A & B, a Visual Impact Statement is prepared in accordance with the Lake Macquarie Scenic Quality Guidelines (2004) that assesses the impact of development and illustrates how any impact will be ameliorated.	Yes. The site is located within Scenic Management Zone B. Refer to Visual Impact Assessment in Appendix 10.
2.1.6 - Water bodies, Waterways and Wetlands	To protect the quality of receiving waters and the ecosystems that rely on those waters.	P1.1 – Water cleaning, hydraulic, and ecological functions are to be preserved. P1.2 – Changes to water regime that could affect ecological values are to be avoided or	A1.1 Proposals to identify the effects of any changes in hydrological conditions and appropriate mitigating measures. A1.2 Proposals to demonstrate that alterations	Yes Refer to Sections 5.18 and 8.17, the Engineering Report in Appendix 20, the Phase 1 Environmental Site Assessment in Appendix

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		minimised. P1.3 – Development should be designed to ensure that watercourses and associated vegetation are protected, water quality is maintained and construction impacts are minimised.	in the water regime will no affect habitat. A1.3 Development should protect natural watercourses and riparian corridors by avoiding disturbance, redirection, reshaping etc.	15 and the Flora and Fauna Impact Assessment Report in Appendix 11.
		P 2 – Lands adjoining a water body are to be managed so as to protect their ecological processes, community and scenic value.	A2.1 – Land adjacent to a water body is managed to retain its ecological processes, community and scenic function.	(as above)
2.1.7 – Flood Management	To reduce the impact of flooding and flood liability on individual owners, occupiers of flood prone property, and adjoining land.	P1. – Satisfy relevant criteria in an adopted Flood Study.	A1. (as per performance criteria)	Yes. Refer to Sections 6.10 and 8.4 and the Engineering Report in Appendix 20.
		P2. – Adequate risk mitigation measures are applied.	A2.1 – Development is consistent with principles contained in the NSW Floodplain Development Manual (2005) and any relevant flood study. A2.2 – Development will not result in adverse impacts on adjoining flood plains and land.	(as above).
		P3. – Development does not result in unacceptable risks due to impacts on flooding behaviour at other locations.	A3. – Proposal is the subject of a local flood study, floodplain management study or plan that considers cumulative impact issues.	(as above).
		P4. – Proposal incorporates adequate measures to manage risks to life.	A4. – Development incorporates measures including evacuation routes, on-site refuge, structural stability, etc OR The proposal incorporates risk management measures as recommended by a flood study.	(as above).
		P5. – New development on flood prone land are located and designed to meet an acceptable level of risk of flood damage.	A5.1 – For All Development: • Buildings and structures are located to avoid impeding floodway	(as above).

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
			areas. • All development uses suitable building materials. • Proposed flood mitigation works are compatible with a Floodplain Management Plan. • Run-off from development is maintained at pre-development levels. For Commercial Development: • Floors are constructed a minimum of 500mm above 100 year ARI.	
		P6. – Additions or alterations to existing development are located and designed to meet an acceptable level of risk of flood damage.	A6.1 – Apply Acceptable Solution A5 for additions and alterations that include habitable rooms.	(as above)
		P9. – Construction methods for development on flood prone land shall be designed and located to meet an acceptable level of risk of flood damage and to minimise the modification of floodplain topography.	A9. – • Concrete slabs may be provided for floor levels created at less than 1m above natural ground level. • Pier and beam construction may be provided. • Fill of up to 1m above natural ground level may be provided where suitably retained. • Fill used to raise the natural ground level must be placed, graded and retained to ensure local drainage is not adversely affected.	(as above)
		P10. – Drainage solutions for development on flood prone land shall be designed to meet an acceptable level of risk of flood	A10. – A site drainage plan shall be prepared and lodged detailing the management for drainage from the development and adjoining	(as above)

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		damage.	sites.	
2.1.10 – Acid Sulfate Soils	To safeguard against the disturbance of acid sulphate soils.	P1. – Minimise the disturbance of acid sulphate soils.	A1.1 – Development is located to avoid disturbance of Potential Acid Sulfate Soils.	Yes. Refer to Geotechnical Assessment in Appendix 14 and Section 2.6.10.
2.1.11 – Erosion Prevention and Sediment Control	To prevent erosion and run-off during site preparation, construction and the ongoing use of land.	P1.1 – Development minimises the exposure of the soil surface to the action of stormwater or wind. P1.2 – Measures are taken to limit sediment laden stormwater discharges and restrict stormwater flows over exposed areas during construction. P1.3 – Stormwater discharges from the site are directed to suitable devices and methods to intercept, retain and remove water borne pollutants.	A1.1 – Development is designed to reduce impacts of erosion by minimising disturbance, retaining vegetation and reducing the need for earthworks. A1.2 – Erosion and sediment control measures to be installed and maintained where the area to be disturbed exceeds 200sqm. A1.3 – Devices used for erosion prevention are designed and constructed pursuant to Council requirements.	Yes. Refer to the Engineering Report in Appendix 20 and Sections 5.19 and 8.20.
2.1.13 – Contaminated Land	To ensure there is no unacceptable risk to human health or the environment from that may have been previously contaminated.	P1.1 – The level of contamination is clearly identified and addressed. P1.2 – The site is remediated and the works are reviewed and validated before the land is used. P1.3 – The proposal demonstrates how contaminants that are proposed to remain on the site will be monitored.	A1.1 – A Preliminary Site Investigation Report is prepared and lodged where required. Where contaminants are found within the site, a Detailed Investigation Report may be required.	Yes. Refer to the Phase 1 Environmental Site Assessment in Appendix 15 and Section 2.6.12.
2.1.14 – Energy Efficiency	To reduce the use of non-renewable resources and greenhouse gas-emissions.	P3. – Commercial, tourist and similar forms of development must be designed to ensure compliance with Section J of the BCA.	A3. – As per Performance Criteria.	Yes. The development will comply with Section J of the BCA. Refer to Building Code of Australia 2009 Compliance Report in Appendix 24.
2.1.15 – Noise and Vibration	To ensure that any noise and vibration source will not affect the surrounding population.	P1. – Development is carried out so that no intrusive or offensive impacts from noise are caused to the surrounding population.	A1. – Noise complies with NSW EPA Industrial Noise Policy and NSW EPA Environmental Noise Control Manual.	Yes. Refer to Noise Impact Assessment in Appendix 17.
		P2. – Construction of development is carried out so that no intrusive or offensive impacts	A2. - Noise complies with NSW EPA Industrial Noise Policy and NSW EPA Environmental	(as above)

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		from noise are caused to the surrounding population.	Noise Control Manual.	
		P3. – Operation of development is carried out so that no intrusive or offensive impacts from noise are caused to the surrounding population.	A3. - Noise complies with NSW EPA Industrial Noise Policy and NSW EPA Environmental Noise Control Manual.	(as above)
2.1.17 – Building Waste Management	To reduce the disposal of construction and demolition waste to landfill by promoting waste avoidance, reuse and recycling.	P1. – The reuse of and recycling of material is maximised and waste disposal is minimised.	A1.1 – A Waste Management Plan is prepared.	Yes. Refer to Waste Management Plan in Appendix 25 and Sections 5.21 and 8.20.
2.2 – Social Impact				
2.2.1 - Social Impact Assessment	To ensure that development will provide positive community benefits to the locality and the City.	P1 - Development maintains and/or enhances Social Equity of the community affected by and/or likely to result from the proposed development, both now and into the future.	A1.1 & A1.2 - A Social Impact Assessment is prepared and lodged with the appropriate level of documentation as per the detailed solutions for Category 1 as well as the additional requirements for Category 2 developments.	Yes. A Social and Economic Impact Statement has been prepared by Insite Planning (see Appendix 18).
2.3 – Economic Impact				
2.3.1 – Economic Impact Assessment	To demonstrate that development will provide positive economic benefits to the locality and the City.	P1. – Development positively contributes to the economic growth of the City and is in accordance with the intentions of the land use zone. Development contributes to the creation of employment and economic benefits.	A1. – An Economic Impact Assessment is prepared where development is designated development as listed in Schedule 3 of the EP& A Regulations (see Section 7.8.1).	Yes. A Social and Economic Impact Statement has been prepared by Insite Planning (see Appendix 18).
2.4 – Heritage				
2.4.3 – Aboriginal Heritage Items and Sites.	To assist the community to protect and conserve Aboriginal cultural, spiritual and sacred sites within the City.	P1. – For Aboriginal objects and places, development is permitted where it has the approval of the Department of Environment & Conservation and the support of the Local Aboriginal Community.	A1. – The requirements of the Local Aboriginal Community and the Department of Environment & Conservation must be considered and reflected in a DA.	Yes. Refer to Heritage and Archaeological Assessment in Appendix 13.
		P2. – For sites, relics and placed identified by the Local Aboriginal Community or	A2. Refer to Acceptable Solution A1.	(as above).

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		Council, development is permitted where it has the support of the local Aboriginal community.		
2.5 – Stormwater Management, Infrastructure and On-Site Services				
2.5.1 – Essential Infrastructure	To ensure the provision of essential infrastructure to all development in a manner that minimises environmental impacts.	P1.1 – Essential infrastructure is efficiently provided to all development including the delivery of water, electricity, communications, sewage, reticulated natural gas.	A1.1 – Development in the 6(2) Tourism and Recreation zone must be capable of connection to a reticulated sewerage system. Electrical, communication and natural gas infrastructure to be provided to new developments.	Yes Refer to Engineering Report in Appendix 20 and Section 5.15.
		P2. – Location and design of essential infrastructure minimises adverse environmental impacts in the short and long term.	A2.1 – Location of infrastructure avoids areas of ecological or scenic value and/or water bodies, waterways and wetlands. A2.2 – Essential Infrastructure is designed as an integral part of the development. A2.3 – Drainage, sewerage and sullage systems are designed so that overflows do not enter residences.	(as above).
		P4. – Essential infrastructure is accessible, easy to maintain, uses available technology and is cost effective.	A4. – Compatible infrastructure is co-located in shared underground trenching.	(as above).
2.5.3 – Stormwater Management (Drainage System Design)	To ensure stormwater systems are carefully planned, designed and located to prevent disturbance of watercourses and associated vegetation, and to protect quality of receiving waters.	P1.1 – Stormwater drainage system is planned to ensure watercourses and their associated vegetation are protected from disturbance, redirection, reshaping or modification. P1.2 – Stormwater planning, including site layout, is undertaken to ensure - design takes full account of the existing downstream systems; controls are incorporated into the design to minimise the impacts on water quality and quantity of runoff from the site; the system is accessible and easily maintained; maintenance access is available	A1.1 – Drainage design system to comply with Council's design and construction requirements and to protect natural water courses/riparian zones. A1.2 – A stormwater management plan is prepared. A1.3 – A comprehensive water cycle strategy is prepared.	Yes. Refer to Engineering Report in Appendix 20 and Section 5.18.

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		to those parts of the system on private land. P1.3 – Developments are designed and constructed in accordance with a comprehensive water cycle strategy.		
		P2.1 – Stormwater discharge to surface and underground waters does not degrade the quality of receiving waters. P2.2 – Stormwater management system optimises the interception, retention and removal of water borne pollutants. P2.4 – Stormwater management system minimises the environmental impact of urban run-off on the quality of surface or ground receiving waters and on other aspects of the environment. P2.5 - For commercial development, the first flush is diverted from sensitive areas or treatment systems are installed to minimise polluted run-off entering receiving waters. P2.6 – For proposal draining directly into the Lake, measures appropriate to the site are incorporated.	A2.1 – Development complies with the provisions outlined in Managing Urban Stormwater – Soils and Construction (1998). A2.2 – Refer to Section 2.1.11 – Erosion Prevention and Sediment Control. A2.4 – Water pollution control ponds or other water quality improvement devices are provided. A2.5 – Water quality protection measures are incorporated into the development. A2.6 – Stormwater systems that slow run-off and minimise erosion and maximise cleaning of the run-off are installed.	(as above)
		P3.1 – Natural water bodies, waterways and vegetation are retained and protected from increased stormwater flows. P3.2 – On-site detention of stormwater is required for residential developments of more than 2 lots.	A3.1 – A variety of controls are provided to minimise the increase in stormwater flows. A3.2 – Development complies with "Handbook for Drainage Design Criteria" (LMCC 2003).	(as above)
		P4.1 – For the major drainage system there is the capacity to safely convey stormwater flows from the relevant design storm and from more extreme events without any	A4.1 – Development complies with "Handbook for Drainage Design Criteria" (LMCC 2003).	(as above)

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		blockage or property damage		
		P5.1 – For the minor drainage system, there is a capacity to control flows under normal operating conditions for the relevant ARI design storm. P5.2 – Drainage works are well defined, ensuring no hidden flow paths and minimising undesirable ponding for a prolonged period.	A5.1 – Development complies with "Handbook for Drainage Design Criteria" (LMCC 2003). A5.2 – Ponding is limited to a maximum of 72 hours for non road surfaces.	(as above)
		P6.1 – The system has the capacity to control site surface stormwater flows and any excess flows from upstream properties to prevent stormwater from entering buildings in the design event. P6.2 – The system minimises undesirable ponding for a prolonged period. P6.3 – A variety of source control measures are incorporated into the design, where soil conditions allow, that minimise the quantity of stormwater runoff. P6.4 – Development is located and designed to prevent water inundation as a result of incidental flooding.	A6.2 – Following rainfall, no area is ponded to a depth greater than 50mm after one hour. A6.3 – If soil conditions are suitable, soakage chambers are installed within the property with overflow via an interlot drainage system. A6.4 – Proposed cut and fill considers the implications of incidental flooding.	(as above)
2.6 – Transport, Parking, Access and Servicing				
2.6.2 – Traffic Generating Development	To apply the Movement System provisions of this DCP to SEPP (Infrastructure) 2007.	P1. – Development with high traffic generating potential adequately considers transport/land use issues.	A1.1 – The proposal complies with Performance Criteria and Acceptable Solutions detailed in Sections 2.6.3 to 2.6.12 (where relevant). A1.2 – A Traffic Impact Statement for development identified in Schedule 1 and 2 of SEPP (Infrastructure) 2007) is prepared and lodged.	Yes. Refer to Traffic and Parking Assessment in Appendix 16 and Sections 5.11 and 5.12.
2.6.4 – Pedestrian	To ensure the provision of	P1. – Road and path networks provide	A1.1 – Pedestrian and cycle paths comply	Yes.

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
and Cycle Paths	accessible, well located and designed pedestrian and cycle paths.	pedestrian and cyclist paths with connections to local and higher order roads, open spaces and activity centres. The alignment of paths is designed to be varied to add visual interest and located to protect the natural foreshore.	with the design and construction requirements detailed in Volume 2 Engineering Guidelines and Austroad 14 Bicycle Standards. A1.2 – Pedestrian and cycle connectivity is provided within the road network and/or as a component of the open space network. A1.5 – Pedestrian and cycle paths are of a width and design that reflect their expected usage and complement the local natural attributes of the foreshore.	Refer to the Traffic and Parking Assessment in Appendix 16 and the Landscape Plans in Appendix 9. Also refer to Sections 5.8 and 5.11.
2.6.6 – Vehicle Parking Provision	To ensure that development is provided with adequate and well designed on-site car parking.	P1. – Development achieves adequate provision of on-site parking that is clearly defined, safe and easily accessible.	A1.1 – The provision of parking complies with Table 4 – Vehicle Parking Provision. Table 4 requires the following: Clubs – 1 space plus 1 space per 15sqm GFA. Marina – (no Council requirements – to be justified in Traffic Impact Assessment). Restaurant – 1 space per 10sqm. A1.2 – Where a variation to the requirements of Table 4 is sought (or a rate is not defined), it is supported by a Traffic Impact Statement. A1.3 – Single file parking is included in the provisions of the number of vehicle parking spaces where identified as suitable in Table 4. A1.5 – Where an existing building is altered/extended/remodelled, the number of parking spaces is calculated having regard to the extent of change and the parking spaces already provided. A1.6 – Parking provision for proposals with a variety of land uses is calculated on each use within the development. A1.7 – Parking may be reduced where it is demonstrated parking will be used to access a	Yes. Refer to the Traffic and Parking Assessment in Appendix 16 and Sections 5.2.3 and 5.11.

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
			variety of activities within the development. A1.9 – Where parking requirements exceed 5 spaces, marked and signed spaces for persons with a disability shall be provided at the rate of 1 space per 50 spaces with a minimum of 1 space. A1.10 – Disabled spaces to be provided adjacent to entries of development. A1.11 – Disabled spaces to be provided in accordance with AS2890.1.	
		P2. – On-site vehicle parking does not detract from the aesthetics or amenity of the locality and discourages on street parking.	A2.1 – The car park is appropriately designed, landscaped and located to provide adequate shade, access, surveillance and safety for users. A2.2 – The car park area's drainage system is designed to meet the intent of Section 2.5.3.	(as above).
2.6.7 – Car Parking Areas & Structures	To ensure car parking areas and/or structures are well sited and designed.	P1. – Car parking areas and structures are designed to: - provide clear internal movement hierarchy; be easily negotiated by vehicles and pedestrians; ensure vehicles do not reverse into areas of high pedestrian activity; ensure traffic congestion does not adversely affect the external traffic system; optimise safety and security of users; ensure stormwater systems protect the quality of receiving environment; provide a clearly defined/readable, logical pedestrian network.	A1.1 – Layout of parking areas complies with hierarchy of internal movement as set out in the DCP. A1.3 – Long, straight circulation roads and aisles and large areas of open car parking are avoided. A1.5 – Car park drainage system to meet requirements of the DCP. A1.6 – Wheel stops to be provided 500mm from the closed end of the car park space. A1.7. – Dead end aisles are avoided. A1.8 – Cross intersections are avoided, especially between parking and service areas. A1.9 – Aisles intersect circulation roads and circulation aisles at angles greater than 75 degrees. A1.10 – Parking aisles are orientated at right	Yes. Refer to Architectural Drawings in Appendix 8, the Traffic and Parking Assessment Report in Appendix 16 and the Engineering Report in Appendix 20.

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
			angles to the main building frontage (mainly where parking is located in front of building). A1.11 – Circulation roads comply with Table 5 – Minimum Circulation Road Widths. A1.12 – Gradients in car parking areas to comply with AS2890.1 and Table 6 – Desirable Maximum Grades. A1.13 – Gradient across a car park space does not exceed 1 in 20 (5%). A1.14 – Minimum gradients are defined by drainage requirements. A1.15 – Widths of car spaces to comply with Table 7 – Minimum Car Space Widths. A1.16 – Some spaces (such as where aisle widths are constrained) are wider (up to 3500mm). A1.7 – If a side boundary of a space is adjacent to an obstruction greater than 150mm high and places so as to restrict doors from opening, 500mm is added to the width of the space. A1.18 – Except for small car spaces (5m) and parallel parking spaces, all bays are 5.4m in length. A1.20 – Parking areas are designed for a progressive reduction is speed between the external road and the internal parking space. A1.21 – Lower speeds are required near areas of high pedestrian activity. A1.22 – Sight distances are appropriate for the likely operating speeds in all areas of potential pedestrian/vehicle conflict (sight distances of at least 2.5 seconds of travel time at the likely prevailing speed). This may	

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
			require splayed corners. A1.23 – A clearly defined pedestrian network is provided in car park areas. A1.24 – Provision is made for pedestrian and vehicular queues at conflict points. A1.25 to A1.27 – Signage is erected on site to control traffic movements, indicate access points, etc. Illuminated signs to be provided where traffic movements may occur at night. A1.28 – Appropriate lighting is provided.	
		P2. – Car parking areas are landscaped to provide shade and allow infiltration of stormwater.	A2.1 – Landscaping of car parks meets Council requirements. A2.2 – Evergreen shade trees and ground covers are selected. A2.3 – Suitable species of shade trees are planted at the end of each row and in the middle of parking rows with more than 15 car spaces/or after every tenth parking space.	Yes. Refer to Architectural Drawings in Appendix 8.
2.6.10 – Servicing Areas	To provide appropriate facilities for service vehicles.	P1. – Layout of development achieves adequate provision for on-site servicing that is clearly defined, safe and easily accessible.	A1.1 – The design and site layout provides for the operational requirements of service vehicles, pursuant to Council guidelines. A1.3 – Access for waste collection vehicles to bins and compactors are kept clear.	Yes. The proposed site layout can accommodate service vehicles.
2.6.12 – Non-Discriminatory Access and Use	To ensure equitable access for all members of the community.	P1. – Non-discriminatory access is provided to and within the development.	A1. – Development complies with the BCA and AS1428 Parts 1,2,3 and 4 – Design for Access and Mobility.	Yes. Refer to Disability Access Report in Appendix 26 and BCA Compliance Report in Appendix 24.
Section 2.7 – Streetscape and the Public Realm				
2.7.1 – Streetscape and Local Character	The enhancement and creation of attractive, pleasant and safe streetscapes.	P1. – Streetscape built form and landscape: - achieves an attractive setting with a clear character and identity; respects and responds to existing streetscapes in established areas; recognises existing street	A1.1 – Buildings and landscapes are designed to reflect the local context and the positive features of the prevailing character and streetscape. A1.2 – Buildings are designed to enhance	Yes. Refer to Architectural Drawings in Appendix 8, the Landscape Drawings in Appendix 9 and the Visual Impact Assessment in Appendix 10.

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		character; provides for appropriate street tree planting, etc.	mass and proportion, roof form, façade articulation, access driveway locations, verandahs, eaves and parapets and fence style. A1.5 – Landscaping considers the placement and the mature height of plantings to ensure natural surveillance of areas and access/egress points.	
2.7.2 – Landscape	The provision of site landscaping, using local indigenous species wherever possible, that is appropriate to the nature and scale of the development.	P1 and P2. – A Category 3 Landscape Plan and Design Statement is prepared by a Landscape Architect.	A1 and A2. (as per Performance Criteria).	Yes. Refer to Section 5.8 and Landscape Design Report and Landscape Concept Plans in Appendix 9.
		P3. – Proposals demonstrate that the landscape design: • is responsive to site characteristics and recognises the landscape context, • supports the retention, regeneration and enhancement of areas of ecological value, • contributes to energy and water efficiency, • supports pedestrian, cyclist and vehicular flows, • considers the needs of people who are mobility and visually impaired, • reduces risk to personal safety and the potential for crime/vandalism, • retains and protects heritage items or places, • clearly defines spaces and usage. • minimises the impact of, and supports	A3. – The appropriate level of documentation is prepared and lodged demonstrating how the proposal meets the relevant requirements of Acceptable Solution A1.	(as above)

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
		the function of the built form, movement system and parking facilities, • effectively screens service areas, reduces noise impacts and highlights views and vistas, • is an integrated component of stormwater management, • minimises bushfire hazard, • can be reasonable maintained over the life of the development.		
2.7.3 – Public Open Space	To ensure the provision of well located and accessible public open spaces that meet user needs.	P2. – Open space provides for recreational, aesthetic, environmental and stormwater management needs.	A2.2 – Where a connection is established between the development and nearby open space, Council will provide direction to the applicant.	Yes. Refer to upgrading works within Cullen Park in Section 5.8 and the Landscape Drawings in Appendix 9.
2.7.4 – Pedestrian Networks and Places	To provide quality pedestrian networks and places that are accessible and designed to meet user needs.	P1. – Street level design develops a strong link between internal and external pedestrian places.	A1.1 – Buildings abutting pedestrian places are devoted to people oriented activities that maintain visual connections and casual surveillance. A1.2 – Where appropriate, development reinforces the streetscape with a built form edge and provides setbacks for plazas, colonnades and footpath extensions.	(as above).
		P4. – Design of pedestrian paths and places reinforces the desired future character of the area and/or Centre.	A4. – Development complies with the BCA and AS1428 and will depend upon the location of the development.	Yes. Refer to Disability Access Report in Appendix 26.
		P5. – Location, design and provision of pedestrian facilities (in and around developments) achieves a high level of user amenity, comfort and safety. Appropriate streetscape design is included in the development, including street trees and paving.	A5. – Pedestrian and public spaces are designed in accordance with the provisions of the DCP.	Yes. Refer to upgrading works within Cullen Park in Section 5.8 and the Landscape Drawings in Appendix 9.

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
2.7.6 - Views	To ensure development does not unreasonably impact or intentionally obstruct views from areas of high public usage, or from existing or future private development.	P1. - For public views (defined as views enjoyed from parks, the lake, lookouts, streets & other public areas which are integral to the Lake Macquarie identity), development should preserve views of significant buildings, environments & landmarks, and maintain the visual character of the City.	A1.1 – Development is of appropriate height, setback, design and siting to preserve significant public view corridors. A1.2 – Development maintains vistas to places of heritage or scenic significance.	Yes. As detailed in Sections 2.8 and 8.11 and the Visual Impact Assessment in Appendix 10, public views will not be adversely affected in any significant way.
		P2. – Vistas along streets are preserved or enhanced through sensitive landscaping and building location, form and design.	A2.1 – Development is designed to complement existing built form and not dominate public views. A2.2 – Trees and landscaping are used to frame, filter or otherwise enhance views by concentrating planting at the front and side of buildings.	Yes. As detailed in Sections 2.8 and 8.11 and the Visual Impact Assessment in Appendix 10 vistas along streets will not be altered in any significant way.
		P3. – For private views, development allows for the reasonable sharing of views through the siting, height and design of buildings.	A3. – Design of development minimises impacts on private views and shares views where necessary by: • Adjusting bulk, form and setbacks of new development to minimise loss of views from living areas and verandahs of neighbouring residences. • Locating garages, fences and walls to avoid blocking of views. • Avoiding large flat expansive roofs with vents, air-conditioning units, etc. • Minimising floor to ceiling heights. • Using vegetation to enhance views. • Using hipped or gabled roof forms. Development reinstates and/or enhances existing vistas and views to and from the site	Yes. This matter is dealt with in Sections 2.8 and 8.11 of the SEE and the Visual Impact Assessment in Appendix 10.

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Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
			and considers existing private access to views.	
2.7.9 – Safety and Security	To discourage crime and increase casual surveillance, safety and security.	P1. – The proposed development: • maximises actual and perceived safety within the community through design, • encourages the public and private use of all spaces to maximise safety, • provides for surveillance or public spaces and private entries adjoining public spaces.	A1.1 – Site planning provides a clear definition of territory and ownership of all private, semi-public and public places. A1.7 – Development minimises opportunities for concealment and avoidance of "blind" corners. A1.8 – Planting and fencing does not reduce the safety of users. A1.9 – Pedestrian site access through a site is clearly defined. A1.12 – A CPTED Assessment is prepared for developments which consist of Clubs.	Yes. Refer to Section 8.8 and the Safer By Design Report in Appendix 22.
3.1 – Lake, Waterway and Coastline Development				
3.1.1 Development adjoining the Lake and Waterways	To ensure development maintains and enhances the ecological, community and scenic values of the Lake and its tributaries.	P1. – In general, for all development • the physical and ecological integrity of the foreshore is preserved and where possible, restored and enhanced. • Development does not affect the visual character of the setting. • Development does not result in alteration of the natural ground level of the foreshore. • Development provides for management of lands, in private ownership, for its ecological, community and scenic values. • Development or redevelopment on foreshore areas promotes the restoration of the foreshore building line and public access.	A1.1 - A Visual Impact Statement is prepared and lodged in accordance with 2.1.3. A1.2 – Land between the foreshore building line and the DHWM is managed to retain any identified functions A1.4 – The development maintains the natural ground level of the foreshore and the existing foreshore vegetation. A1.5 – Development incorporates the planting of appropriate native species to secure the lake/or waterway foreshore. A1.6 – Where the proposal will cause disturbance to acid sulfate soils the requirements of 2.1.10 are met	Yes A Visual Impact Assessment has been prepared and is included in Appendix 10. Matters relating to improvements along the foreshore have been dealt with in Section 8.6. The proposal will improve the physical and ecological integrity of the foreshore and will not impact on the visual character of the setting. The natural ground level will not be altered in any significant way and the public access to the foreshore will be improved. Matters relating to ASS have been dealt with in Section 2.6.10 and the Geotechnical Assessment in Appendix 14.
3.1.2 Development in or adjoining the	To ensure that development does not adversely impact on the City's	P2.1 – For development adjoining the Coastal Zone – The proposal, its siting,	A2.1 The development demonstrates that its siting, construction and use does not	Yes This has been dealt with in Sections 8.2, 8.3

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
Coastal Zone	coastal lands.	design and construction are suited to its location.	negatively affect: • The natural processes of coastal lands, • Marine Environments of coastal waters, • Coastal water quality, • Scenic values associated with the coastline, • The ecological heritage values of the coast.	and 8.4 as well as the Visual Impact Assessment in Appendix 10, the Engineering Report in Appendix 20 and the Flora and Fauna Impact Assessment in Appendix 11.
		P2.2 – The proposal illustrates that it is not at risk from hazards associated with coastal lands.	A2.2 – The structures and buildings are located outside the 100 year Coastal Impact Zone unless the development is for a purpose that by its nature has to be within the Coastal Impact Zone. • The development is structurally designed so as not to be at risk from coastal processes (i.e. wind, sand, soil, salt or land movement), normally associated with a coastal location. • The development will not necessitate the expenditure of public funds for coastal protection works within the 100 year planning period.	Yes This matter has been dealt with in Sections 6.10, 8.2, 8.3, 8.4 and the Engineering Report in Appendix 20.
		P2.3 – The proposal results in the conservation enhancement and appreciation of the coastal corridor.	A2.3 – Disturbance is minimised and the development does not result in a net loss of native vegetation. Development is designed and located so as not to adversely affect natural areas in the Coastline Management Plan.	Yes Matters relating to improvements along the foreshore have been dealt with in Sections 5.8 and 5.20 and the Landscape Plans in Appendix 9.
		P2.5 – Facilitates and/or increases public access to and public appreciation of the coast.	A2.5 The development makes provision for or constructs the coastal walk and provides public access and educational material.	Yes Matters relating to improvements along the foreshore have been dealt with in Section 5.8. The proposal will improve the physical and ecological integrity of the foreshore. The

Table 10: Lake Macquarie DCP No. 1

Clause	Intent of Clause	Performance Criteria	Acceptable Solutions	Compliance
				natural ground level will not be altered in any significant way and the public access to and along the foreshore will be improved.
		P2.6 Public ownership of coastal land is increased.	A2.6 - Development results in an increase of publicly owned land along the coast.	(as above).

7.11.4 Lake Macquarie City Council Scenic Quality Guidelines 2004

The Lake Macquarie City Council Scenic Quality Guidelines 2004 ("Scenic Guidelines) are intended to assist in the preparation of a Visual Impact Statement ("VIS") as required in Section 2.1.3 of DCP No. 1. The site is located within Scenic Management Zone B, which is described as follows:

> *"Zone B*
>
> *"Is assigned to those areas that are highly valued in the City for the maintenance of the scenic quality and identity of the various localities. Zone B areas have a Visual Accessibility rating of Moderate or Low and a Medium Scenic Quality Rating."*

As the site is located within Scenic Management Zone B, a VIS has been prepared pursuant to the provisions of DCP No. 1. The Visual Impact Assessment concludes:

> *"The subject site currently contains the Yacht Club, marina and carpark. The proposed scheme is an extension of an existing lakeside tourism/recreation typology and a new Club building located within the general footprint and form of the existing building; having a moderate affect on scenic quality.*
>
> *Five viewpoints were attempted from within with greater visual catchment area. Of these viewpoints, those with highest viewer access are located north of the site at the Belmont Lions Park (Viewpoint 5) and the public open space adjoining the lake adjacent to Brook's parade. Viewer access from other attempted viewpoints (Viewpoint 1, 2, 3 & 4) is considered low due to generally low traffic levels, viewer distance to the site and the residential nature of these areas.*
>
> *Five photomontages were then developed from viewpoints within closer vicinity to the site. From the elevated viewpoints E2 and C2 it is evident that the proposed development will have an impact on the visual quality of Belmont Bay.*
>
> *The proposal incorporates the objectives of both the LMCC's Scenic Quality Guidelines (LMC2 Consulting 2003) and the Coastal Design Guidelines (Coastal Council 2003) and the LMCC's Development control plan.*
>
> *The key landscape treatment recommended by this report is; canopy planting to screen the proposed car park to increase the general scenic quality of the area as viewed from the noted viewpoints. If these measures are taken, scenic quality will be increased in the area adjoining the foreshore by softening the detrimental effect of the carpark.*
>
> *Other than close viewing location, the height of the proposed building does not break the height of the ridgeline backdrop, nor is it excessively obtrusive when viewed from the lake. The most noticeable contrast will be the marina extension screening natural views across the lake and the concentrations of masts against the sky extending further into the lake due to the marina extension. The proposed canopy tree planting to the formalised foreshore based parking area will reduce the effect to the carpark on the scenic quality of the area. Only one tree is proposed for removal. In addition, many new trees will be planted on site for screening and amenity (refer to the landscape master plan – Appendix – E). It is considered the natural visual environment is generally maintained and will remain significant to the character of Belmont.*
>
> *The VIS has found that the proposed development will have a moderate impact on the scenic quality of the surrounding areas considering proposed landscape treatments, and the existing land use and fabric of the Lake and its surrounds."*

8. ANALYSIS OF KEY ISSUES

8.1 Site Suitability

The suitability of the site for the proposed development is dealt with in Section 2. The LMYC has existed on the site since around 1934. The clubhouse and marina is recognised as an important part of the numerous community and recreational services provided within and around the lake. The dwellings surrounding this part of Lake Macquarie have co-existed with LMYC for over 70 years.

The LMYC is an established sailing club and community facility and the proposed redevelopment will take place on land and water that is already part of the area used presently by the LMYC. This includes the areas of the waterways that are presently commercial swing moorings licensed to the LMYC that will be removed as part of the development. The proposal therefore comprises the redevelopment of an existing facility, rather than the provision of a new facility within a "Greenfield" precinct of the lake. The existing LMYC is located in an ideal location on the eastern shores of the lake, within a sheltered cove which is considered to be suitable for the proposed expansion and redevelopment.

The site is not affected by any heritage listing and as detailed in the Aboriginal Site Surveys in Appendix 13 no aboriginal artefacts will be affected by the proposal. The City's heritage resources will therefore be protected by the proposed development.

As detailed in the Flora and Fauna Impact Assessment in Appendix 11, both the land and water based components of the site are able to accommodate the development proposed without any significant adverse environmental impacts.

It is therefore considered that the site is eminently suitable for the proposal.

8.2 Coastal Processes and Climate Change

The Engineering Report and Hydrodynamic Assessment in Appendix 20 provides a comprehensive assessment of both existing conditions and the impacts of the development associated with coastal processes and climate change. This includes an assessment of impacts associated with wind action, wave action, coastal erosion, climate change and sea level rise. Matters associated with sea level rise are also addressed in Sections 6.10 and 8.4 of the EA.

An extensive series of simulations was undertaken to determine the impacts of the proposed extension on hydrodynamics and wave action. Simulations were carried out in both typical moderate wind situations as well as the 1 in 50 year wind, with sea level rise factored in. An adjustment of 7% was made to estimates of the west and north-west winds in accordance with the estimates to CSIRO and Bureau of Meteorology of likely increases in extreme winds associated with climate change. The 1 in 50 year wind, with sea level rise, is the design condition for the marina and results in significant wave heights approaching the marina of 1.1m and within the marina of about 0.55m or less.

Sea level rise will also cause an increase in the lake's tidal prism and peak tidal elevations. Tidal pumping will increase the mean water level in the lake by about 40mm and increase in the tidal range will add a further 42mm to peak tidal elevations in "average" conditions. This additional 82mm for the "average" tide peak will be additional to sea level rise itself. To simulate sea level rise, the modelling was run with all depths increased by 910mm, providing a tidal maximum level including sea level rise of around 992mm.

The Hydrodynamic Assessment showed that sea level rise and the associated increase in depths in the lake appear to have only a small impact on the wave climate. There are only small increases in significant wave height that were evident in the comparative simulations undertaken. The wave skirt around the proposed marina would attenuate the wave (as is currently the case) and distort the wave field. This causes reflection and diffraction around the corners of the marina. However, at the shoreline (where potential erosion may occur or seagrass wrack may accumulate), there is no measurable difference in the wave climate when compared with simulations of the existing development.

The wave climate within the proposed marina would reduce resuspension of sediments and this would improve light transmission in that area under windy conditions. The lake bed stresses due to wave action would also generally be reduced, increasing the potential for the establishment of seagrasses within the bounds of the proposed marina (as is evident in the existing marina). The design of the proposed wave skirt, in particular the substantial gap beneath the skirts, would allow reasonably free flow through the system with minimal turbulence derived from the skirt itself, apart from the immediate small scale wakes imposed by the gaps in the skirt. These will be well above the benthic system and will not cause bottom disturbance. The new marina piles will result in turbulent wakes, however, these will generally be at very low velocities and are unlikely to cause scouring beyond the immediate vicinity (around 1 metre) of the pile.

The western skirt of the proposed marina (see Section 8.3) would be the most important in reducing wave action in the marina because most waves approach the marina from the west due to the bathymetry of the Lake. The proposed western skirt, with a depth of 2.4m and 200mm boards with 18mm gaps, would reduce approaching wave heights of 1.2m to the acceptable level of 0.6m within the marina basin. The northern and southern skirts are not subject to such high direct wave impingement with the waves approaching them at acute angles which significantly reduces transmission. As detailed in Section 8.3, it is proposed that these skirts would be 1.8m deep with 200mm boards spaced at 60mm gaps, which is 600mm deeper than the existing skirts (and the gaps between the boards are 25mm less). In such conditions, waves perpendicular to the skirt would transmit about 72% of the wave height.

The existing wave climate generated by the existing wind climate is detailed in Section 8.3. The proposed marina extension would penetrate a zone of waves in excess of 0.6m and attenuate this. On the downwind side a much larger protected area is created reducing wave heights further north of the existing marina, in addition to the reductions that would occur north of the proposed marina. Despite these changes occurring in moderately deep water, there is little evidence of change occurring at the shoreline, where the filled car park has the dominant effect, along with bottom frictional effects in much shallower water. The simulations undertaken in the Hydrodynamic Assessment in Appendix 20 show the wave climates for north-easterly winds with similar indications of insignificant impacts on the shoreline and reduced wave height within and immediately adjacent to the marina.

When the potential impact of 1 in 50 year winds with raised sea level (increased depth of 910mm) is modelled, the additional sheltering effect of the proposed marina is again evident. However, even in these extreme wind conditions the effects do not impact significantly on shoreline conditions.

The NSW Government's Coastline Management Manual provides guidance on identification and management of coastal hazards to development and guidance on protection and enhancement measures. This EA has included an assessment of existing site conditions and the proposed redevelopment with consideration to the Coastline Management Manual. The concept designs have been developed with consideration of coastal processes. Management strategies to mitigate impacts from the identified hazards can be readily implemented for the proposed redevelopment and will include the following:

- Provision of hydrodynamically modelled wave skirts along the marina as detailed in Appendix 20 and above to attenuate and control wave heights within the marina.

- The design of the marina, clubhouse and carpark extension to appropriate wind loading for coastal areas under Australian Standards.
- The proposed clubhouse finished ground level will be set above estimated peak 1 in 100 year flood levels for the lake, with allowance for revision to flood levels due to sea (lake) level rise and other climate change impacts through the design of an adaptable floor structure (see Section 6.10).
- The proposed foreshore works will improve the stability of the existing shoreline and provide improved protection against coastline erosion.
- The existing bitumen car park is not currently subject to erosion and the proposed extensions will be designed to ensure this integrity is maintained. The construction of a concrete edge beam and suspended slab structure supported by driven piles over the existing sloping rock wall, will improve the stability of the carpark edges without detracting from the wave dissipating role of the existing rock wall (see Section 8.3).
- Appropriate construction materials for coastal environments will be specified for the proposed works, in accordance with relevant Australian Standards and building codes to reduce the risk of corrosion.

8.3 Hydrodynamic Impacts

As detailed in Section 8.2, the currents in Lake Macquarie are very small under tidal influence alone and the most significant motion is wind driven. The simulations undertaken in the Hydrodynamic Assessment in Appendix 20 demonstrate that there will be negligibly small impacts on advection and dispersion of buoyant materials and solutes contained in wind and tide driven flows as a result of the proposed marina. These simulations also provide clear predictions of unchanged movement of sea-grass wrack and together with the unchanged shoreline wave-climate indicate that changes in sea grass wrack would not be measurable.

There will be some resistance to flows into and within the proposed marina (as is currently the case) but this has been minimised by focussing wave attenuation (ie. the marina skirt) on the western side of the marina, which is parallel to the major flow directions which are north-south, parallel to the shore. The existing wave skirt consists of 200mm boards separated by 85mm gaps. The boards extend 1200mm below the surface, in water which is around 3.3m deep. The existing marina also has around 430 piles of approximately 330mm diameter in typically 3.3m of water. The proposed marina will have approximately 350 new piles and the north and south sides of the proposed marina will have a skirt depth of 1.8m and 200mm boards spaced at 60mm centres. As the structure reduces currents and wave action, there will be reduced turbulence within the new marina. Immediately adjacent to the new marina (ie. the new flow obstacles associated with the piles and skirts), there will be turbulent wakes, however, these will dissipate within a few metres.

8.4 Sea Level Rise and Flooding

Matters relating to sea level rise have been dealt with in Sections 6.10, 6.11 and 6.12 of the EA as well as the Engineering Report in Appendix 20. No further assessment is required in this regard.

Matters relating to flooding have been addressed in the Engineering Report in Appendix 20 and also discussed in Section 2.6.2 dealing with sea level rise. A Preliminary Flood Emergency Response Plan and Flood Evacuation Plan has also been provided in Appendix 20. The NSW Floodplain Development Manual provides guidance on the use, occupation and development of flood prone land. The intent of the NSW Government's Flood Prone Land Policy (on which the manual is based) is to reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property and to reduce public and private losses. At the same time the policy recognises the benefits flowing from the use, occupation and development of flood prone land.

The proposed development has the potential to be flood affected. The existing clubhouse has been exposed to several extreme storm events which have resulted in flooding of foreshore areas. Such floods occurred in 1974 and June 2007, however, we understand the clubhouse has never been inundated. The normal still water level for the lake has been adopted by Lake Macquarie City Council as 0.15m to the AHD. The existing clubhouse floor level is approximately 1.2m AHD. As detailed in Section 6.10, a ground floor level of 1.98m AHD has been proposed for the new clubhouse following close consultation with Council, DECCW and consideration of the site specific nature of the development, current Council flood planning levels, wave action, storm surge and provision of future sea level rise. As detailed in Section 6.10, the clubhouse has been designed and constructed with an adaptable ground floor level to be raised in future as required.

Detailed design of the proposed new clubhouse and marina will include consideration of hydrostatic and dynamic pressures to ensure the integrity of the structures in the likely event of inundation. In the unlikely event of the proposed clubhouse becoming inundated, flood refuge will be available on the first floor of the building, however, timely evacuation of club patrons via Ada Street to higher ground would be readily achievable and a more likely course of action.

The existing bitumen carpark currently has surface levels in the order of 0.8m AHD to around 1.2m AHD. The proposal will maintain the carpark at similar levels to existing. The car park supports ample egress for both pedestrians and vehicles from the clubhouse to Ada Street and higher ground on the foreshore. A Flood Evacuation Plan for the proposed redevelopment is presented in Appendix 20, indicating available refuge areas and egress routes. Time to peak flood level for extreme flooding events within the lake is likely to be in the order of 48 hours, providing ample time for evacuation of the clubhouse and surrounds to higher ground (*Source: Data from the February 1990 Flood within Lake Macquarie, presented by Webb, McKeown & Associates in the Lake Macquarie Floodplain Management Study, October 2000*).

Given the refuge available on the clubhouse first floor, the available egress paths to higher ground on the foreshore and that flood levels in extreme events are likely to peak with some 2 days notice, it is considered the flood hazard category is low for the development. The proposal would not pose significant risk to users, provided a formalised Flood Emergency Response Plan is administered by the LMYC. In this regard a Preliminary Flood Emergency Response Plan for the site is provided in Appendix 20.

The proposed redevelopment is also not considered to have any significant impact on existing flood behaviour in the lake. The proposal will involve minor filling of up to 300mm in depth within the foreshore and bitumen car park areas, potentially resulting in a minor loss of temporary floodplain storage in extreme flooding events. The Lake Macquarie Floodplain Management Study, October 2000 suggests that for land surrounding the lake, the effect of a loss of temporary floodplain storage due to filling can effectively be ignored as it represents such a small percentage of the total storage available. This study suggests the most significant impact of filling of land surrounding the lake is likely to be the redirection of local runoff (for instance) onto adjoining properties. In the case of the LMYC, minor filling of the existing bitumen car park will not alter the existing runoff regime as surface water will continue to be directed to the lake. The foreshore works will be graded to fall toward the lake as per the existing regime. It is therefore considered that the minor filling associated with the development will have no significant impact on existing flood behaviour within the lake.

8.5 Boat Users and Navigation

8.5.1 Existing Conditions

Lake Macquarie accommodates much of the area's water based recreational activities with approximately 40 boat launching ramps, 16 sailing clubs, six marinas, various public jetties, swimming enclosures and boat mooring

areas. Boating activities on the Lake include yacht racing, recreational sailing, cruising (sail and power boats), fishing, waterskiing, jet skiing, windsurfing, kite surfing, canoeing, rowing, swimming and diving.

The six existing marinas vary in size with berth numbers ranging from around 18 to 160. These marinas are described in Section 4.3.

Commercial fishing in Lake Macquarie ceased in 2002 when the Lake was declared a Recreational Fishing Haven. Recreational fishing occurs throughout the Lake from both the shoreline and recreational boats.

Swansea Channel links the Lake with the ocean and is relatively narrow with depths in the range of 2 to 3 metres below Indian Spring Low Water mark and is subject to periodic dredging to maintain navigation depths. Shoals across the channel entrance can also limit the depth of water to around 1.5 metres at low tide. Swansea Bridge is opened regularly on weekends and public holidays and by arrangement on weekdays to allow yachts to pass between the Lake and the ocean.

Within Belmont Bay, the Lake Macquarie Mooring Plan (see Section 6.13) states that the users of this bay predominantly include vessels in organised races and regattas, with intensive use by the LMYC and the Belmont 16 Sailing Club. In this regard, the LMYC also has an existing regatta racing course in Belmont Bay that is demarcated by fixed marker buoys on the lake (see Drawing No. A05 in Appendix 8). This area is used for regattas on Wednesday afternoons, Friday evenings, Saturday afternoons and Sunday afternoons (as well as additional specialist regattas and yachting events at other times during the year).

8.5.2 Potential Impacts

8.5.2.1 Overview

There are a number of water transport issues that can be identified, including the following:

- Impacts on navigation.
- Impacts on water based recreation.
- Impacts on public and private berthing.
- Impacts on swing moorings.

The proposed development is not anticipated to be one that results in additional boat users on Lake Macquarie. As detailed in Section 4.3, it is anticipated that the new marina berths will be filled as a result of the following demands:

- The existing 40 boats on the waiting list for a marina berth at LMYC.
- The predicted increase in boat numbers and the need for between 166 and 398 new marina berths by 2011.
- Boats on swing moorings in other more remote parts of the lake that would like to be closer to the facilities that LMYC offers and will continue to offer.
- Other boats in existing marinas on the lake where the facilities are not as central to the areas of population as those of LMYC.
- Some visiting yachts and power boats that tend to stay for temporary periods within the sheltered waters of Lake Macquarie.

As detailed in Appendix 18, it is anticipated that only a small percentage of the new marina spaces will be filled by additional boats resulting from general increases in boat users. As a result, the proposed development is not

anticipated to result in any significant increase in boat users on Lake Macquarie or additionally any increased conflict between users in their enjoyment of a confined water space.

8.5.3 Navigation

The marina location was the subject of consultation with NSW Maritime to ensure navigation channels and areas of highest use were not impacted upon. The westernmost extent of the marina was identified by NSW Maritime as being the existing swing mooring number CL2833-08 (see Drawing A09 in Appendix 8). This ensures the marina occupies a space on the lake currently taken up by swing moorings, and therefore not used for general boating purposes. The position of the marina therefore would not impact on general navigation and boat user areas thereby resulting in minimal interference to competing uses of the surrounding waterway.

As is the case with the existing marina, it is proposed that a single main navigation channel will provide access to the marina along the northern side of the marina. This would again be set on a west – east alignment providing access to the berths within the marina. This channel provides ample width for boat manoeuvring to comply with AS3962-2001 – Guidelines for Design of Marinas (see Section 6.7). Depths within this navigation channel are typically around 3 metres, therefore catering for the range of vessels that will use the marina.

Drawing A09 in Appendix 8 indicates the existing and proposed navigation zones. A "no wash" zone would continue to operate within the marina and would be signed accordingly. Other appropriate navigational signs would be located accordingly. Safe boating requirements such as speed restrictions, navigation marks and no wash areas for vessels using waterways in or adjacent to designated mooring areas, will therefore continue to be provided. Adequate space between the shoreline and/or structures (wharves or jetties) adjacent to public and private lands will also continue to be provided.

As detailed in Section 8.5.1, this part of the waterway is used intensively by vessels in organised races and regattas. The existing regatta racing courses that are demarcated by fixed marker buoys on the lake (see Drawing A05 in Appendix 8 will not change or be affected as a result of the proposed development.

8.5.4 Water Based Recreation

Water skiing, wake boarding, jet skiing, kite surfing, recreational fishing, recreational sailing etc are generally undertaken throughout various parts of Lake Macquarie, including parts of Belmont Bay. However, the new marina extension will take place in an area that is presently occupied by swing moorings and is therefore a part of the Lake where these activities do not presently occur. As a result, the proposal would not have any impact on these activities. Low intensity activities such as canoeing/kayaking may be slightly disadvantaged as presently such activities can take place around the swing moorings that currently exist on the site of the proposed marina. When the new marina is built, such activities would still be able to take place around the marina and would not be significantly impacted upon. In terms of rowing, the area of the proposed marina is not used for rowing as the designated rowing course (and associated Hunter Rowing Club) is at Booragul, with Warners Bay being the affected water area.

In terms of fishing, structures associated with marina developments (jetties, pontoons, etc) are now accepted as providing structures and habitats beneficial to sustaining fish communities. It is therefore likely that the new marina will provide a new fish habitat area, as is the case with the existing marina. This would provide an overall net gain to overall lake fishing opportunities, even though public fishing off the marina will remain prohibited (which in turn will continue to ensure the marina structure provides the ecological benefit of the additional habitat provided).

8.5.5 Public and Private Berthing

The proposed marina, as is the case with the existing marina, predominantly caters for private berthing for yachts associated with the LMYC. However, there are presently opportunities for public berthing with temporary berths

generally available. With the new marina extension, space for public berthing has been provided as detailed on Drawing A09 in Appendix 8 and would be available for use during the hours of operation of the marina.

As detailed in the Lake Macquarie Mooring Management Plan (see Section 6.13), the cumulative effect of concentrated moorings between Belmont Public Jetty and Andersons Point has resulted in the mooring area being constrained to its present boundary. Once the popular mooring areas within Belmont Bay are full, no new moorings are to be allocated in these areas and as a result, moorings will not extend beyond their current limits.

In addition, berths within the marina that have not been allocated as private berths would be available to the public for berthing at casual rates during the hours of operation of the marina and by prior arrangement. Casual berthing would be controlled by the Manager of LMYC.

8.5.6 Swing Moorings

As detailed in Section 8.5.3, the new marina extension will take place in an area that is presently occupied by swing moorings. As part of the proposal, 4 of the 12 swing moorings which are already leased to the LMYC will be removed. As a result, the vessels displaced by the removal of the swing moorings are predominantly LMYC vessels and would therefore benefit from the opportunity to take up a berth within the marina. The removal of these swing moorings also provides for ecological benefits (see Section 5.20) and improved navigation through better spatial management.

8.6 Foreshore Protection and Improvement

The protection and improvement of the foreshore, particularly the Cullen Park foreshore adjoining the LMYC, has been the subject of consultation with Council. This area presently comprises a degraded gravel area of public open space which is predominantly used for car parking. This foreshore area will be substantially improved as detailed in Section 5.8 and the Landscape Design Report in Appendix 9. This will include the provision of additional trees and the creation of a salt marsh environment along the Lake foreshore.

8.7 Economic Impacts

In considering economic impacts, the SEIA in Appendix 18 analyses the following three specific areas:

1. The marina.
2. Tourism.
3. Employment.

With regard to the marina, the SEIA concludes as follows:

> *"The economic impacts arising from the redevelopment of the LMYC are positive. The LMYC redevelopment provides a positive economic contribution via the availability of the marina facility to local boating and chandlery suppliers. The estimated cost generated per boat is estimated to be anywhere between $4,500 and $19,000 per boat per annum.*

With regard to tourism, the SEIA concludes as follows:

> *"The average input into Lake Macquarie's economy over this 3-4 year average is $115 Million or approximately $28.75 to $38.33 Million dollars per year. The main source of income is generated by domestic overnight and day visitors. LMYC hosts five regattas per year which attract between 100-200 people to each event (includes families). People attending regattas are regarded as domestic overnight and domestic day visitors and they usually stay in local accommodation (close to the LMYC) and attend*

other activities during their stay. Based on the above spend people attending regattas alone could contribute up to $300,000 per annum into the local economy. This represents and important contribution to the total tourism numbers attending Lake Macquarie.

……..

With this in mind, the redevelopment of the LMYC has the capacity to cater to the desired activities for a range of visitors to the area via its restaurant facilities, capacity for functions and specific boating activities. The redevelopment of the LMYC improves existing infrastructure and therefore reinforces the role of the LGA and Belmont as a tourist destination. Given the demand for tourism, desired visitor activities ad expenditure generated by visitors to the area, the impact of the redevelopment of the LMYC can only be positive."

With regard to employment, the SEIA concludes as follows:

"The LMYC employs 20 people in 8 FTE positions. Catering at the facility is undertaken by contractors who have recently entered into a new three year lease. It is expected that once the marina has been finalised there will be an additional position created (Marina Manager) making a total of approximately 9 FTE positions. Due to the hospitality nature of the LMYC, additional staff requirements for functions or at peak times are filled via their casual pool. Once the redevelopment is completed, the staff establishment will be reviewed to assess if additional FTE positions are required.

With regard to the number of jobs created from the development, it is estimated that one direct job year is created in the construction industry per $160,000 of construction investment (based on Australian National Accounts Input-Output tables ABS Cat. No. 5209.0). Based on an estimated overall capital cost of approximately $7 million, the development has the potential to create approximately 44 direct job years over the construction period. In addition to direct employment, ABS National Accounts Data indicates that a multiplier of 2.6 applies to the direct construction employment. Therefore the creation of 44 direct job years during construction would result in approximately 70 job years in the wider economy.

The redevelopment of the LMYC therefore provides significant employment across the construction sector."

The SEIA goes on to conclude as follows:

"Overall the redevelopment of the LMYC has been found to have an overall positive economic and social impact on the broader LGA as well as the local community of Belmont. The redevelopment of the LMYC will supply much needed marina berths into the area."

8.8 Social Impacts

The SEIA in Appendix 18 provides a detailed review of the social and economic impacts of the proposed development. The existing social environment is also described in the SEIA as well as Section 3.2 of this EA.

In considering social impacts, the SEIA analyses the following specific areas:

1. Changes to the population and characteristics of the area.
2. Employment.
3. Income.
4. Cost of living and housing affordability.
5. The community structure.
6. The health and safety of those living and working in the vicinity of the development.

7. The crime risk.
8. Accessibility.
9. Social cohesion.
10. Sense of place and community.

With regard to the population and characteristics of the area, the SEIA concludes as follows:

> *"The re-development of the LMYC on its own will not result in any net changes to Belmont's total population or its characteristics. The most likely changes to the community's population and its characteristics will be a result of lifestyle choices for retirees and the in-migration of older professional people."*

With regard to employment, the SEIA concludes as follows:

> *"As stated above the LMYC plays an important role in the local economy and supports many businesses. The re-development of LMYC will not negatively impact on the areas labour force but its redevelopment could in fact bring about a more robust marine based industry.*
>
> *The LMYC employs about 20 staff (8FTE). Catering is undertaken by contractors who are about to have their leases renewed. It is anticipated that the staff establishment will increase by 1 FTE as the role of the marina manager will be created.*
>
> *Due to its hospitality component additional staff requirements are met via casual engagement. After the clubs redevelopment is completed, the minimum required staff establishment in the area will be reviewed."*

With regard to income, the SEIA concludes as follows:

> *"The redevelopment of the LMYC is not expected to bring about changes to the level of income across the community, nor will it impact on the cost of day to day living. Many services (retail and commercial) are not affected by the operation of the LMYC and its redevelopment will not impact in this area."*
>
> *There will be some increase in demand for retail and commercial activities relating to boating as the local market share will increase."*

With regard to the cost of living and housing affordability, the SEIA concludes as follows:

> *"With reference to housing, the development may have a positive impact on housing/land prices in the immediate area. However, waterfront land is usually more expensive and more popular to buy so changes to this characteristic would most likely be driven by factors other than the redevelopment of the LMYC."*

With regard to community structure, including religious beliefs, the SEIA concludes as follows:

> *"The redevelopment of the LMYC will have no impact on any factors relating to these characteristics identified in the ABS.*
>
> *There may be some impact relating to the indigenous community. There is a nearby area of land dedicated to the Awabakal peoples of the area. Research into this is being undertaken and subject to an independent report. It is understood that the cultural significance is within the place its self (sic) rather than the particular building."*

With regard to the health and safety of those living and working in the vicinity of the development, the SEIA concludes as follows:

"The development will not require the addition of any health services. The development is not identified to impact on the health of any residents and may in fact promote healthy lifestyles/fitness by those participating in boating activities.

There may be additional noise and pollution during construction however the management of these impacts are identified in separate reports.

Public safety could possible be an impact arising from the development given its proximity to the water. However in identifying this it needs to be recognised that the LMYC is an existing facility and it is located on the shore of a large lake, of which its foreshore is very accessible across the entire lake. In that sense the development will not increase any risk that is not already identified and managed."

With regard to crime risk, the SEIA concludes as follows:

"It was found that the vicinity of the LMYC generally is not a hot spot for any crime and does not come under any attention from the Police. The proposed redevelopment of the LMYC, including the pedestrian pathway proposed for the southern foreshore did not raise any concerns regarding the increased risk of crime and antisocial behaviour. A Crime Risk Assessment has been undertaken and is contained within a separate report."

With regard to accessibility, the SEIA concludes as follows:

"As the LMYC is an existing facility, it does not generate any further impacts in this regards nor does the facility impact on the general access to other services within the community."

With regard to social cohesion, the SEIA concludes as follows:

"The LMYC has been in existence since 1934. Its growth and development over this time has been limited and the proposed redevelopment represents the largest change to the site for many years. The LMYC is well known in the area and is one of a number of yacht clubs, boating clubs, marinas, etc on the Lake.

…….

With this in mind, the redevelopment of the LMYC is not in conflict with what the areas is known for. Further to this the Belmont Bay area (which LMYC lies within) also hosts a number of moored yachts outside of the marina. Therefore the visual aspect of the Bay is very much featured by boats, in particular yachts.

……..

Further to this the redevelopment of the existing site will not change the lifestyles of the existing residents. Many residents would have relocated to the area when the LMYC was in existence and may possibly be attracted to the character and appeal that the LMYC provides.

The adverse reactions to the development proposal relate to the ongoing impact of car parking and traffic on the local residents who live in the Ada and Walter Street areas. Race days in particular have caused problems to some residents.

There has also been an issue with the health of the Lake, in particular the area of Belmont Bay north of the LMYC as a result of the construction of the car park. The filling of the lake and small channel (covered by the bridge leading to the car park from Ada Street) are said to be a cause of this issue. These issues have been ongoing for some time.

The increase in marina berths will not so much increase traffic flows because not all boats at the marina will be used on a regular basis. The main impact from traffic flow and car parking would be from race days, regattas and on weekends (reported to be Saturday afternoons in particular).

It is not envisaged that the impact would be significantly increased. Some residents reported this to be part and parcel of the LMYC."

With regard to sense of place and community, the SEIA concludes as follows:

"Generally there is no issue with the concept of the redevelopment of the LMYC. Residents agree that the yacht club is in need of a redevelopment due to its age and condition. Yachting and boating are characteristic of the area and the LMYC has been a part of the community for many years. Therefore the redevelopment generally is not in conflict with the surrounding area.

There were some comments regarding the design but these related to taste rather than size, scale and bulk. There was no visual impact identified from the redevelopment of the club house its self.

The extension of the marina to the west raised some concerns with residents who had limited (ie not expansive) views of the lake. Of particular note were houses on Bellevue Road (Andersons Hill) who faced towards the north. After the re-development the little open water views would be lost to the marina extension by some residences."

8.9 Traffic and Parking Impacts

The traffic and parking impacts of the proposed development have been detailed in the Traffic and Parking Assessment Report in Appendix 16. This assessment concludes as follows:

"I recommend that the proposed development of the Lake Macquarie Yacht Club as traffic impacts will be minimal and the proposed increase in parking will satisfactorily cater for the majority of the Club's parking demand."

Matters relating to traffic and parking have also been addressed in Sections 5.11 and 5.12. No further assessment is therefore required in this regard.

8.10 Ecological Impacts

A detailed assessment of the ecological impacts of the proposed development has been provided in Section 5.20 as well as the Flora and Fauna Impact Assessment Report in Appendix 11 and the Seagrass Management Plan in Appendix 12. The Flora and Fauna Impact Assessment Report concludes as follows:

"Therefore it is concluded that the proposed redevelopment of the LMYC will not have an adverse effect on the terrestrial or aquatic habitats at this site. The proposal will improve the terrestrial habitats by restoration of some of the shoreline vegetation, the removal of four swing moorings will allow seagrass re-establishment and the marina extension may in fact result in increased seagrass cover in that area."

No further assessment is therefore required in this regard.

8.11 Visual Impacts

8.11.1 Context

The scenic context of the site has been outlined in detail in Section 2.8, the Visual Impact Assessment in Appendix 10 and the Architectural Drawings in Appendix 8. The site is located on reclaimed land on Lake Macquarie and occupies a prominent foreshore location comprising both land and water based elements. The redevelopment of the site requires careful consideration of this special location, along with the relevant site specific physical and environmental constraints. The geographical location of the site within the Belmont Bay locality maximises the potential visual impact.

8.11.2 Visual Impacts

The visual impact of the proposed development has been comprehensively assessed in the Visual Impact Assessment prepared by Terras Landscape Architects (see Appendix 10). The conclusions of this assessment are provided in Section 7.11.4.

The site's location on the lake requires careful design consideration. The site is not prominent by way of its topography, not being situated on a prominent ridge line or the like. However, the visual quality of the overall study area is of medium to high level due to the presence of natural environmental features and the consistent building densities. The presence of the lake and adjoining open space system, including the surrounding vegetated ridgelines assists in creating an overall high visual quality.

The design of the new marina has provided for an extension to the west (rather than to the north or south). This ensures that when viewed from the lake foreshore, the new marina is predominantly screened by the visual presence of the existing marina in the foreground. In other words, the masts of the yachts to be located within the new marina will be predominantly screened by the masts of the existing yachts in the existing marina, when viewed from the lake foreshore. This design solution has been geared towards ensuring the views of residents and users of the foreshore towards the lake, is not compromised by additional structures. Furthermore, given that the masts of the yachts within the marina are not rigged, there will still be filtered views of the lake through these mast structures.

As detailed in Section 5.2.3, the need for additional car parking has also been resolved in a manner which ensures minimal increased visual impact. Rather than provide additional parking on reclaimed land to the north or south of the existing car park (with the resultant adverse visual impacts), additional parking is to be predominantly provided by the reconfiguration of the existing car park. There will be only a minor increased footprint of the existing car park up to the existing rock wall face (which presently comprises the lease boundary of the LMYC). Furthermore, the formalisation of the existing public parking on the gravel section of Cullen Park, will most likely improve visual impacts due to the public foreshore improvements proposed for this area (see Section 5.8).

The Clubhouse building presently comprises a two storey structure which, when viewed from the land, is seen in the foreground of the yacht masts associated with the marina (see Photo 1 in Section 2.7). This visual context will remain predominantly unchanged when the new LMYC building is completed. The new clubhouse will continue to comprise a two storey structure, but the design will be contemporary with a less intrusive mix of materials and colours (see Section 5.6). The mass of the proposed LMYC building sits primarily within the footprint and form of the existing clubhouse. The proposed landscaping within the car park will assist in softening any additional expanse. Furthermore, the height of the proposed building will not exceed the height of the ridgeline backdrop, nor will it be excessively obtrusive when viewed from the lake (see photomontages in Appendix 8).

It is also relevant to note that the LMYC has existed on this site since the 1930's. As a result, the majority of residents along this part of the foreshore post-date the LMYC premises. As a result, these residents are used to a view of the lake that includes the yacht club infrastructure and therefore the visual impact of the proposed redevelopment and marina extension is likely to be viewed in this context.

8.11.3 Heights

The two storey height of the proposed Clubhouse is consistent with both the two storey height of the existing LMYC building as well as the two storey height limit of the 2(1) Residential zoned land along the lake foreshore. The mass of the proposed LMYC building sits primarily within the footprint and form of the existing clubhouse. Furthermore, the height of the proposed building will not exceed the height of the ridgeline backdrop. As detailed in Section 3.1, there are numerous two storey dwellings along this part of the lake foreshore. The height of the clubhouse has also been set below the mast height of the yachts within the marina (both existing and proposed marinas). This will ensure that when viewed from the lake foreshore, the clubhouse is generally seen as a less intrusive foreground element, with the yacht masts as a backdrop (providing filtered views of the lake).

8.11.4 Building Materials and Colours

The proposed building materials and colours of the new Clubhouse are clearly detailed on the Architectural Drawings and Photomontages in Appendix 8. The materials will include a mixture of colorbond panels, colorbond steel horizontal corrugated sheet cladding, coloured and textured render finishes, colorbond roof sheeting, powdercoated aluminium slat privacy screens, glass balustrades to the external stairs and timber decking to external areas.

8.12 Community Land and Public Access

The proposed development will include improvements to community land, being the proposed works within Cullen Park and along the lake foreshore described in Section 5.8 and the Landscape Design Report in Appendix 9. These works will include the following:

- The formalising of the existing gravel car park in Cullen Park which will improve stormwater management and water quality by preventing stormwater from the existing gravel car park contaminating the lake.
- The protection and retention of the existing trees within Cullen Park and the minor re-turfing of the existing park area where it is disturbed by the proposed works.
- The provision of access through the car park to the Council's community facilities (currently Meals on Wheels) within the southern section of Cullen Park.
- The planting of small native shade trees [*Cupaniopsis anacardioides* (Tuckeroo)] to the car park area.
- The rehabilitation of the lake foreshore vegetation with new endemic foreshore planting of sedges and salt tolerant trees. This foreshore area will also be slightly regraded to provide the correct water levels for the macrophytes.
- The provision of a concrete access footpath/cycleway (1.5m wide) along the foreshore area (between the car park and the foreshore vegetation). This footpath/cycleway will extend south approximately 140 metres past Cullen Park along the foreshore area to the existing small park at Andersons Point. This will substantially improve public access along the foreshore.

8.13 Greenhouse Gas Emissions

8.13.1 Existing Conditions

Australia is one of the many regions experiencing significant climate change as a result of global emissions of greenhouse gas ("GHG") from human activities. The average surface air temperature of Australia increased by 0.7°C over the past century – warming that has been accompanied by marked declines in regional precipitation, particularly along the east and west coasts of the continent (CSIRO, 2007). As a signatory to the Kyoto Protocol, an international agreement linked to the United Nations Framework Convention on Climate Change, Australia has committed to limit emissions and the production of GHG.

GHG emissions include gases such as carbon dioxide ("C02"), methane, nitrous oxide, ozone or water vapour which contribute to the warming of the Earth's atmosphere by reflecting radiation from the Earth's surface. The amount of C02 in the atmosphere is about 30% higher now than 200 years ago and is the biggest contributor to the enhanced greenhouse effect (about 70%). (*Australian Government Greenhouse Gas Emissions Fact Sheet, December 2008*). As a result, this assessment concentrates on the emissions of C02.

Australia's net GHG emissions across all sectors totalled 576 million tonnes of C02 equivalent in 2006. (*Australian Government Greenhouse Gas Emissions Fact Sheet, December 2008*).

There are a number of activities in the Lake Macquarie, Newcastle and Hunter region that contribute to the production of GHG and C02 in particular. These include coal mining and exporting, electricity generation, transport and industrial manufacturing. With regard to the existing operation of the LMYC the emission of C02 is attributed predominantly to the following:

- Energy use of the existing LMYC operations, including lighting, air-conditioning, etc. The existing LMYC building was constructed in around the 1930's and was built without any specific implementation of energy efficient measures or materials.
- Transport energy associated with vehicle travel to and from the LMYC by workers and visitors.
- Emissions associated with the existing land and water based structures, boats and construction materials.
- The transport energy associated with the use of motors and other on board equipment by both powercraft and yachts.

Although the above GHG emissions have not been quantified, they provide a base level of understanding for assessment purposes.

8.13.2 Potential Impacts and Environmental Safeguards

There is unlikely to be any significant change to C02 from the proposed redevelopment. There is likely to be some marginal increase in C02 emissions through the increased number of vehicles that will visit the site to take advantage of the new facilities. However, it is likely that these vehicles would access alternative facilities in the area even if the new LMYC facility did not proceed. As such the resultant gap in marina facilities would be filled by another site in the area. In other words, removing the GHG emissions from the LMYC facility would not likely result in any decrease in global C02 emissions.

With regard to any increased C02 emissions associated with boat usage, it is relevant to note that a substantial proportion of boats that will occupy the new marina are already in circulation on the Lake. This is demonstrated by the fact that there is a waiting list of around 40 existing boats waiting for a space in the new marina (see Section 4.3). Furthermore, as detailed in Section 4.3, the remaining spaces within the proposed marina are likely to be taken up by boats moored at other more remote locations within the Lake that would prefer newer facilities

and a more central location. There will also be spaces filled through the identified increase in boat ownership identified in Section 4.3. In both these cases, the increase in boats at the marina is not generated as a result of the proposal, but rather by other external factors (ie. the relocation of existing boats on and around the Lake or natural increase in boat numbers over time). As a result, building of the new marina does not in itself result in an increase in overall C02 emissions associated with additional boat usage.

The only substantial change in existing C02 emissions would be those generated by the construction and operation of the new LMYC building, when compared with the existing club. The existing clubhouse has a gross floor area of around 738 square metres. The new clubhouse will have a GFA of around 1,287 square metres. The table below outlines the predicted 40 year C02 emissions of the proposed LMYC building compared to the existing LMYC building:
(Note: 40 years is generally considered to be the average lifespan of a building in Australia according to the Australian Bureau of Statistics website).

Table 11: Estimate of Existing Club C02 emissions.

C02 Generator	Significance*	Predicted C02 Emissions
Embodied Energy of Construction Materials	(moderate impact) Approx. 0.5 – 2t C02/sqm (Average is 1.25 tonnes C02/sqm).	738 (GFA) x 1.25t C02/sqm = 922.5 tonnes C02.
On-Site Construction Energy	(low impact) Approx. 10% of embodied energy. Therefore 0.05 – 0.2 tonnes C02/sqm. (Average is 0.125 tonnes C02/sqm).	None (existing Club).
Operational Energy	(moderate to large impact) Approx. 0.3 tonnes C02/sqm/year for an average commercial building.	738 (GFA) x 0.3 tonnes C02/sqm/year = 221.4 tonnes C02/year Assume 40 year building lifespan = 221.4 tonnes C02/year x 40 = 8,856 tonnes C02/40 years
Total C02 Emissions over a 40 year period		9,778.5 tonnes C02/40 years

Table 12: Estimate of Proposed Club C02 emissions.

C02 Generator	Significance*	Predicted C02 Emissions
Embodied Energy of Construction Materials	(moderate impact) Approx. 0.5 – 2t C02/sqm (Average is 1.25 tonnes C02/sqm).	1,287 (GFA) x 1.25t C02/sqm = 1,608.75 tonnes C02.
On-Site Construction Energy	(low impact) Approx. 10% of embodied energy. Therefore 0.05 – 0.2 tonnes C02/sqm. (Average is 0.125 tonnes C02/sqm).	1,287 (GFA) x 0.125t C02/sqm = 160.87 tonnes C02.
Operational Energy	(moderate to large impact) Approx. 0.3 tonnes C02/sqm/year for an average commercial building.	1,287 (GFA) x 0.3 tonnes C02/sqm/year = 386.1 tonnes C02/year Assume 40 year building lifespan = 386.1 tonnes C02/year x 40 = 15,444 tonnes C02/40 years
Total C02 Emissions over a 40 year period		17,213.62 tonnes C02/40 years

*Source: *"Major Greenhouse Gas Emission Issues Associated with Commercial and Industrial Buildings", Australian Greenhouse Office, Department of Environment and Water Resources, February 2002.*

Although some types of GHG emissions have not been able to be quantified in the above tables (such as those associated with the demolition of the existing LMYC building), Tables 11 and 12 provide a general overview of the change in C02 emissions that is likely to result. The above tables indicate that the new club will result in some 7,435 tonnes of additional C02 over a 40 year period when compared with the existing club (ie. 186 tonnes per

year on average). This is insignificant when compared to the 576 million tonnes of C02 produced in a single year (2006) in Australia.

Notwithstanding the above, various measures will be included in the design of the new clubhouse to reduce the actual amount of C02 emitted following completion of the proposal. This will include improved energy efficiency and reduced operational energy when compared with the existing clubhouse through the utilisation of energy efficient lighting, including energy efficient light globes and high levels of solar access. The new clubhouse will include energy rated skylights for access to natural light. Shading will be provided to windows to minimise summer sun and maximise winter sun. Insulation will be provided to walls to create thermal comfort using passive means. The clubhouse will also have insulation to the ceiling to achieve a minimum R-Value of 2.5. Where required, the building will be built to Section J – Energy Efficiency of the Building Code of Australia.

8.14 Contamination

Matters relating to contamination have been dealt with in Sections 2.6.12 and 7.9.5 as well as the Phase 1 Environmental Site Assessment in Appendix 15. This concludes that the site in it's current state is suitable for the development proposed and that no further contamination investigations are required. The Phase 1 Assessment makes the following recommendation:

> *"A construction environmental management plan (CEMP) will be required to be prepared and implemented during redevelopment of the yacht club. The CEMP should address among other things, procedures for appropriate handling and disposal of disturbed soils from each of the nominated AECs."*

The above requirement has been reflected in the Statement of Commitments in Section 9.

8.15 Heritage Impacts

8.15.1 Overview

The Heritage and Archaeological Assessment prepared by Insite Heritage Pty Ltd includes a detailed assessment of both European and Aboriginal Cultural Heritage (see Appendix 13 and Section 2.13). This has included an Aboriginal Archaeological survey and consultation with the Bahtahbah Local Aboriginal Land Council, Awabakal Descendants Traditional Owners Corporation and Awabakal Traditional Owners Corporation.

8.15.2 European Heritage

With regard to European heritage, the Heritage and Archaeological Assessment concludes as follows:

> *"Lake Macquarie Yacht Club is a place of importance to its members – it is a focal point for members of the local community who have an interest in sailing and boating in general. The club was formed in 1929 and the club-house erected in 1934. Since that time the club-rooms have been extended and modified to cope with increasing numbers of members (and boats), and demands for improved member services (for both recreational and social purposes). The club now serves members in a variety of ways including a venue for meetings and social gatherings, bar and restaurant services, race management, boat moorings, equipment storage, car park and commercial services (retail outlets and offices). As a result little remains of the original building and the intrusive nature of the renovations has detracted from the significance of the building. While the place is of moderate to high significance within a local context, the building itself is of little significance."*

The assessment recommends that an archival recording of the LMYC club house be undertaken prior to demolition.

8.15.3 Aboriginal Cultural Heritage

With regard to Aboriginal cultural heritage, the Heritage and Archaeological Assessment concludes as follows in Section 5.2.1:

> *"The Aboriginal site in Cullen Park is of high cultural significance to the local Aboriginal community. The site may provide a direct link to the occupation of the area during the contact period in addition to the pre-European period. The site in Cullen Park is of low to moderate scientific significance as the area is unlikely to contain stratified deposits. The Cullen Park site has high local public significance as a site with the potential to be associated with the contact period and located in a public space, thus available for public interpretation and promotion of the contact period. The Anderson Ave deposits are likely to be part of a continuous site along the relic dune associated with the Cullen Park site. These deposits are highly disturbed and of low scientific and high cultural significance."*

In terms of the impact of the development on Aboriginal Cultural Heritage, Section 7 conclude as follows:

> *"The reconfiguration of the car park adjacent to Cullen Park will have little or no impact on the historic heritage values of the locality. There is a very low probability of archaeological relics related to Aboriginal campsites around Threkeld's Mission and in prehistory. Any relics are unlikely to be in-situ given the angle of the toe slope. The potential ground disturbance proposed is a small cut in the south eastern corner of the toe slope of the park.*
>
> *It is unlikely the reconfiguration will impact on shell fragments or stone artefacts associated with site 45-7-0030. The site is generally located above the (approx) 2m contour however there may be shell or artefacts that have moved down slope to the toe slope/fill margin. The minor cut associated with the carpark reconfiguration in the south eastern corner is the only area of potential impact. The remainder of the reconfiguration involves importation of fill for garden beds and reapplication of tar over previously tarred/gravelled areas.*
>
> ……."
>
> *"The potential cycle/pedestrian path that would link the Cullen Park carpark with Anderson Parade is unlikely to impact on any historic or Aboriginal heritage. The path has been proposed by Lake Macquarie City Council and if not supported by local residents may not proceed. The route of the path follows the sewer main in an area of reclaimed foreshore with no evidence of intact soil profiles. At the southern end of the path where it links to Anderson Place there is some potential for disturbed midden material. The shell midden recorded at Anderson Parade is located each side of the existing road and will not be impacted by this project.*
>
> ……."
>
> *"This study has not identified any potential impacts that the proposed marina extension may have on Aboriginal or historic archaeological relics."*

The assessment recommends that Aboriginal stakeholders be invited to monitor excavation of the minor cut in the south eastern corner of the car park as well as the proposed cycleway/footpath along the Lake Macquarie foreshore (see Draft Statement of Commitments in Section 9).

8.16 Stormwater Management

Stormwater management and water quality matters have been addressed in the Engineering Report prepared by Northrop (see Appendix 20) and Section 5.18. A site specific, holistic Water Cycle Management Strategy will be implemented for the proposed redevelopment based on the principles of Water Sensitive Urban Design and in accordance with Lake Macquarie City Council guidelines.

No further assessment is required in this regard.

8.17 Water Quality

Issues associated with water quality during operation and construction have been addressed in the Engineering Report in Appendix 20 and Section 5.18. Previous water quality investigations at the Lake have indicated that in general, the Lake does not meet all criteria for the protection of aquatic ecosystems under ANZECC (2000) guidelines. In particular, dissolved oxygen, nutrients, chlorophyll-a and some heavy metals. It is likely that similar characteristics are present at the LMYC site (see Appendix 2.6.12).

The proposed development is considered to have a number of positive impacts on water quality during the operational phase when compared with the existing development, including the following:

- The collection and treatment of stormwater runoff from the reconfigured car park, as opposed to the present regime of stormwater running unmitigated into the lake.
- The reuse of stormwater for boat washdown and irrigation of landscaped areas.
- The improvement of stormwater quality runoff into the lake and reduction in sedimentation. This will be done via a number of measures including the foreshore vegetation works and the sealing of part of Cullen Park which will prevent sediment runoff from this gravel car park into the Lake.

It is also noted that the operation of the marina will continue to be a Scheduled Activity within the meaning of Schedule 1 of the Protection of the Environment Operations Act, 1997 (see Section 7.3). As a result, an Environment Protection Licence will need to be issued by the DECCW under the Act for the carrying out of the activity. This licence, as is the case with the current marina licence, would set out a range of conditions that need to be complied with, including conditions relating to the pollution of waters. This licence would be enforced by the DECCW.

As detailed in Section 5.19, a range of accepted erosion and sediment control measures are available and will be implemented during construction. These controls would ensure that there are no significant adverse impacts on receiving water quality during the construction phase.

Overall, water quality will be substantially improved within and around the marina as a result of the proposed development when compared with the existing operations. As a result, no ongoing water quality monitoring is proposed or considered necessary.

8.18 Noise Impacts

8.18.1 Overview

A Noise Impact Assessment and Addendum Report has been prepared by Reverb Acoustics and is included in Appendix 17. The assessment determines the noise impacts the construction and operation of the proposed

development would have on nearby neighbours and includes recommendations for practical and cost effective noise control options where required.

8.18.2 Noise Impacts of New Clubhouse

The proposed outdoor terraces have the potential for adverse noise impacts. These include the restaurant terrace on the ground level (alfresco dining area), the auditorium terraces on the ground level (used during functions) and the function room terrace on the first floor (used during functions). In this regard it is relevant to note that only the terrace on the first floor comprises a new use, whereas the terraces at the ground level are used for existing functions (ie. they will comprise replacement terraces when the new clubhouse is built, rather than new noise sources). The noise impact assessment concludes that the combined noise impact from patrons on all outdoor terraces will be compliant with the Liquor Administration Board's Noise Control Guidelines (and therefore the requirements of Council and DOP) at all nearby residences subject to the erection of acoustic barriers at the terrace perimeters as outlined below. The restaurant and function room terraces will not be used after midnight, however, the auditorium terraces are expected to be used by patrons after this time. The predicted noise impact at nearest residences (assuming patron numbers will reduce after midnight) will be in the order of 28dB(A)-29dB(A) from these terraces, which is compliant with the most stringent post midnight criteria.

As is presently the case, there will continue to be live entertainment at the LMYC. Presently such entertainment is restricted to the ground level (due to space constraints) and includes bands, discos as well as duos/trios with drum machine accompaniment at functions (eg. weddings, birthday parties, club socials, etc). However, the new LMYC building will include entertainment on the first floor function room. The Noise Impact Assessment concludes that the noise emissions from all entertainment sources in the function rooms and auditoriums will be compliant with the Liquor Administration Board's Noise Control Guidelines (and therefore the requirements of DECCW) at all nearby residences up until midnight (when such entertainment ceases), subject to the construction recommendations outlined.

Notwithstanding the above, various recommendations are made in Section 9.1 of the Noise Impact Assessment to control noise from the Clubhouse. These recommendations can be included as conditions of any consent granted and are summarised below:

1. All outdoor terraces are to be used during LMYC trading hours, apart from the restaurant terrace which should not be used after midnight.
2. Acoustic barriers should be erected at the perimeter of the outdoor terraces. The Auditorium terrace should have a 1.5m high barrier along the north and eastern edges. The Function Room 1 terrace should have a 1.2m high barrier along the northern edge. The Function Room 2 terrace should have a 1.2m high barrier along the southern edge.
3. All entertainment should cease by midnight. Discos and bands should be permitted in Function Room 1 and the Auditorium. Function Room 2 should be limited to only duos/trios with drum machine accompaniment.
4. The Auditorium, Function Room 1 and Function Room 2 should be constructed pursuant to the recommendations in Section 9.1 of the Noise Impact Assessment. This includes the provision of roof/ceiling insulation, laminated glass glazing and additional wall cladding.

8.18.3 Traffic and Parking Noise Impacts

Noise generated by traffic associated with the proposed development has the potential to create adverse noise impacts. The Noise Impact Assessment assumes that 10-15 small delivery trucks would visit the site each day, although in reality this is likely to be substantially less. The assumption has also been made that the car park would generally be full during peak periods (including night time periods when functions occur) and that 25% of these vehicles would leave in the same hour. The Noise Impact Assessment shows the noise impact from traffic

movements associated with the development are compliant with DECCW's Environmental Criteria for Road Traffic Noise ("ECRTN") during the day (7am-10pm) and night (10pm-7am) for all residences near the site. It is relevant to note that where the criteria are already exceeded, the ECRTN requires that the combined impact from existing and future traffic must not raise the noise level by more than 2dB(A). In this regard, the Noise Impact Assessment concludes that vehicle movements would only raise noise levels by 0.4-0.9dB(A) during the day and by 1.1dB(A) at night, which are considered acceptable. Furthermore, the assessment shows that existing average Lmax noise levels as high as 71dB(A) already exist in the nearby residential area at night, which are more than 10dB(A) above noise levels produced by cars approaching and departing the site. Therefore, it is unlikely that there will be any noticeable change in received noise levels due to vehicles entering and leaving the site.

Noise generated by vehicles entering, leaving and manoeuvring in the car park also has the potential to cause disturbance to nearby residents. The greatest impact will occur during peak periods when use of both the lake pontoon car park and the foreshore car park coincide with a regatta. The Noise Impact Assessment has assessed all potential noise sources from these car parks including reversing, manoeuvring, leaving, car door slamming, trailer unhitching and raised speech. The assessment concludes that the noise activities associated with the car parks are compliant with the criteria during the day and evening at all nearby residences during peak periods. Peak carpark usage may occur at night at the completion of a function in the Clubhouse. However, trailers will not be unhitched in the foreshore car park at night (10pm to 7am), therefore peak car parking noise at night would be in the order of 40dB(A) Leq (equivalent continuous noise level) at nearest residential boundaries, which is acceptable.

8.18.4 Marina Noise Impacts

As detailed in the Noise Impact Assessment in Appendix 17, the general day to day marina operations do not generate any significant or offensive noise levels. The marina activities operate during the day (generally between the hours of 7am and 10pm) and only the following marina activities are noise generating.

- Boat travel lift/crane.
- Boat engines.
- Repair/maintenance activities within the existing workshop.
- General power tools used for boat repairs by owners (air tools, sanders, hammering, angle grinder, etc).

The noise sources associated with general boat operations (boat engine) and repairs (drills, sanders, welders, etc) all produce a sound power less than 85dB. Collectively, with up to 3 or 4 sources operating simultaneously on occasion, the sum could be as high as 90dB. This is at least 10dB below other existing significant sources and therefore they will not contribute or raise the sound level at the nearby receivers. The assessment shows that noise created by activities associated with the marina are compliant with the criteria at all residential receivers, providing activities only occur during the day and subject to implementing the following recommendations:

1. All workshop activities, including the cranes/boat lifts, should only operate during the day (7am to 6pm).
2. The use of compressors, electric motors, etc should take place within the existing workshop.
3. The waste disposal bins are to be located in the designated shielded area, with waste collection restricted to weekdays between 7am and 6pm.
4. Deliveries should only occur during the day between 7am and 6pm.
5. The marina should be restricted to registered and seaworthy boats only. The owners of boats which require noisy repairs should leave the site to make such repairs.

6. Signage should be erected instructing boat owners of the above requirements and advising them to undertake repairs and routine maintenance during the day only. This should be reinforced in newsletters, etc.

These recommendations can be included as conditions of any consent granted.

8.18.5 Plant Noise Impacts

The majority of mechanical plant will be located on the roof of the Clubhouse or at ground level at the marina. Although the type and location of mechanical plant has not been finalised, the following plant has been assumed for assessment purposes:

- 8 x air-conditioning condensers, 2 x refrigeration condensers and 2 x exhaust fans (all located on the Clubhouse roof).
- 2 x refrigeration condensers and 2 x refrigeration compressors above the clubhouse coolroom.
- An air compressor and refrigeration condenser at the marina.

The Noise Impact Assessment concludes that the noise emissions from all mechanical plant on the roof of the Clubhouse will be compliant with the night criterion of 41dB(A) Leq (equivalent continuous noise level) at the nearest residences to the east, providing an acoustic barrier equal in height to the top of the plant is erected along the east edge of the deck. However, it may be the case that the parapet walls or intervening building structures of equivalent height achieve the same purpose, thereby removing the need for acoustic barriers. Section 9.1 of the Noise Impact Assessment makes recommendations to control noise from the proposed mechanical plant. These recommendations can be included as conditions of any consent granted and are summarised below:

1. Acoustic barriers (as per the specifications in Section 9.1 of the Noise Impact Assessment) must be erected at the perimeter of the plant on the roof of the Clubhouse along the northern, eastern and southern edges. These barriers must be equal in height to the top of the plant.
2. In-duct silencers must be fitted to any ducted supply/exhaust air associated with the emergency generator.
3. The contractor responsible for supplying and installing mechanical plant must provide evidence that installed plant meets the specified noise emission limit, or that noise control included with the plant is effective in reducing the sound level to the specified limit.

8.18.6 Cumulative Noise Impacts

The Noise Impact Assessment in Appendix 17 includes a cumulative noise impact assessment of all activities associated with the site to confirm compliance. The Clubhouse will operate during the day and night, whereas the marina is expected to generally operate during the day. The acoustic sum of all noise generating items operating during the various parts of the day and night were propagated to the nearest residential receivers as part of the assessment. This cumulative assessment found that the noise impact from individual activities associated with the operation of the site would be compliant with the criteria at the nearest residential receivers during all time periods, subject to the recommendations outlined. In this regard it is relevant to note the following:

- When the car park is operating at full capacity during the day (eg when a regatta is being held), activities/equipment associated with the marina will generally be idle (eg operation of the workshop). Therefore, compliance will be achieved.

- Entertainment within the Clubhouse will cease by midnight. The criteria up until midnight is 46dB(A) and after this time reduces to 41dB(A). Therefore, providing all entertainment ceases by midnight, overall compliance with the night time criterion of 41dB(A) will be achieved.

It is recommended that the construction documentation be forwarded to an accredited acoustic consultant to ensure that the various recommendations outlined in the Noise Impact Assessment have been incorporated into the design of the development.

8.18.7 Construction Noise and Vibration

The Noise Impact Assessment assessed the anticipated noise and vibration impacts produced by construction activities assuming no noise barriers or acoustic shielding were in place and with each item of plant operating at full power. Only bulk earthworks and pile driving were predicted to exceed the daytime construction noise criteria of 56dB(A) Leq (equivalent continuous noise level) for prolonged periods of time. Noise levels as high as 72dB(A) are predicted during pile driving at nearest residences, however, simultaneous operation of other construction activities is not expected to exceed 65dB(A). Earthworks are expected to occur in the early stages of the construction, with less noise intensive construction activities occurring for the remainder of the time.

The construction temporary barriers of plywood (at least 2m high) could be considered to mitigate some of the construction noise at the nearby residential boundaries. With such barriers in place, the worst case construction noise will be reduced by up to 10dB(A). In any event, these noise levels are expected to occur for a relatively short time and reduce as work progresses to a new area. The potential for undue noise impact is reduced by noting that the daytime LAeq level is above 65dB(A). Noise levels are dominated by passing road traffic and as the character and amplitude of the construction noise will be similar to the existing road traffic noise, it will be less intrusive than an unfamiliar introduced source.

Notwithstanding the above, Section 9.1 of the Noise Impact Assessment makes recommendations to control noise from the proposed construction activities. These recommendations can be included as conditions of any consent granted and are summarised below:

1. Attended noise and vibration monitoring should be carried out at the commencement of each construction process which has the potential to generate excessive noise. The processes that should be monitored include piling, ripping (bulldozer), earthworks (track machine), vibrating roller, smooth drum roller and truck movements.
2. All combustion engine plant should be carefully checked to ensure they produce minimal noise, with particular attention to residential grade exhaust silencers and shielding around motors.
3. Temporary construction barriers of plywood (around 2-3 metres high) should be erected at the perimeter of the construction site or around individual activities.
4. Nearest neighbours should be notified of the intended construction timetable and kept up to date as work progresses. The site manager should be available to consult with complainants and to respond to complaints in a timely manner. Staff involved with the construction should receive informal training with regard to noise control procedures.

Construction noise will also be managed through the provisions of the Preliminary Construction Management Plan (Appendix 21).

In addition to construction noise, the occupants of neighbouring buildings may have concerns about ground vibration levels from vibrating machinery (pile driving, tracked machines, ripping, rollers, etc). The Noise Impact Assessment in Appendix 17 includes a detailed assessment of potential vibration impacts and makes the following recommendations:

1. To minimise the chances of excessive vibration during site preparation, it is recommended that tracked machines or vibrating rollers should not be used at any one time within 80m of any nearby building.
2. Two vibrating rollers should not be operated in tandem within the minimum safe distance of 60 metres, unless simultaneous attended vibration monitoring is conducted at the nearest receiver/s.

With regard to construction vibration, the Noise Impact Assessment concludes as follows:

> *"We conclude, with a high degree of confidence, that vibration levels at the predicted magnitudes will not cause direct structural damage to any building. We suspect any damage that may occur to nearby buildings during construction activities would be the result of natural forces, as discussed in the previous section."*

8.18.8 Conclusion

The Noise Impact Assessment predicts no exceedance of the criteria for normal operation of the completed development, subject to the recommendations outlined above and in Section 9 of the report (eg. requisite time restrictions on entertainment, operation of the marina, acoustic barriers, etc). Subject to these noise control measures, the construction and operation of the proposed development would result in only short-term periods of high noise and no long term acoustic impact on neighbouring residential properties.

The Noise Impact Assessment concludes as follows:

> *"Providing the recommendations presented in this report are implemented, operation and construction of the development will not have any long term adverse noise impact upon the acoustic amenity of nearby residents. We therefore see no acoustic reason why the proposal should be denied."*

8.19 Air Quality Impacts

8.19.1 Overview

The nearest sensitive receptors are the series of residences located on the foreshore of the Lake as follows (refer to Section 1.3 of the Noise Impact Assessment in Appendix 17):

- Residential units to the north east on the corner of Victoria Street and Walter Street.
- Residences to the east along Ada Street and Walter Street.
- Residences to the south east adjacent to the lake along the Pacific Highway to the east of the site.

The existing environment benefits from good air quality and the existing operations of the LMYC and marina do not contribute in any significant way to reduced air quality. The potential impacts of construction and operation of the new development on air quality have been assessed below. When complete the proposed foreshore works will reduce the current potential for airborne dust as the unsealed car park will be replaced with a sealed surface and landscaping.

8.19.2 Construction Air Quality

Air quality impacts during the construction phases are expected to be minor and not of any significant duration. The air quality impacts of the offshore construction activities are considered to be negligible and are in any event well removed from the residences along the foreshore. The major emission sources during the land based construction activities are likely to be:

- Dust generation when soil is exposed during regarding and site preparation works.
- Emissions from construction plant and equipment including particulates, carbon monoxide, nitrogen oxides and volatile organic compounds.

Appropriate mitigation measures will be put in place as part of the Preliminary Construction Management Plan (see Appendix 21) to address these potential adverse impacts. Such measures will include the following:

- The provision of well established erosion and sediment controls (see Section 5.19 and Appendix 20).
- Ensuring any stockpile of fine materials is kept moist, if stored in exposed locations.
- The provision of temporary construction fencing incorporating solid (or shadecloth) materials to mitigate against wind erosion.
- Ensuring that trucks entering and leaving the site have canopies secured over their load and their tailgates closed.

8.19.3 Operational Air Quality

A summary of the potential emission sources associated with pollutants and potential impacts during operation is summarised in the table below:

Table 13: Operational Air Quality Impacts

Facility/Activity	Location	Potential Impact	Impact with Mitigation Measures (where relevant)	Associated Pollutant
Boat travel lift/crane	Hardstand/Car Park	Negligible	Negligible	S02 (Sulphur dioxide), NO2 (Nitrogen dioxide), CO (Carbon monoxide), solid particles.
Operational vehicular traffic.	Hardstand/Car Park	Negligible	Negligible	S02 (Sulphur dioxide), NO2 (Nitrogen dioxide), CO (Carbon monoxide), solid particles.
Vessels	Marina	Negligible	Negligible	S02 (Sulphur dioxide), NO2 (Nitrogen dioxide), CO (Carbon monoxide), solid particles.

Appropriate mitigation measures will be put in place as part of the conditions of any consent granted to address these potential adverse impacts. Such measures will include the following:

- Ensuring that no major boat maintenance activities take place within the marina (other than general repairs). Any additional maintenance activities to take place either off-site or within the designated existing workshop space. Boat maintenance and repairs are not currently undertaken at the marina and are not proposed as part of on-going operations following the redevelopment.
- Although emissions from vessels are difficult to control by the marina manager, boat owners would continue to be informed and encouraged to improve engine efficiency, reduce fuel use and reduce emissions. Measures that can be adopted include regular maintenance and engine tuning, increased use of catalytic converters and reduced idling time within the marina.
- Emissions from the boat lift will be reduced by continuing to ensure that the lift is operated by trained and experienced personnel and that the lift is operated for the minimum time possible.

8.20 Construction Management

A Preliminary Construction Management Plan ("PCMP") has been prepared by Northrop and is included in Appendix 21. This PCMP provides the following strategies for managing construction at the site:

- Site Management Strategy, dealing with issues such as site communication, site safety, construction traffic and community relationships.
- Water Management Strategy.
- Dust Management Strategy.
- Road Management Strategy.
- Noise and Vibration Management Strategy.
- Contaminated Soil Contingency Strategy.
- Waste Minimisation Strategy.
- Complaints Handling.

Details relating to the recommended construction methods are outlined in the Geotechnical Assessment in Appendix 14. The soils beneath lake bed level within the existing and proposed new clubhouse building footprint are expected to comprise Unit 2 alluvium, comprising variable density sands overlying stiff to hard clays, to greater than 7m depth below the existing car park level. It is therefore recommended that the proposed new clubhouse be supported on pile foundations founded on weathered rock (located beneath the upper layers of fill and variable density alluvium). Suitable pile options include grout injected piles, 'Atlas' screw piles or driven piles.

In terms of the car park widening, pavement design recommendations have been provided in the Geotechnical Assessment in Appendix 14. The pavement design of the car park widenings will have a design traffic loading of 7×10^4 equivalent standard axles (assuming a "Local Road – Access Place or Cul-de-sac" street type in accordance with Lake Macquarie City Council guidelines). Subsoil drains are not considered to be necessary provided existing embankment fill materials comprise clean sand or similar.

Potential adverse ecological impacts during construction can be adequately managed and mitigated as outlined in the PCMP and summarised below:

- Demolition of the existing clubhouse will be undertaken using best practice methods. A Demolition Management Plan will be developed to reduce the risk of building materials entering the lake during demolition.
- Material stockpiles will be minimised and covered to reduce the risk of foreign material entering the lake.
- The marina structure will be constructed using best practice construction methods. Pilons will be driven or screwed to minimise disturbance to the lake bed.
- Sediment and erosion control measures including sediment fences, floating bunds, silt curtains and dust suppression will be implemented for the duration of works to minimise the risk of sediment entering the lake.
- Existing vegetation on the foreshore will be protected during construction.

8.21 Utility Services

Details in this regard are provided in Section 5.15 and the Engineering Report in Appendix 20, which includes correspondence from the relevant utility companies.

No further assessment is therefore required in this regard.

8.22 Crime Prevention Through Environmental Design

A Safer By Design Report has been prepared by Insite Economic & Social Planning and is included in Appendix 22. This report includes a crime risk assessment utilising the principles of Crime Risk Through Environmental Design ("CPTED"). This report makes the following findings:

- The LMYC and local area is not considered a high risk crime area and the proposed development is not expected to bring about an increased incidence in crime.
- The area is well defined, however, its location makes surveillance from areas outside of the clubhouse difficult. However, the marina will only be accessible to users from within the premises of LMYC via locked gates, similar to the existing situation. From the land, users will be required to either be members of LMYC or guests of members and will be required to sign in at the reception office.
- Although there are opportunities for ad hoc irregular users to attend the facility (eg. for a meal or a function), the majority of users will be members or people who live within a 5km radius. Therefore, monitoring people around the LMYC is easier.
- There is no evidence to support any conflict between the LMYC and the Gunya Hotel, however, the availability of taxis for both user groups would need to be considered.
- Advice from the Police Community Safety Officer indicates that the development would not be a major concern.

Notwithstanding the above, the Safer By Design Report makes the following recommendations:

1. Graffiti resistant paint be applied to the exterior surfaces and evidence of anti-social behaviour be addressed immediately.
2. A regular "walk through" be undertaken by management of the LMYC lease area, the Ada Street car park and adjoining foreshore area to provide ongoing monitoring and a quick response to issues that may arise.
3. The introduction of a "lock it or lose it" campaign for the car park, marina and swing moorings to improve vehicle and boat security.
4. The provision of lighting within the car park and marina to promote visual surveillance at night.
5. The co-ordination of taxis at the LMYC for patrons prior to and at closing time.
6. The continuation of the courtesy bus service that operates at the LMYC.

The Safer By Design Report concludes as follows:

> *"In closing, the level of risk for crime and anti social behaviour has been assessed as low. The redevelopment of the site is not considered to increase the opportunities for crime or antisocial behaviour. Supporting this assessment is the existence of policies that are, and will continue to be in place. These include:*

- *The Responsible Service of Alcohol;*
- *Monitoring of patrons entering and existing the facility at all times when the club is open;*
- *Employment of external security contractors at special events and functions;*
- *Security of the marina and car park areas including lighting of these areas;*
- *Ongoing monitoring of the site by staff; and*
- *Practice to report and act on any incidents such as vandalism etc.*

With the above policies in place, and the adoption of the above proactive strategies, there are no specific issues arising from this development."

8.23 Ecologically Sustainable Development

Ecologically Sustainable Development ("ESD") principles are required to be taken into account in the preparation and consideration of development proposals pursuant to, inter alia, Section 5 of the EP&A Act. Schedule 2 of the EP&A Regulation requires the justification of the development or activity to be carried out in the manner proposed, having regard to biophysical, economic and social considerations, including the principles of ESD.

The principles of ESD are not defined in the Act, but are outlined in Section 6(2) of the Protection of the Environment Administration Act 1991 as follows:

> *"ecologically sustainable development requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:*
>
> *(a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.*
>
> *In the application of the precautionary principle, public and private decisions should be guided by:*
>
> *(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and*
>
> *(ii) an assessment of the risk-weighted consequences of various options,"*

Throughout the process of development of the LMYC, the proponent has adopted an anticipatory approach to the identification and mitigation of the environmental, social and economic risks and ecological damage, by using proactive solutions for design, construction and operation. This approach was adopted from the start of the proposal, through extensive research, specialist studies and impact assessment commissioned as part of the preparation of the EA. The proposed development is supported by specialist technical reports which conclude that the proposal's impacts can be successfully managed and mitigated. No serious or irreversible environmental impacts have been identified.

> *"(b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,"*

The design of the proposed development will ensure that the existing environment is protected for future generations.

"(c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,"

The proposed development is supported by specialist technical reports which have included a thorough assessment of how the existing biological diversity and ecological integrity can be conserved. No serious or irreversible environmental impacts have been identified.

"(d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:

(i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems."

It is necessary for improved valuation, pricing and incentive mechanisms to form an element of policy making and program implementation to ensure environmental factors are included in the valuation of assets and services. Cost benefit analysis can be applied to help decide how to proceed towards sustainable development, by allowing the costs of proceeding with a proposal to be measured against the benefits arising from the proposal.

It is difficult, however, to assign a monetary value to the environment of a locality or to environmental resources not considered for commercial use. The proponent has therefore taken the following approach:

- Include land assessment and consultation with LPMA.
- Committing financial and commercial resources to provide new club and marina facilities, both for immediate and long term. This will meet the increased demand for boat storage and alleviate the pressures for swing moorings on Lake Macquarie. It will also meet increasing demand for multi purpose community and tourist facilities on the Lake (sailing, social functions, competitive regattas, etc).
- Managing the potential environmental impacts of the proposal by identifying appropriate safeguards to mitigate adverse environmental effects with financial support for implementation.

In summary, the proposed redevelopment of the LMYC has a significant long term benefit in terms of its environmental, economic and social benefits. The proposal has been designed and developed in accordance with the four key principles of ESD and appropriate mitigation measures have been identified where necessary.

9. DRAFT STATEMENT OF COMMITMENTS

In accordance with the Director General's requirements for the preparation of this EA, this section provides a draft Statement of Commitments which details the measures proposed by the proponent for environmental mitigation and management of the proposed project. The draft Statement of Commitments identifies those matters which will be dealt with in the next stage of the proposed project in order to minimise the impacts on the environment. Those matters arise from the detailed analysis of the project which has been carried out and documented in this report and the accompanying specialist reports.

If approval is granted under Part 3A of the EP&A Act, 1979, the proponent will commit to the following controls for the construction and operation of the proposed development.

Table 14: Draft Statement of Commitments

NO.	ITEM	COMMITMENTS
1.	Scope of Development	The development will be carried out substantially in accordance with the Environmental Assessment prepared by de Witt Consulting, supporting plans and reports.
2.	General	The developer will obtain and maintain the following licences, permits and approvals for the development: • Lake Macquarie City Council/Private Certifier – Construction Certificates for works associated with the development. This will include engineering design plans containing, where relevant, detailed designs relating to earthworks, building works, drainage, hardstand works, water supply and landscaping. • Lake Macquarie City Council/Private Certifier – Occupation Certificates prior to occupation/use of the new marina and club house. • Energy Australia – Design Certification • Hunter Water Corporation – Compliance Certificate • Telstra – Compliance Certificate
3.	Demolition	Demolition of the existing Clubhouse will take place in accordance with AS 2601 – the Demolition of Structures. The demolition contractor will prepare a Hazardous Materials Assessment prior to the demolition of the Clubhouse.
4.	Construction	Prior to the release of the Construction Certificate, the developer will prepare a Construction Management Plan addressing matters relating to education of contractors, statutory obligations, management procedures, sediment controls, traffic management, marine ecology management, foreshore protection, environmental management procedures and waste minimisation.
5.	Ada Street Causeway	Ada Street causeway will be dredged on a monthly basis by dredging the centre to 0.8m below MSL and the edges to 200mm over a waterway area of 5 square metres.
6.	Marina Structures	During construction the developer will prevent debris or materials falling into the water and will remove any that do fall into the water.

NO.	ITEM	COMMITMENTS
		During construction a continuous silt curtain surrounding the piling works and extending from the water to the Lake bed, will be installed.
7.	Infrastructure	Prior to the release of the Occupation Certificate the developer will provide power to the development, where required, in accordance with the requirements of Energy Australia. Prior to the release of the Occupation Certificate, the developer will provide telecommunications infrastructure to the development, where required, in accordance with the requirements of Telstra. Prior to the release of the Occupation Certificate, the developer will provide reticulated water and sewerage services to the development, where required, in accordance with the requirements of Hunter Water Corporation.
8.	Stormwater and Water Quality	Prior to the release of the Occupation Certificate, stormwater management and water quality infrastructure in accordance with the Engineering Report prepared by Northrop Engineers will be provided.
9.	Soil Erosion and Sediments	• A Sediment and Erosion Control Plan will be developed in accordance with the relevant guidelines prior to the commencement of construction. • Surface drainage for construction will be installed prior to commencement of earthworks to intercept overland flows. • Topsoils will be stockpiled for landscaping purposes. • Any filling on the site will be placed and compacted in accordance with AS3798-1996, Guidelines on Earthworks for Commercial and Residential Development. • During construction a continuous silt curtain surrounding the piling works and extending from the water to the Lake bed will be installed.
10.	Acid Sulphate Soils	Design piling methods involving minimal disturbance of Potential Acid Sulphate Soils. If disturbance of the Potential Acid Sulphate Soils is unavoidable, the developer will prepare and implement an Acid Sulphate Soil Management Plan.
11.	Contamination	A construction environmental management plan (CEMP) will be required to be prepared and implemented during redevelopment of the LMYC. The CEMP would address among other things, procedures for appropriate handling and disposal of disturbed soils from each of the nominated AECs.
12.	Ecological	Four of the LMYC swing moorings will be removed prior to the commencement of construction of the marina extension to facilitate the implementation of the Seagrass Management Plan. Any large scale removal of seagrass wrack will be avoided. The allocation of moorings at the redeveloped marina will be based on the draught of the boat with shallow draught boats moored to the east and deeper draught boats to the west. The Sea Grass Management Plan will be implemented. During construction a continuous silt curtain surrounding the piling works

NO.	ITEM	COMMITMENTS
		and extending from the water to the Lake bed will be installed. Construction waste will be collected regularly and disposed of appropriately. Stormwater runoff from the hardstand areas will be directed to a series of proposed stormwater inlet pits with appropriate pollutant traps and filters to treat stormwater runoff. Accumulated water surface rubbish within the marina will be collected as part of regular cleaning/maintenance activities.
13.	Noise	Construction operations will take place in approved Council hours and pursuant to the provisions of the Construction Management Plan.
14.	Dust	• All loads leaving the site will be adequately covered. • Stockpiles will be maintained in a moist condition to minimise wind blown and traffic generated dust. • All roads and trafficked areas will be watered as required to minimise dust generation.
15.	Landscaping	Prior to the release of the Occupation Certificate: • Plantings will be in accordance with a detailed Landscape Plan to be prepared in accordance with the Landscape Concept Plan already prepared by Terras Landscape Architects. The Landscape Plan will be prepared by a suitably qualified Landscape Architect.
16.	Water Transport and Navigation	Prior to construction the developer will include in the Construction Management Plan provision for signage and site demarcation to inform water users about the construction of the marina structures.
17.	Aboriginal Heritage	If human remains are located during the project, all works will halt in the immediate area to prevent any further impacts to the object(s). The local NSW Police, the Aboriginal community and DECCW will be notified. If the remains are found to be of Aboriginal origin and the police consider the site not an investigation site for criminal activities, DECCW will be contacted and notified of the situation. Works will not resume in the designated area until approval in writing is provided by DECCW. In the event that a criminal investigation ensues, works will not resume in the designated area until approval in writing is obtained from the local NSW Police and DECCW. The developer will ensure that if there is any evidence of Aboriginal archaeological content exposed during the construction stage, the developer and any associated contractors will stop work and notify the Aboriginal stakeholders group and DECCW. An Aboriginal Cultural Heritage Education Program will be developed for the induction of personnel and contractors involved in the construction activities on site. The program will be developed in collaboration with the registered local Aboriginal stakeholders. Registered local Aboriginal stakeholders will be invited to monitor excavation of the minor cut in the south eastern corner of the car park as well as excavations associated with the proposed cycleway/footpath along the Lake Macquarie foreshore.

NO.	ITEM	COMMITMENTS
18.	European Heritage	An archival recording of the LMYC clubhouse will be undertaken prior to demolition. The recording will include the collection and collation of all documentary records including plans, council records and club records that may discuss building modifications. Documentation may include photographs, member interviews and a photographic record of the building and construction detail. A photographic record of the sub-floor, wall and roof construction will be undertaken during the demolition process.

10. CONCLUSION

This Environmental Assessment has been prepared to accompany a Major Project Application under Part 3A of the Environmental Planning and Assessment Act, 1979 in order to address the Director-General's Environmental Assessment Requirements for the redevelopment of the Lake Macquarie Yacht Club at No. 9 Ada Street, Belmont. LMYC seeks approval for the proposed redevelopment including a new clubhouse, an extended marina, an extended car park and foreshore improvements to the adjoining Cullen Park.

The subject land is reclaimed Crown land comprising Lots 973, 974, 975 in DP 755233, as well as part of Lake Macquarie and the adjoining Cullen Park. The reclaimed land portion of the site (which accommodates the clubhouse, car park and associated hardstand) has an approximate area of 5,100 square metres. The water based component comprising the existing marina, occupies an approximate area of 8,700 square metres. The land and water based components of the site are under the care and control of the Land and Property Management Authority. The existing development includes a car parking area for around 94 vehicles on reclaimed land (with access off Ada Street); a two storey clubhouse (which includes meeting rooms, licensed premises with bar and restaurant, office and general amenities); an 84 berth marina; 12 swing moorings licensed to the LMYC and a hardstand area adjacent to the car park which accommodates 19 yachts.

The proposed development comprises various elements. The existing marina will be extended to accommodate 64 additional wet berths/boats (*Note: 72 new wet berths are to be provided in the new marina extension. However, the existing marina berths are to be reduced to 76 berths with a catamaran configuration*). The marina extension will comprise a total of 148 wet berths (including temporary day berths and berths used by the Club). Four commercial swing moorings licensed to the LMYC will be surrendered, reducing the number of such swing moorings to 8. The existing two storey clubhouse will be demolished and a new contemporary style two storey clubhouse building erected. The existing car park will be reconfigured to accommodate a total of 127 car spaces, including 3 disabled spaces (ie. 33 additional spaces). The existing car park will be resealed and will be extended over the existing rock ballast walls to both the north and south. An additional 24 at grade parking spaces and 2 car and trailer spaces will be provided within the existing gravel car park in Cullen Park. These works will include the landscaping of Cullen Park and the provision of a new public access path along the foreshore.

In this EA, the proposal has been assessed against the relevant zoning provisions and objectives, development standards, and DCP requirements. It is a permissible and generally complying development. This EA has addressed in detail both the statutory and non-statutory provisions that apply to a development of this nature, particularly NSW Coastal Policy 1997, Lake Macquarie Sea Level Rise Preparedness Adaptation Policy, State Environmental Planning Policy No. 71 – Coastal Protection, Lake Macquarie Local Environmental Plan 2004, Lake Macquarie Lifestyle 2020 Strategy and the Lake Macquarie Development Control Plan No. 1 – Principles of Development.

It has been demonstrated by addressing the Director-General's requirements that the proposal does not adversely impact upon the surrounding environment. This has been supported by investigations by suitably qualified practitioners with expertise in a range of fields to ensure that there will be no irrevocable damage to the environment.

It is considered that the proposal is the best economic use of the site while retaining the existing character of the yacht club and its compatibility with the surrounding residential environment. The development is consistent with the NSW Government's policies for the protection of sensitive coastal environments.

APPENDICES

APPENDIX 1

Director General's Environmental Assessment Requirements

APPENDIX 2

Location Plan

APPENDIX 3

Aerial Photograph

APPENDIX 4

Zoning – Lake Macquarie LEP 2004

APPENDIX 5

Council's Coastal Zone Map

APPENDIX 6

Crown Plan

APPENDIX 7

Survey Plan prepared by Harper Somers O'Sullivan

APPENDIX 8

Site Analysis and Architectural Drawings prepared by EJE Architecture

APPENDIX 9

Landscape Design Report and Concept Plans prepared by Terras Landscape Architects

APPENDIX 10

Visual Impact Assessment prepared by Terras Landscape Architects

APPENDIX 11

Flora and Fauna Impact Assessment Report prepared by Ecotone Ecological Consultants Pty Ltd

APPENDIX 12

Seagrass Management Plan prepared by Ecotone Ecological Consultants Pty Ltd

APPENDIX 13

Heritage and Archaeological Assessment prepared by Insite Heritage Pty Ltd

APPENDIX 14

Geotechnical Assessment prepared by Coffey Geotechnics Pty Ltd

APPENDIX 15

Phase 1 Environmental Site Assessment prepared by Coffey Environments Pty Ltd

APPENDIX 16

Traffic and Parking Assessment Report prepared by BJ Bradley & Associates

APPENDIX 17

Noise Impact Assessment and Addendum Report prepared by Reverb Acoustics

APPENDIX 18

Social and Economic Impact Assessment prepared by Insite Economic and Social Planning

APPENDIX 19

Consultation Report prepared by Insite Economic and Social Planning (includes car park option plans prepared by EJE Architecture)

APPENDIX 20

Engineering Report prepared by Northrop

APPENDIX 21

Preliminary Construction Management Plan prepared by Northrop

APPENDIX 22

Safer By Design Report prepared by Insite Economic & Social Planning

APPENDIX 23

Plan of Management for Lake Macquarie Yacht Club

APPENDIX 24

Building Code of Australia 2009 Compliance Report prepared by DixGardner Pty Ltd

APPENDIX 25

Waste Management Plan prepared by EJE Architecture

APPENDIX 26

Disability Access Report prepared by Lindsay Perry Access + Architecture

APPENDIX 27

Quantity Surveyors Certificate