6 Impacts and mitigation

This chapter outlines the assessment of impacts that the proposal may have on the surrounding environment. Each section addresses a specific requirement of the Director-General. Generally each section is broken up into a description of the existing environment, potential impacts from the proposal and mitigation measures designed to reduce or ameliorate those impacts. Some sections do not include specific mitigation measures, as the assessment has concluded there are no significant impacts resulting from the proposal.

Overall, the impacts of the proposal have been assessed as acceptable given a combination of issue specific mitigation measures and standard industry procedures.

6.1 Land use patterns and adjoining sites

6.1.1 Existing environment

Bounded by Bay Street, Park Street, the Governor's Way and Dolphin Keys, the subject site, featuring Settlement City Shopping Centre, a conventional closed and internalised shopping mall, a Panthers Club, areas of at-grade parking and multi-deck structured parking, is currently largely impermeable.

The site is relatively large but with limited access points and through connections, it is poorly integrated with and connected to the local and wider context. Buildings on the site are generally introverted, focussing patron's attention internally and ignoring the riverside setting and water views.

6.1.2 Potential impacts

The proposed Stage 1 redevelopment and expansion of the shopping centre will improve the site conditions by increasing permeability and improving access to and connections with the Settlement City precinct and wider geographical area. These positive impacts will be achieved by the following measures.

Creating a new street, specialising in retail, food and entertainment and increasing permeability of the site and improving links to the precinct and through the block. The street runs from Bay Street through the site to Park Street, creating a new pedestrian precinct that ties the Panther's Club into an external street setting activated by retail, restaurants and the cinema/bowling foyer. This is shown in Figure 10 below.

Both Park Street and Bay Street are proposed to have new buildings, built to the edge of the site, that will create active frontages to both streets and will include variation within the architecture and good quality environmental protection. New retail outlets will also be introduced to the site edges, turning the shopping centre 'inside-out' so that it is extroverted rather than introverted and better connected with its local context.

In addition to the new street that punctures the site overall, multiple new pedestrian entries are proposed, including off Bay Street and Park Street and within the new street itself. These entries will contribute towards creating an interconnected and permeable pedestrian network both within the site and the broader Settlement City Precinct.

Overall the proposal will realise a net urban benefit and significant improvement to the land use pattern and relationship between the subject site and adjoining areas.

Figure 10 Stage 1

6.1.3 Mitigation measures

There are no specific mitigation measures as the project presents an overall benefit to the site and surrounding areas.

6.2 Urban design

6.2.1 Existing environment

The following description of the existing environment corresponds to the *Settlement City Precinct Structure Plan* categories:

Table 7 Existing urban design elements

Category	Existing environment
Uses and activation	The study area is poorly integrated and has a low level of activation to the public domain. The Panthers Club lacks activation to the majority of its frontage. The shopping centre has active frontages only to the car park and a small section to Governors Way at the entry point.
Height	Most buildings in the precinct are between one and two storeys. The top of the Panthers roof and the top of the pitched roof of the Settlement City shopping centre entry set the dominant heights.
Street hierarchy and movement networks	Bay Street and Park Street constitute major access points for the precinct. These two are also collector roads for the city centre. On-street parking is provided on both streets while at-grade parking and multi-level parking is also present on the site. These parking areas are not sleeved and accordingly have inactive edges.
Public open space	While the site has internal mall space, it currently lacks public open space.
Built form and architectural character	A quarter of a century since its construction, the Settlement City Shopping Centre is now architecturally dated.

A detailed assessment of the built form and architectural charter against the objectives and principles of the *Settlement City Structure Plan* is included as Appendix A.3

6.2.2 Proposed environment

Design objectives

The Stage 1 proposal has been developed with regards to a number of project specific design and architectural objectives. These include:

- The existing centre is internally orientated, is fronted by large on-grade car parking and does not create active uses of the important river frontage. The existing public domain provides poor connectivity to the wider precinct, especially to the foreshore and through the planning of the new development we wish to open up the centre and connect it to both the surrounding environment and to a series of new external, public space.
- To increase the range of uses on the site, that complement the existing centre and widens the visitor demographic, through increasing the retail offer and integrating further leisure/entertainment uses that support the Panthers Club.

- To maximise the opportunity for street based activity along both Park Street and Bay Street.
- To minimise the visual impact of car parking upon the perimeter street environment.
- To create a ground condition that is both permeable and pedestrian friendly, with a high quality public domain.
- To produce an architecture and materiality that is responsive to the local context.
- To produce a variety within the architecture that responds to use and location/immediate context.

Built form – Park and Bay Streets

The corner of Park Street and Bay Street is an important urban junction within the precinct and is an important visual focus of the approach along Park Street from the east. The height and the strong built form of the corner respects this prime location. A series of framing structures provide a visual screen that adds depth to the simple glazed box of the gymnasium behind. These lightweight structures screen both the sun light and viewing into the building, whilst forming a strong framing hood element that responds to the corner location.

Bay St is presented as a streetscape of building facades that relate to use and location. This approach produces a variety of built forms that breaks down the scale of the urban block into individual buildings, that have their own character and identity, from the strong v shaped structure and projecting roof of the commercial offices to the timber clad, wedge shaped roof of the corner retail store adjacent to the existing petrol station.

To the west of the corner the glazed commercial box of the gymnasium breaks down to a pattern of textured panels that screen the car park behind whilst allowing light to enter through a series of controlled openings.

Further along Bay Street at the corner of the new Leisure Street the existing car park footprint has been reduced, to enable the introduction of new retail uses. This will extend the activated frontages to Bay Street and screen the car park at this important entry point to the site.

The existing car park will be repainted and the addition of a pattern of timber screens will help reduce the impact of the existing structure and tie it in to the colours and materiality of the rest of the development.

Built form – Leisure Street and Entertainment Street

The two proposed new streets will open up the site to the public, providing links to the waterfront to the north and the mangroves to the east. New vista back to the natural surroundings will also be created along these new streets generating a stronger link to the wider precinct

The new streetscapes are predominantly two storeys with upper level uses bringing activity out onto the street frontage through terraces and balconies and providing passive security to the streets below. High-level bridges allow both car and customer connection to occur between the existing and proposed development.

The ground level shop frontages will provide a fine grain to the design of the streets and pedestrians will have environmental protection from the sun and the rain through the inclusion of canopies and awnings.

Street trees with high canopies will be planted along the new streets to bring shade and colour into the street environment.

Leisure Street presents a new elevation to the existing mall and new entry points along the street provide access to the existing mall.

Entertainment Street provides access to the Panthers Club and to the new cinema and leisure uses. The street will become a busy food street with cafes and restaurants spilling out onto the footpath and creating a lively, colourful setting. New tenancies are being introduced into the Panthers Club footprint that will help activate the northern side of the street

The existing mall will be straightened to allow glimpses of the northern end of the site that overlooks Governor s Way. The northern end of the shopping centre will be rebuilt as a food court and market area that can open out onto outdoor terraces and dining spaces along the waterfront edge. The proposal to attract people to this end of the site to bring further activity to the waterfront and to help generate a vibrant, active, public space overlooking the river.

Landscaping response

The landscape design includes all aspects of the external spaces around the building additions and upgrades. The landscape proposals have responded to the site context and role of the building and the proposed upgrades and additions. It is considered that the proposals conform to Council's codes, and the landscape provides added value and a positive improvement on the landscape that exists on the existing site. The overall design applied the design principles for coastal settlements as articulated in the *Coastal Design Guidelines for NSW* (Coastal Council of NSW 2003) as well as *Safer By Design* and *Crime Prevention Through Environmental Design (CPTED)* principles.

6.2.3 Potential impacts

Table 8 Urban design potential impacts

Category	Potential impact
Uses and activation	By providing for greater retail and service diversity, the project will expand the range of uses and facilities in the Greater CBD area. Staging of the retail expansion will ensure that the long-term viability of the CBD is enhanced. New uses and facilities will service tourist opportunities and a wider population and age group than is currently catered for. The proposal will activate both Park Street and Bay Street with the inclusion of new buildings, built to the edge of the site. These will create active frontages to both streets and will include variation within the architecture and good quality environmental protection. These new buildings along with the two new streets 'sleeve' a central multi-level car parking structure within the middle of this new block.
Height	Height is considered in section 6.3, Visual impact. The assessment concludes height generally complies with the adopted structure plan and provides a net benefit in terms of visual impact. Additional height proposed for the cinema element is unavoidable due to site constraints including acid sulphate soils, cinema design requirements and parking requirements.
Street hierarchy and movement networks	The existing road network will be maintained and two new local streets (privately owned roads) introduced. These will improve pedestrian and cycle access, as well as taxi connections. Large areas of at-grade car parking are to be converted into parking structures as part of this process. The new parking structures will be 'sleeved' by buildings allowing for new, active edges. The proposed works are consistent with Council's Section 94A plan and the adopted Structure Plan.
Public open space	No public open space is included as part of this proposal. However, some existing public open space along the foreshore will be enhanced. It is also worth noting that there are increased publicly accessible open space areas included in the Settlement City Shopping Centre Masterplan. These include the newly constructed streets, café and dining areas. The proposed works are consistent with Council's adopted Structure Plan.
Built form and architectural character	The corner of Bay Street and Park Street is an important urban junction within the precinct and the height and strong built form of this corner responds to its prime location. New buildings will respond, in both form and materiality to the local character and coastal context and create a high quality public domain.

6.2.4 Mitigation measures

There are no specific mitigation measures as the new shopping centre design presents an improvement to what is currently on site.

A number of commitments have been incorporated into the draft SoC. These combined with industry standard conditions of consent will ensure the development upholds the principles outlined above.

6.3 Visual impact

6.3.1 Existing environment

The existing centre has little immediate built form context and little visual impact on the surrounding context where views are screened by existing landscape or by physical separation.

The roof of the Panther's Club is the most striking feature of the current architecture and the singular element on the site that can be seen from any distance.

There are more local views from the site to the water and back towards the centre from the canal style residential development to the north and west of the site.

A visual impact assessment (VIA) has been prepared by Clouston Associates. The VIA report is included as Appendix N. The purpose of their study was to complete an objective assessment of:

- The visual impacts of the proposal.
- The means by which any such impacts might be mitigated.

The site is affected by key local views identified in DCPs 20 and 49. These views are included as a key view in the *Settlement City Structure Plan*. Other key views identified as significant and assessed by the Clouston report include:

- St Agnes Church to the west over Settlement City.
- The foreshore walk to the east across the Hastings River.
- Residential Ridgeline to the direct south of Warlters Street.
- Hastings Avenue and Warlters Street.

6.3.2 Proposed environment

The proposed development of Settlement City Shopping Centre will sit comfortably in both scale and form with the future growth of this city precinct. The exterior facades onto both Parks and Bay Street no longer present as an internalised 'fortress' type shopping centre but as active street edge with individual buildings responding to use and location.

The new streets that activate the interior of the urban block will open up connections and views to the water's edge that are not currently available to the public.

The VIA undertaken by Clouston Associates considered both the qualitative and quantitative visual impacts of the proposal when completed. The majority of the receptors assessed are considered to be low or moderately impacted by the proposal. No receptors were classified as being highly impacted.

The most significant impacts resulting from the development are classified as moderate to high impacts. The receptors that are assessed at this level are key mid distance views including:

- Hasting Avenue (RE1).
- Seawall walkway (P1).
- Foreshore walk views west of the CBD (P2 and P3).

These views are illustrated in figures X-Y on the following pages as well as in the VIA report included as Appendix N.

Receptor CH2 existing (View A in SCPSP) from St Agnes Church Forecourt. Note Panthers RSL roofline, white building in mid distance right.

Receptor CH2 proposed (View A in SCPSP) from St Agnes Church Forecourt. Note roofline of cinema immediately below and to right of flagpole, approximatley 3 metres above RSL roofline; there is no appreciable loss of view to mountain backdrop from this location and the pine trees in the midground are likely to obscure much of the proposed building when they mature.

Receptor P3 existing (View B in SCPSP) from CBD foreshore walk. Note existing Panthers RSL roofline, white building in mid distance

Receptor P3 proposed (View B in SCPSP) from CBD foreshore walk. Note roofline of cinema immediately to right of flagpole and left of RSL.

Receptor RE1 existing (View D in SCPSP) from Hastings Avenue. Note existing Panthers RSL roofline, white inclined roof in mid distance, centre left.

Receptor RE1 proposed (View D in SCPSP) from Hastings Avenue. Note Panthers RSL roofline obscured by new development cinema roofline. Cinema roofline does not breach horizon from this location but would do so marginally from midslope in the street.

Receptor P1 existing (not shown in SCPSP) from Seawall Wakway. Note existing RSL roofline in distance, centre right. Vegetation in front of RSL is mostly mid ground on Pelican Island.

Receptor P1 proposed (not shown in SCPSP) from Seawall Wakway. Note new development roofline to left of RSL with cinema roofline above height of RSL and mountain horizon in background mostly obscured in this part of view.

The visual impacts of the cinema roofline are generally moderate to high when viewed at three of the four key view areas illustrated by the assessment. This element requires closest attention in terms of considering mitigation.

When viewed from closer quarters in the adjoining streets, parks and residential properties the design has ensured that the street-front facades hide the cinema roofline. The visual assessment concludes that the development proposal provides net benefits to visual quality of the site and locality. In summary:

- A stronger, more activated and more legible built form street presence on the junction of Bay and Park Streets.
- The containment of large areas of parking presently visible from Park and Bay Streets within the proposed built form.
- A more contemporary architectural style appropriate to the locality and responding to the materials and design guidelines in the structure plan.
- A more coherent and structured landscape design for the site and its street frontages, including significant new tree plantings.

The report concludes that for the most part the proposal appears to meet the objectives and guidelines contained in the structure plan from a visual impact perspective, however, notes that the cinema roofline generates some moderate to high impacts from mid distance. This is discussed in more detail in section 6.3.3.

Additional height

The cinema area on the set back upper level of the building exceed the height controls by a margin. The structure plan nominates a RL19 for this section of the site as a guideline. The plans submitted as part of the Proposed Stage 1 works establish a maximum building height of RL24.3 for the setback uppermost part of the building. The area of the non compliance is the highest part of the building as illustrated in figures 11, 12 and 13.

The complete set of plans including additional artists impressions of the proposal are provide in Appendix A.2.

The necessity of the proposed height is discussed in detail in section 6.3.3 This includes discussion of the opportunities and constraints that were considered in relation to design of the building and possible mitigants. The assessment concludes that the height generally complies with the adopted structure plan and provides a net benefit in terms of visual impact. Additional height proposed for the cinema element is unavoidable due to site constraints including acid sulphate soils, cinema design requirements and parking requirements.

Figure 11 3D perspective view

Figure 12 Proposed Stage 1 – Section AA

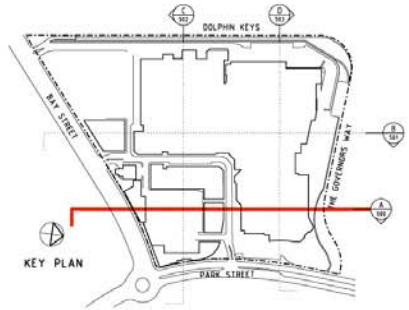
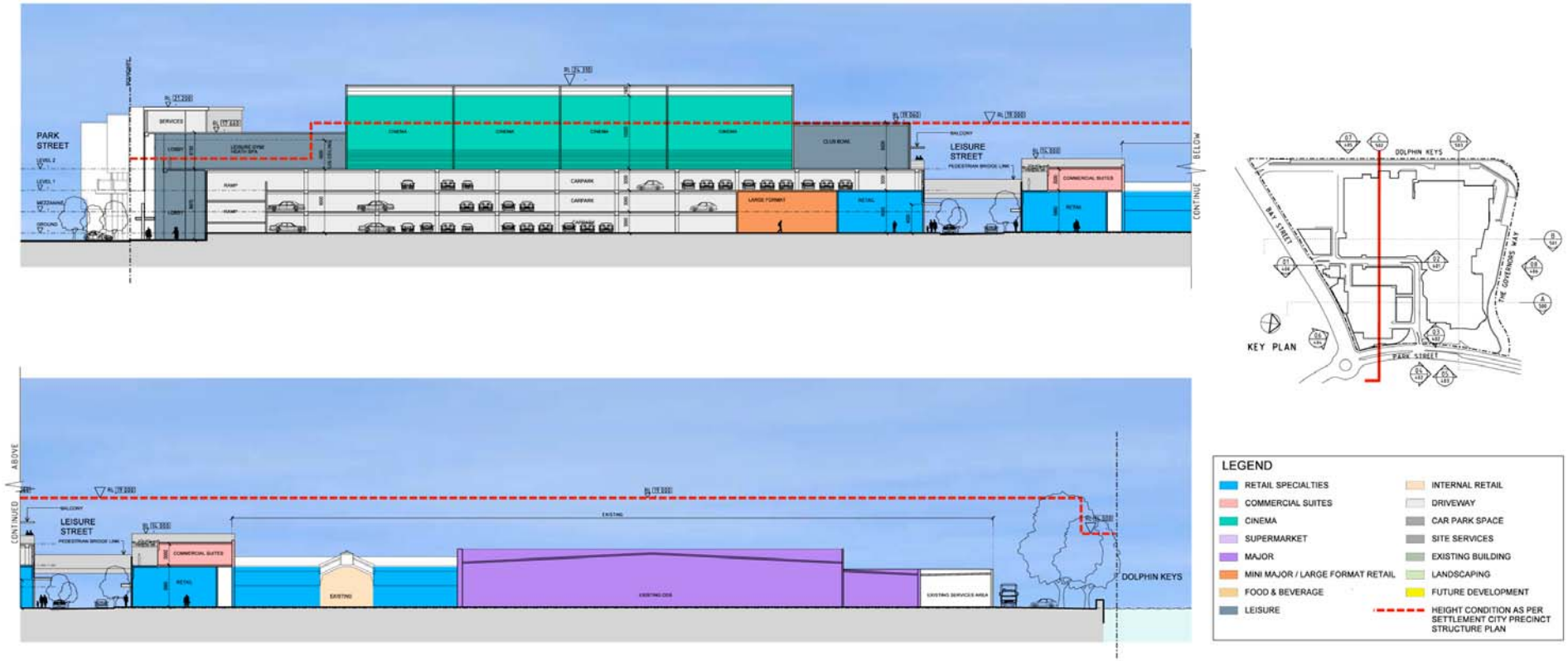


Figure 13 Proposed Stage 1 – Section CC



6.3.3 Potential impacts and mitigation measures

Visual impact assessment

The majority of the receptors assessed in the VIA are considered to be impacted at a low or moderate level. Only mid distant views, as indicated, are measured as moderate to high impacts.

Some reductions in impacts can be achieved through matters such as selection of finishes, architectural detailing and colour selection. Mitigation measures from the report have been included in the draft statement of commitments (Appendix O).

A major reduction in building height as a mitigant would entail significant changes to the design of the building to reduce its impact to moderate levels. The adoption of major mitigation, through altering the core design of the building is not feasible for a number of reasons outlined below.

The project team have assessed a number of design options for the proposal. These have included seeking to reduce the height of the building to comply fully with the requirements of the structure plan adopted by Council. There are a number of significant constraints that prevent a reduction in height including:

- Presence of acid sulphate soils limits both the depth and feasibility of excavation to provide car parking at basement levels.
- Requirements to provide adequate car parking provision and circulation areas in accordance with relevant standards has significantly influenced the car park structure which in turn influences the total building height.
- Design requirements for the cinema screens (height of digital screens) dictate the floor to ceiling heights of this element of the building.
- The need to maintain operation of parts of the existing centre during construction constrains available site area for redevelopment.

There are a number of other important considerations that need to be taken into account in regards to a merit based assessment of the height of the current proposal. These have generally been noted elsewhere within this report. In summary they include:

- The proposed uses (retail, entertainment, commercial) are envisaged by the current and future zonings of the subject site.
- The proposal meets the vision and desired future character as set out within the structure plan.
- The proposal meets existing and future demand for retail and entertainment facilities.
- The proposal will facilitate the revitalisation of the centre and act as a catalyst for further development within the precinct.
- The proposal delivers significant community benefits in terms of improved and additional services.
- Within the view corridors there will be significant foreground development occurring in the future at heights up to four stories, significantly reducing the future visual impact of the proposed buildings.
- The structure plan will facilitate a significant change in the area over the next 20 years. This proposal is in effect the first development. Therefore the extent of change will be initially more apparent that if the remainder of the precincts development had occurred previously or at the same time as this proposal.

- The structure plan notes the distant views of the hills in the background are of significance and these views are generally maintained and only ever partially obscured by the proposed development.
- The additional height is limited to a small area of the overall development deliberately designed with set back towards the centre of the building. This height therefore does not lead to impacts such as overshadowing or views from the immediate streets.
- The majority of the proposal complies with the height limits set by the structure plan recently adopted by Council. The extent of the non compliance is described in section 6.3.2.

On balance the benefits attributable to the development are considered to be adequate justification for the additional height for one setback section of the built form. The proposed quantum of floor space proposed is envisaged for the site by the structure plan and demand for the proposed mix of uses has been widely identified. As a result of the site constraints and design specifications additional height is required to provide for a cinema facility. It would not be possible to overcome these requirements without compromising on other standards and outcomes being proposed by the development.

Overall it is considered that there will be net improvement to views and vistas to and from the subject site, with greatly enhanced visual connection to the water and upgraded local views. These improvements can be summarised as follows:

Views to the water

Views to the water are proposed to be improved by a number of design strategies:

- Straightening of internal shopping street so that views and connections to the water are improved for patrons.
- Improving the landscaping along the publically accessible water's edge and upgrading, expanding and improving the public domain of the food court to create a new public space at the water front.

Views from the water

Views from the water and residential development across the water will be improved by:

- Architectural design that responds to the marine character of the precinct through the use of form materials and colour.
- Richness, visual contrast and variety in the proposed façade design.
- Heights that generally meet the structure plan objectives of not exceeding the existing top of the wave shaped Panthers roof.

Views from surrounding streets and sites

Views from surrounding streets and neighbouring sites will be improved by:

- Modernising of the building façade and the inclusion of active uses along building edges, including 'sleeving' of multi-storey car parks.
- Richness, visual contrast and variety in the proposed façade design.
- Visual reinforcement of new entry points, which will also improve legibility of the site.
- Visual reinforcement of the important urban junction at the corner of Bay Street, where height and strong built form are proposed to be applied to respond to this prime location.

6.4 Sustainability

The proponent is committed to reducing the environmental footprint of its assets and operations. To this end ING Retail Property Fund Australia has implemented the ING Retail Fund Sustainability Policy to help guide its operations to be more sustainable. At a project level, sustainability measures have been developed to achieve this aim, and have also taken into account the *Port Macquarie-Hastings Council Greenhouse Action Strategy* and the NSW Government's *Climate Change Action Plan*. The strategy will guide a development control plan, which will provide baselines for energy efficiency in new commercial and industrial buildings.

6.4.1 Existing site conditions

Solar access

The subject site enjoys good solar access, and the design and layout of the proposed expansion and partial redevelopment takes full advantage of the sun to minimise the heating and cooling requirements of the buildings. However, shading during the summer months to minimise solar gain will be important in the Port Macquarie climate, as cooling requirements are likely to dominate total air conditioning loads.

The new food court is positioned adjacent to the Hastings River. The indoor food court is linked to the mall, and will use glazing to both maximise views over the river and allow maximum solar exposure to the northern façade. This means maximum solar radiation can occur, particularly during winter. It will be important to incorporate horizontal shading to shield against high altitude summer sun and associated unwanted summer heat.

The leisure, gym and health centre space to the north and east of the site will also allow solar exposure throughout the day. Again, shading from the summer sun will be required, and horizontal louvers are recommended.

The form of the existing shopping centre dictates that the shopfronts of the smaller retail stores will be aligned to the north, south and west, facing the existing shopping centre. Deep awnings for rain protection will limit solar heat gain during summer months.

Wind and ventilation

The key characteristics of the Port Macquarie wind climate relevant to the assessment of the proposal's wind impact and natural ventilation availability are the two primary wind seasons, which occur in summer (sea breezes) and winter/early spring (cold south and south west winds).

It will be critical to provide shelter from cold winter winds for the relevant façades of the building. Proper sealing of glazing will be important, particularly for west exposed façade areas, to allow solar heat gain during winter months without allowing cold air penetration.

At the same time, the abundance of cooling sea breezes to the site can be used to remove accumulated heat gains during overheated periods. Also important in warmer climates is the role of ventilation in directly improving the perception of thermal comfort.

6.4.2 Potential impacts

The following factors can lead to inefficient energy use and high greenhouse gas emissions:

- Poor insulation results in unnecessary heat loss and an increase in energy demand.
- Lighter colours reflect heat and prevent possible heat gain, whereas darker colours absorb heat and prevent possible heat loss. An inappropriate colour selection may result in increased electricity demand for either heating or cooling.
- Heat loss through low thermal mass materials results in increased electricity demand for heating and cooling appliances.
- Lack of energy and lighting efficiency within the development will result in increased electricity demand.

The use of chlorofluorocarbons (CFCs) in refrigeration and air conditioning units contributes to the acceleration of ozone depletion.

The material selection during construction can also have an impact on the amount of embodied energy and greenhouse gas emissions that is required to complete the development. The use of construction materials, such as those that are recycled or sourced locally assist in lowering the embodied energy during the construction phase.

6.4.3 Proposed mitigation measures

Table 9 Proposed sustainability mitigation measures

Element	Mitigation measure
Energy reduction	
Insulation	Roof – ceiling insulation to an R-value* of 2.5 in conjunction with anti-condensation blankets for metal roofing.
	Walls – minimum R-value* of 1.5.
Colour	It has been determined that the advantage of reflecting unwanted heat gain in summer overrides the advantage of absorbing heat with dark colours in winter. Therefore light coloured surfaces are recommended internally and externally for this redevelopment.
Thermal mass	Concrete is a high thermal mass material, and will be used where possible within the development.
Heating, cooling and ventilation	Equipment control systems shall be properly calibrated.
	Heating systems shall have sufficient means of control to ensure that areas are only heated when occupied, and only to the required temperature.
	The use of CFCs will be excluded.
	Pipework and ducting will be adequately insulated.
Lighting	Energy efficient bulbs will be used throughout the development.
	A lighting control system will ensure spaces are only lit when necessary. The system will have an automatic switch timed to turn off when staff and shoppers are not normally present.
	Integration of electric lighting and daylight using sensors to automatically adjust illumination to changing natural conditions. These would be appropriate for the perimeter retail stores.

Element	Mitigation measure
Construction and commissioning	Energy efficient design features will be included within the agreed scope of works for each contractor on the site.
	Design, on-site and documentation quality assurance checks will be carried out to ensure than energy efficient design features are preserved throughout the construction process.
Green power	The option of purchasing green power (power produced from renewable energy sources) will be made available to tenants. Green power is purchased in the same way as standard power from an electricity retailer, however is certified as being from renewable sources.
Water reduction	
Pipe fittings	Water efficient fittings will be installed throughout the development on kitchen and bathroom fittings.
	Hot water pipes should be insulated (where longer than a few metres) to reduce heat loss.
Rainwater harvesting	A rainwater harvesting system will be implemented on-site. Harvested water shall be used for irrigation and toilet flushing. A water balance study will be completed prior to construction to determine the most cost effective system to implement.
Landscape design	Indigenous tree and shrub species that have a low demand for water shall be used for all landscaping.
	Timers and soil moisture sensors shall be used to minimise landscaping water usage to when it is necessary.
	Common areas will implement water sensitive urban design to minimise water use and loss through runoff.
Materials selection	
Construction materials	Construction materials and products will be selected, where feasible and reasonable, based on the following criteria: • Recyclability. • Sustainable sourcing. • Low embodied energy. • Low pollution from manufacturing. • Low transport costs. • Minimal environmental impact. • Durability and minimal maintenance. • Non-hazardous. • Eco-labelling and certification.
	Recycled materials will be used as aggregate in roadways and other paved areas. Concrete will also contain a component of recycled material, which will reduce greenhouse gas emissions from cement production and the mining of raw materials.
	Consultation will occur with local suppliers to determine the most appropriate locally sourced aggregate to use.
	A recycling management plan will be developed for construction materials to maximise recovery of waste materials on-site.
	Waste that cannot be reused or recycled on site will be disposed of at a suitable licensed recycling or disposal facility.

** The R-value for a material is a measure of its thermal resistance. The greater the R-value, the more insulating effect it provides.*

6.4.4 Conclusion

It is considered that the above mitigation measures adequately address the potential sustainability impacts.

6.5 Infrastructure service provision

6.5.1 Electricity and gas

Existing environment

VOS Group Consulting Engineers have assessed the electricity and gas supply requirements of the proposed redevelopment and expansion.

The electricity supply authority for the subject site is Country Energy. There is an existing high voltage cable network and four existing substations serving the site.

There is no underground gas system servicing the site or in adjacent streets. Gas is currently stored on site in bulk tanks.

Potential impacts

The electricity cable network servicing the subject site has sufficient capacity to cater for the proposed redevelopment and expansion. However, the substation system will require some augmentation to cater for the proposal.

The substation chamber located adjacent to the existing discount department store and supermarket is clear of the proposed redevelopment works, and can therefore remain in its present location.

The redevelopment works will affect the other three substations. The associated high voltage and low voltage cables will need to be re-established and re-routed to match the proposed development plans and new road system on the site. It is likely that two new chamber substations would be required to serve the new buildings.

Some existing high voltage cables, forming part of the supply authority high voltage ring feeds in the area, cross the site on existing easements. These cables will be removed and repositioned around the site to suit the new development works. The new development works on the south east section of the site (cinemas, offices, bowling, leisure areas and car parking) will require the establishment of new substations.

Mitigation measures

Table 10 Proposed electricity and gas service provision mitigation measures

Potential impact	Proposed mitigation measure
Impact on site electricity network	All cables will be located underground.
	New substations will be incorporated into new buildings on the site.
	All electricity infrastructure will be planned to have minimal effect from electromagnetic fields emanating from them on the existing and new development areas.
	Electrical lighting services around the site are to be planned to utilise energy efficient light sources and switching methods to reduce energy usage but still maintain site safety, operation and security.

6.5.2 Water

Existing environment

Consulting engineers Martens and Associates conducted an assessment of water supply for the proposed redevelopment and expansion.

The water supply infrastructure is discussed in detail in section 6.9 of this report. There is sufficient capacity in the existing service arrangement to cope with the projected increase in water demand. There is also sufficient capacity in existing infrastructure to cope with wastewater disposal.

Potential impacts

There is expected to be a reduced demand on town water supply as a result of stormwater harvesting and re-use. Although there will be a temporary increase in service flow rate for the site, overall consumption volumes will be reduced. This will reduce the overall impact of the development on water supply infrastructure.

The increase in pervious surfaces on site, implementing water sensitive urban design (WSUD) and stormwater harvesting will also reduce the development's impact on drainage and stormwater discharge infrastructure.

Mitigation measures

As the development will reduce the impact on water supply infrastructure, there are no additional mitigation measures required. The measures to be implemented that will reduce the impact are discussed in more detail in section 6.9 of this report.

6.5.3 Stormwater

Existing environment

The site is highly developed, with the majority of land surface being covered by impervious surfaces, such as buildings, roads and car parking areas. Only a minor portion of the site is covered with pervious landscaping in the form of boundary planting, along internal roads and in car park areas.

Drainage is currently through a pit and pipe system, which drains to the canal system (north and west) or to a mangrove inlet beyond the eastern site boundary. No formal stormwater treatment devices were observed in the site drainage system.

Potential impacts

Due to an increase in landscaping and pervious surfaces in the south-eastern part of the site, post-development stormwater flows will be less than pre-development flows by approximately 1.4 per cent for that catchment, and for the rest of the site pre-development flows will equal post-development flows. However, the current stormwater system does not satisfy ecologically sustainable development principles and this may result in the inefficient use or treatment of water across the site.

Mitigation measures

To improve the stormwater system in accordance with ecologically sustainable development principles, a number of measures are proposed for the site.

Table 11 Proposed water and stormwater service mitigation measures

Potential impact	Mitigation measure
Inefficient use or treatment of water on-site.	Include stormwater quality controls on new pipe systems.
	Rain water harvesting of stormwater from metal roof areas for non-potable uses.
	Site layout and grading will be designed to maximise infiltration of overland flow through pervious areas, with excess runoff conveyed by the road stormwater system. Along the northern and western site boundaries, landscaped fringes would allow excess runoff to drain directly to the canal system by overland flow.
	The use of stormwater for toilet flushing in new amenities, site irrigation and external washdown is recommended. This will achieve a reduction in site discharges as well as reducing the demand on the town water supply. Required infrastructure for this measure would be limited to storage tanks, pumping and reticulation systems.
	No on-site stormwater detention is proposed as there is no increase in the amount of stormwater being produced onsite, nor is there council policy to require it. Stormwater harvesting will provide a degree of retention capacity, thus achieving a reduction in overall stormwater flows from the site.

6.5.4 Wastewater

Existing environment

Consulting engineers Martens and Associates conducted an assessment of wastewater disposal and infrastructure provision. This is discussed in more detail in section 6.9. Wastewater from the existing site flows through a series of pump stations and rising mains to the town sewer system.

Potential impacts

The proposed development will increase the peak flow of wastewater by 1.17L/s, resulting in a peak flow of 3.09L/s. Council staff have noted that this increase in flow will be adequately serviced by the existing infrastructure, this correspondence is provided in Appendix L. However additional assessment will be conducted during detailed design to determine if reconfiguration of pump stations is required.

Mitigation measures

Table 12 Proposed wastewater service provision mitigation measures

Impact	Mitigation measure
Need to reconfigure or construct additional pump stations	Any necessary reconfiguration or construction of sewage pumping stations as a result of the project will be undertaken and connected to the town reticulation system.

Further information in regards to infrastructure provision is provided in Appendices L and M.

6.5.5 Conclusion

Implementation of the above mitigation measures will adequately address potential impacts arising from infrastructure service provision.

6.6 Traffic and access

6.6.1 Existing environment

Transport and Traffic Planning Associates (TTPA) originally prepared a traffic and parking assessment for the proposal. This has been supplemented by a report prepared by Colston, Budd, Hunt and Kafes (CHBK), responding to comments made by the Department of Planning and Port Macquarie-Hastings Council in a letter dated 1 April 2009. Copies of both reports can be found in Appendix G. The Settlement City Shopping Centre currently comprises a total retail floor space of 19,157m^2 GLFA and the adjacent Panthers Club is 11,214m^2 in size. The existing parking available for the centre and the club combined is 1,190 spaces.

The predominant road network servicing the site is Park Street (a minor collector route serving Settlement Point) and Bay Street (a minor collector route connecting Hastings River Drive and Park Street). Vehicle access to the site includes:

- An ingress/egress driveway shared with service vehicles located on Bay Street at the western boundary of the site.
- An ingress/egress (by right-of-way) shared with the service station and service vehicles located on Bay Street at the centre of that frontage.
- An ingress/egress driveway (by right-of-way) shared with the club located on Park Street at the centre of that frontage.

The existing traffic controls on the road system in the vicinity of the site include:

- The roundabouts at the Park Street and Bay Street intersection and on Bay Street at the shopping centre access.
- The marked foot crossing on Bay Street.
- The 50km/h speed restrictions on the local road system.

6.6.2 Potential impacts

The proposal will use existing entrance and exit points from Bay and Park Street for the new internal street network, namely leisure and entertainment streets. An additional 325 parking spaces are proposed to cater for the additional development demand. The total parking provision provided by the completed development will be 1,528 car parking spaces.

Pedestrian and bicycle access will be maintained to ensure pedestrians and cyclists have safe access to the site. Given the nature of the works described above, the scope for potential impacts is considered limited.

However, potential impacts that may result from the proposal include additional vehicular, bicycle and pedestrian traffic to and from the site. This would create increased pressure on the road network and could lead to unsafe pedestrian and bicycle access to the site.

There will also be additional demand for parking at the site. If this was not adequately catered for, it would likely result in queuing and traffic congestion at site entry and exit points and at local intersections.

6.6.3 Mitigation measures

The proposal includes the following mitigation and management measures:

Table 13 Proposed traffic and access mitigation measures

Potential impact	Proposed mitigation measure
Additional vehicular, bicycle and pedestrian traffic to and from the site.	Provision of appropriate loading dock facilities.
	Provision of adequate public transport and taxi facilities.
	Provision of cycle and pedestrian links to, from and within the site.
Additional demand for parking at the site.	Provision of 1,528 parking spaces (including 129 spaces for the club), which is about 20 per cent more than the parking required by Council. This would provide buffer to accommodate any additional seasonal demands.
	Provision of appropriate levels of bicycle, motorcycle and disabled parking.
	Provision of internal traffic circulation arrangements to minimise queuing and congestion.

The proposal will not have unsatisfactory traffic impacts. The parking provision is marginally in excess of Council's minimum requirements and will cater for seasonal demands. The adopted structure plan has identified road network and intersection works to cater for future development, including the redevelopment of the shopping centre. However, the existing road network and intersections will be able to handle to proposed development without upgrades. The parking and loading arrangement proposed are considered appropriate.

Full details of the traffic and transport assessments are provided in Appendix G.

6.6.4 Development contributions

Councils Section 94A contributions plan applies to the Settlement City site. The plan allows Council to seek contributions for development, in this case 1% of the value of the works, towards meeting the cost of the public facilities that will be or have been provided within the area as nominated by Schedule 1 of the plan. In accordance with the requirements of the plan the development is required to provide a contribution of $590,000.

In lieu of making a contribution payment the proponent intends to undertake works in kind.

The works and improvements to be carried out are outlined in the Statement of Commitments as part of the proposed works to upgrade and revitalise the existing development. The works are in line with the adopted Structure Plan and reflect the works anticipated by the Section 94A plan. The plan seeks to levy for the purposes of upgrading public facilities including streetscape, parking, road and intersection upgrades in Port Macquarie.

The proponent is willing to undertake the nominated works on behalf of Council as works in kind. Such arrangements are anticipated by the Section 94A plan and Council's works in kind policy.

The value of the works to be undertaken is approximately $1 million. This is in excess of the required Section 94A contribution amount, however, the works are considered to be of material benefit to both

the development and the local community and would normally have been contemplated as part of any proposal for redevelopment of the scale proposed.

It is acknowledged that the Minister is not bound by Council's Section 94A plan or to accept the contribution offered by the proponent. However, in this case it is felt that the provision of works in kind to facilitate localised traffic and streetscape improvements is the appropriate response. The works are consistent with Council's Section 94A plan, the adopted Structure Plan and also the proponents' future vision for the Settlement City Shopping Centre.

6.6.5 Conclusion

It is considered that the potential traffic and access impacts are adequately addressed by the above mitigation measures and the improvements outlined in the Statement of Commitments in Appendix O.

6.7 Hazard management and mitigation

6.7.1 Contamination

Existing environment

Investigations regarding site soils included a review of soil landscape mapping, as well as a review of the history of site development. The Kempsey 1:100 000 soil landscape map indicates that the site is located in an area of disturbed terrain. It is inferred that the site has been filled by approximately one to two metres. A possible source of this fill may have been marine sand dredged from the lower Hastings River.

A walk-over site inspection was undertaken by consulting engineers Martens and Associates. Inspection indicated that the existing service station is the only site activity that has potential to result in significant soil contamination. The potential for hydrocarbon contamination to be introduced from car parking uses is considered to be minor. No obvious signs of contamination were noted on the site surface.

Other potentially contaminating historical uses of the site include possible minor agricultural or farming activity, filling of the site, and the current commercial land use including the petrol retail outlet. It is unlikely that any minor agricultural chemical contamination of the site has occurred.

This initial contamination evaluation is supported by a contamination assessment recently completed. The contamination assessment found that no contamination was present on-site. This is illustrated in the tables below. More detail can be found in Appendix H. The contamination assessment was undertaken in accordance with NSW EPA sampling design guidelines.

Table 14 Results of heavy metal analysis of soil samples (mg/kg).

Sample ID	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc
2316/11/0.4	6	<0.5	8	6	4	<0.1	4	17
2316/9/0.25	5	<0.5	13	8	6	<0.1	6	20
2316/19/0.2	7	<0.5	11	7	8	<0.1	8	32
2316/23/0.2	6	<0.5	24	9	6	<0.1	15	18
2316/29/0.3	4	<0.5	5	3	4	<0.1	3	20
2316/22/3.0	7	<0.5	5	10	1	<0.1	10	8
2316/13/2.8	15	<0.5	39	15	12	<0.1	28	45
2316/13/4.2	<4	<0.5	6	1	1	<0.1	6	6
2316/16/3.0	6	<0.5	11	4	3	<0.1	13	11
2316/24/2.8	8	<0.5	34	10	7	<0.1	25	26
2316/Z3	6	<0.5	11	7	4	<0.1	4	17
2316/Z10	8	<0.5	24	10	6	<0.1	14	21
2316/Z11	7	<0.5	11	4	3	<0.1	15	13
2316/Z12	4	<0.5	28	6	5	<0.1	17	21
C1	7	<0.5	13	14	4	<0.1	3	14
C2	12	<0.5	20	5	4	<0.1	12	24
C3	7	<0.5	15	8	5	<0.1	5	14
C4	7	<0.5	10	9	11	<0.1	7	42
C5	<4	<0.5	12	1	1	<0.1	10	5
C6	5	<0.5	16	7	5	<0.1	11	10
C7	5	<0.5	13	10	4	<0.1	2	11
2316/11/0.4	6	<0.5	14	8	5	<0.1	5	16
Guideline Limit[1]	**500**	**100**	**500**	**5000**	**1500**	**75**	**3000**	**35000**
Guideline Limit[2]	**250**	**50**	**250**	**2500**	**750**	**37.5**	**1500**	**17500**
Guideline Limit[3]	**167**	**34**	**167**	**1667**	**500**	**25**	**1000**	**11667**
General Solid Waste[4]	**100**	**20**	**100**	**Na[5]**	**100**	**4**	**40**	**Na[5]**
Restricted Solid Waste[4]	**400**	**80**	**400**	**Na[5]**	**400**	**16**	**160**	**Na[5]**
Hazardous Waste[4]	**>400**	**>80**	**>400**	**Na[5]**	**>400**	**>16**	**>160**	**Na[5]**

Note: [1] SIL guideline limit for commercial or industrial landuse (NSW EPA, (2006). [2] SIL for double composite. [3] SIL for triple composite. [4] NSW DECC (2008) Waste Classification Guidelines: *Table 1* Contaminant threshold values for classifying waste by chemical assessment without the leaching test. *[5] No criteria listed.*

Table 15 Results of PAH analysis of soil samples

Sample ID	Benzo(a)pyrene	Fluorene	Napthalene	Phen-anthrene	Total PAHs
2316/11/0.4	<0.05	<0.1	<0.1	<0.1	<0.35
2316/9/0.25	<0.05	<0.1	<0.1	<0.1	<0.35
2316/19/0.2	<0.05	<0.1	<0.1	<0.1	<0.35
2316/23/0.2	<0.05	<0.1	<0.1	<0.1	<0.35
2316/29/0.3	<0.05	<0.1	<0.1	<0.1	<0.35
2316/22/3.0	<0.05	<0.1	<0.1	<0.1	<0.35
2316/13/2.8	<0.05	<0.1	<0.1	<0.1	<0.35
2316/13/4.2	<0.05	<0.1	<0.1	<0.1	<0.35
2316/16/3.0	<0.05	<0.1	<0.1	<0.1	<0.35
2316/24/2.8	<0.05	<0.1	<0.1	<0.1	<0.35
Guideline Limit [1]	**5.0**	**Na[3]**	**Na[3]**	**Na[3]**	**100**
General Solid Waste[2]	**0.8**	**Na[3]**	**Na[3]**	**Na[3]**	**200[4]**
Restricted Solid Waste[2]	**3.2**	**Na[3]**	**Na[3]**	**Na[3]**	**800[4]**
Hazardous Waste[2]	**<3.2**	**Na[3]**	**Na[3]**	**Na[3]**	**<800[4]**

Note: [1] NSW EPA (2006) Guidelines for the NSW Site Auditor Scheme, guideline limits for commercial /industrial use (Column 4). [2] NSW DECC (2008) Waste Classification Guidelines: Table 1 Contaminant threshold values for classifying waste by chemical assessment without the leaching test. [3] No criteria listed. [4] NSW DECC (2008) Waste Classification Guidelines: Table 2 Leachable concentration (TCLP) and specific contaminant concentration (SCC) values for classifying waste by chemical assessment.

Table 16 Results of TRH analysis of soil samples

Sample ID	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 TOTAL
2316/11/0.4	<25	<50	<100	<100	<250
2316/9/0.25	<25	<50	<100	<100	<250
2316/19/0.2	<25	<50	<100	<100	<250
2316/23/0.2	<25	<50	<100	<100	<250
2316/29/0.3	<25	<50	<100	<100	<250
2316/22/3.0	<25	<50	<100	<100	<250
2316/13/2.8	<25	<50	<100	<100	<250
2316/13/4.2	<25	<50	<100	<100	<250
2316/16/3.0	<25	<50	<100	<100	<250
2316/24/2.8	<25	<50	<100	<100	<250
Guideline Limit [1]	**65**	**n/a[3]**	**n/a[3]**	**n/a[3]**	**1000**
General Solid Waste[2]	**650**	**n/a[3]**	**n/a[3]**	**n/a[3]**	**10 000[4]**
Restricted Solid Waste[2]	**2600**	**n/a[3]**	**n/a[3]**	**n/a[3]**	**40 000[4]**
Hazardous Waste[2]	**>2600**	**n/a[3]**	**n/a[3]**	**n/a[3]**	**>40 000[4]**

Note: [1] NSW EPA (2006) Guidelines for the NSW Site Auditor Scheme, guideline limits for commercial /industrial use (Column 4). [2] NSW DECC (2008) Waste Classification Guidelines: Table 1 Contaminant threshold values for classifying waste by chemical assessment without the leaching test. [3] No criteria listed. [4] NSW DECC (2008) Waste Classification Guidelines: Table 2 Leachable concentration (TCLP) and specific contaminant concentration (SCC) values for classifying waste by chemical assessment.

Key findings from the contamination tests are that:

- No contamination was found on-site.
- That all the material has been pre-classified as general waste.
- SEPP 55 does not apply, as contamination has not been identified on-site.

Potential impacts

The potential impacts are considered limited as no contamination has been identified on-site.

Mitigation measures

Table 17 Proposed contamination mitigation measures

Potential impact	Proposed mitigation measure
Unexpected contamination is identified on-site	The contaminated spoil would be tested and disposed of in accordance with DECC requirements.

Note: Material has been pre-classified as general waste, however may be subject to further testing to assess whether it can be classed as Virgin Excavated Natural Material (VENM).

Further information in regards to contaminated land is provided in Appendix H.

6.7.2 Acid sulphate soils

Existing environment

A preliminary acid sulphate soil assessment has been undertaken on the site. This assessment has been completed to provide an indication of the likely nature and extent of any acid sulphate soil (ASS) material that may be present on the site.

The completed preliminary ASS assessment is based on a review of the geomorphic site setting, evaluation of site ASS risk classification from the (now restructured) Department of Land and Water Conservation (DLWC) risk maps and a review of limited site development and filling history.

The *Wauchope/Port Macquarie Acid Sulphate Soil Risk Map* (1997) identifies the site as disturbed terrain at elevations of two to four metres. This classification reflects past site filling. Surrounding areas are mapped as Aeolian sandplains with a 'low' probability of ASS material being found at 1–3m below ground surface. These soils are likely to be beneath the placed fill material and would now be located at a depth of approximately two to five metres.

The likelihood of ASS being present on a site is dependent on a range of seven geomorphic parameters (ASSMAC, 1998, Assessment Guidelines). Five of the seven geomorphic conditions are met by the site, indicating a likelihood of acid sulphate soils being present. Those that are met are:

- Holocene sediments (likely to be present in site fill and underlying soils beneath the site).
- Soil horizons less than 5m Australian height datum (AHD) (prior to development of the site and surrounding areas, it is likely that the site was a coastal wetland or swamp area with a dominant vegetation of marine tolerant species as indicated by historical and aerial photography). AHD is approximately equal to mean sea level on the open coast.
- Marine/estuarine sediments or tidal lakes.
- Coastal wetland, backwater swamps, waterlogged or scaled areas, interdune swales or coastal sand dunes.
- Dominant vegetation is mangroves, reeds, rushes and other swamp or marine tolerant species.

The other two geomorphic conditions are classed as unknown or possible on the site:

- Geologies containing sulphide bearing material.
- Deep older (Pleistocene) estuarine sediments.

This preliminary ASS assessment has been supplemented with a full acid sulphate soil field investigation to determine the depth at which acid sulphate soils are likely to be found. This report can be found in Appendix H. The findings are summarised in Table 12. The ASS assessment was conducted in accordance with ASSMAC guidelines.

Table 18 Results of SPOCUS testing

Sample ID	Bore Hole	Sample Depth (m)	pH_{KCL}[1]	pH_{OX}[2]	TPA (mol $H^+/+$)[3]	TSA (mol $H^+/+$)[4]	S_{POS} (%S oxidisable)[5]
2316/24/0.5	24	0.5	9.6	6.1	<5.0	<5.0	0.005
2316/16/1.0	16	1.0	9.7	6.6	<5.0	<5.0	0.008
2316/2/1.0	2	1.0	9.3	7.0	<5.0	<5.0	0.014
2316/9/1.0	9	1.0	9.5	7.1	<5.0	<5.0	0.014
2316/18/1.0	18	1.0	9.6	7.2	<5.0	<5.0	0.012
2316/27/1.0	27	1.0	9.5	6.6	<5.0	<5.0	<0.005
2316/29/1.0	29	1.0	9.5	7.0	<5.0	<5.0	0.008
2316/24/1.4	24	1.4	9.7	6.3	<5.0	<5.0	<0.005
2316/6/1.4	6	1.4	9.6	7.0	<5.0	<5.0	<0.005
2316/29/1.4	29	1.4	9.6	7.0	<5.0	<5.0	<0.005
2316/14/1.5	14	1.5	9.7	7.0	<5.0	<5.0	<0.005
2316/16/1.5	16	1.5	9.6	7.0	<5.0	<5.0	0.008
2316/18/1.5	18	1.5	9.4	7.2	<5.0	<5.0	0.005
2316/1/2.5	1	2.5	9.3	5.4	<5.0	<5.0	0.044
2316/28/2.9	28	2.9	4.8	3.1	190	165	**0.31**
2316/14/3.0	14	3.0	8.6	**2.4**	130	130	**0.43**
2316/1/3.3	1	3.3	7.3	3.3	80	80	**0.22**
2316/5/4.0	5	4.0	6.7	**2**	685	685	**1.4**
2316/8/4.0	8	4.0	6.9	**2.3**	143	143	**0.39**
2316/18/4.5	18	4.5	8.6	**2.6**	155	155	**0.58**
2316/28/5.0	28	5.0	5.3	**2.8**	125	120	**0.24**
2316/27/5.5	27	5.5	6.2	**2.8**	<5.0	<5.0	**0.23**
2316/16/6.0	16	6.0	7.4	3.1	120	120	**0.29**
2316/8/7.5	8	7.5	6.7	3.6	17	17	**0.075**

The key findings are:

- That none of the samples collected have been classified as ASS.
- That the samples identified as potential ASS (identified in bold) all occur three metres below ground level or deeper.

Potential impacts

The results indicate fill material (generally 2.5m deep) is free of AASS and PASS. The proposed development does not involve the excavation of the deeper PASS materials that have been found three metres below ground level and deeper. Current planning for the development assumes footings will be driven into subsurface material such that no material will be retrieved. Given this, there is no need for specific ASS mitigation measures, such as an ASS management plan.

Should construction methods be revised, such that material below the surface fill (approximately 2.5m) will be disturbed or retrieved or the groundwater table is lowered beyond this depth, an ASS management plan will be required.

Mitigation measures

Table 19 Proposed ASS mitigation measures

Potential impact	Proposed mitigation measure
Construction disturbs material below surface fill.	An ASS management plan will be prepared if construction is likely to disturb material below the surface fill.
The groundwater table is lowered as a result of construction.	An ASS management plan will be prepared if construction is likely to lower the groundwater table.

Further information in regards to acid sulphate soils is provided in Appendix L.

6.7.3 Bushfire

Existing environment

The site is predominantly developed, with little vegetation capable of posing a bushfire threat. There is a small vegetated area on the eastern side of Park St, which is partly mangroves, however the site is not connected to any major areas of vegetation. The site and the surrounding area is not mapped as bushfire prone land (pers. comm. – Dan Croft, Port Macquarie Hastings Council, 24/2/2009).

Planning for Bushfire Protection 2006 (PBP) (NSW Rural Fire Service) applies to development within bushfire prone land and is particularly relevant to residential development proposals. The existing level of development of the site and the surrounds, the nature of the proposed development and the lack of bushfire prone land within the vicinity, indicates that PBP does not apply to this proposal.

Potential impacts

Potential impacts of bushfire on the development would be negligible.

Mitigation measures

No specific mitigation measures are proposed to be implemented in relation to bushfire. However, consultation with council and the NSW Rural Fire Service will be undertaken in relation to access to, from and around the site.

6.7.4 Geotechnical and topography

Existing environment

A review of the 1:250,000 Geology Map (Hastings, Sheet SH 56-14, 1970) shows that the site is underlain by Quaternary deposits of alluvium including sand, silt, mud and gravel. The total depth of these deposits is expected to be in excess of four metres and may be up to 20m or more. Subsequent to preparation of the Hastings geology map, a number of canal systems have been constructed on surrounding lands and the site has been filled.

The site is gently sloped with local relief of less than 0.5m. It is located on the lower Hastings River floodplain. Surrounding land is described as a near level coastal floodplain with elevations of less than five metres AHD, with slopes of less than five per cent.

Available site history indicates that the site was filled between 1979 and 1983 prior to its development. Original site levels appear to have been approximately 1.7–2.1m AHD, and the current elevation of the site is three to four metres AHD.

A review of the Port Macquarie 1:25 000 topographic map indicates that surrounding lands comprise predominantly coastal flats that have been developed to create the urban centres of Port Macquarie and Settlement Shores (the residential canal development).

Field investigations have been conducted to determine the site's soil salinity, to assist in determining what materials may be used. These results are summarised in Table 14.

Table 20 Summary of soil salinity results

Bore Hole and Sample ID	Depth (m)	EC[1] (dS/m)	Multiplyer	ECe (dS/m)	Salinity Rating[2]
2316/14/0.5	0.5	0.33	23.0	7.6	Moderately saline
2316/16/0.5	0.5	0.11	23.0	2.5	Slightly saline
2316/25/1.0	1.0	0.05	23.0	1.2	Non-saline
2316/27/1.0	1.0	0.07	23.0	1.6	Non-saline
2316/28/1.0	1.0	0.08	23.0	1.8	Non-saline
2316/24/1.4	1.4	0.06	23.0	1.3	Non-saline
2316/14/1.5	1.5	0.09	23.0	2.1	Slightly saline
2316/5/2.0	2.0	0.19	8.6	1.6	Non-saline
2316/8/2.0	2.0	0.06	8.6	0.5	Non-saline
2316/18/2.0	2.0	0.10	8.6	0.9	Non-saline
2316/5/2.5	2.5	0.13	8.6	1.1	Non-saline
2316/13/2.8	2.8	0.23	8.6	2.0	Slightly saline
2316/13/2.8	2.8	0.23	8.6	2.0	Slightly saline
2316/1/3.3	3.3	0.16	8.6	1.4	Non-saline
2316/8/4.0	4.0	0.11	8.6	0.9	Non-saline
2316/27/4.0	4.0	0.06	8.6	0.5	Non-saline
2316/13/4.2	4.2	0.12	8.6	1.0	Non-saline
2316/13/4.2	4.2	0.12	8.6	1.0	Non-saline
2316/1/4.5	4.5	0.14	8.6	1.2	Non-saline
2316/5/4.5	4.5	0.29	8.6	2.5	Slightly saline
2316/24/4.5	4.5	0.17	8.6	1.5	Non-saline
2316/16/5.0	5.0	0.19	8.6	1.6	Non-saline
2316/16/5.0	5.0	0.20	8.6	1.7	Non-saline
2316/5/5.5	5.5	0.23	8.6	2.0	Slightly saline

Bore Hole and Sample ID	Depth (m)	EC[1] (dS/m)	Multiplyer	ECe (dS/m)	Salinity Rating[2]
2316/5/6.0	6.0	0.30	8.6	2.6	Slightly saline
2316/8/6.0	6.0	0.90	8.6	7.7	Moderately saline
2316/28/6.0	6.0	0.12	8.6	1.0	Non-saline
2316/5/6.0	6.0	0.33	8.6	2.8	Slightly saline
2316/1/7.5	7.5	0.11	23.0	2.5	Slightly saline
2316/8/7.5[3]	7.5	1.10	23.0	25.3	Extremely saline
2316/28/7.5	7.5	0.11	23.0	2.5	Slightly saline
2316/1/9.0	9.0	0.10	23.0	2.3	Slightly saline
2316/14/9.0[3]	9.0	0.45	23.0	10.4	Highly saline

Notes: [1] Electrical Conductivity [2] Salinity Rating based on the Department of Conservation and Land Management (1992), 'What do all the numbers mean' and Table 6.2 of Department of Land and Water Conservation (2002), 'Site Investigations for Urban Salinity'. [3]Bold samples indicate those likely to be outliers and not a true reflection of site salinity at that depth.

Potential impacts

Given the site's coastal location and history of filling, a number of potential geotechnical constraints have been identified:

- Settlement of layers of readily compressible silt, clay or peat or poorly compacted fill may result in differential settlement of structures.
- Groundwater is currently at a depth of approximately 2.5m below the ground surface. If construction works are near that depth, dewatering may be required. This could lead to saltwater ingress issues.

Mitigation measures

Table 21 Proposed geotechnical and topography mitigation measures

Potential impact	Proposed mitigation measure
Differential settlement of structures or underlying soils.	Further investigation prior to finalisation of the site redevelopment design.
	Standard engineering strategic remedies for management of any identified geotechnical constraints will be implemented as necessary.
Groundwater ingress	Current designs do not intercept the groundwater table.
	If the design were to change and the groundwater table was intercepted, a dewatering plan would be developed prior to work commencing.

None of the identified site geotechnical constraints are considered to be sufficient to overly restrict the proposed site redevelopment.

Further information in regards to the Geotechnical impacts of the proposal is provided in Appendix H.

6.7.5 Flooding

Existing environment

The subject site is located adjacent to a system of canals known as Dolphin Keys which joins the Hastings River approximately one kilmotre to the northwest of the site. With regard to tidal flow

influence, the canals adjacent to the western site boundary are approximately seven kilmetres upstream from the river mouth, although the northern site boundary is only 2–2.5km directly west of the river mouth. Settlement Point separates the canal system from the lower reach of the river.

Potential impacts

It is worth noting that Council's Interim Flood Policy *(PMHC, 2007)* applies to the site pending completion and adoption of their flood development control plan and that the floodplain risk management guidelines were considered during the drafting of the estuarine assessment found in Appendix F

Discussions with council and a review of the *Hastings Flood Study* (Patterson Britton and Partners Pty Ltd, 2006) indicate that the flood planning levels for the site are influenced by the differing effects of flood on the canal system and the Hastings River.

Available information indicates that existing site levels would be a minimum of approximately 0.15m above the design 100 year average recurrence interval (ARI) flood level (which assumes a worst case scenario of 2.85m AHD) and proposed ground floor levels are approximately 0.71m above this height. Council mapping shows the site as being outside the 100yr ARI flood event.

Mitigation measures

No mitigation measures are considered necessary, because the proposal design exceeds minimum floor levels to mitigate flooding risk, and no other flooding impacts are predicted.

Further information in regards risk of flooding on the proposal due to sea level rise is provided in Appendix F.

6.7.6 Conclusion

The above mitigation measures outlined above sufficiently address the potential hazards and risks for the project.

6.8 Climate change

6.8.1 Existing environment/policy framework

National Greenhouse and Energy Reporting Act 2007 (NGER Act)

The Australian Government Department of Climate Change administers the NGER Act, which establishes a structure for corporations to report greenhouse gas emissions and energy consumption and production once they reach a certain threshold. There are two thresholds at which corporations are required to report – facility thresholds and corporate group thresholds. Under the NGER Act 2007, corporations are required to report on both Scope 1 and Scope 2 emissions if the total quantity of greenhouse gas (GHG) emissions is over the threshold of 125,000 tonnes of carbon dioxide equivalent (CO_2-e) per year. Scope 1 emissions are those directly emitted from a corporations' site, Scope 2 emissions are those resulting from purchased electricity.

The proponent will abide by any future applicable legislative requirements in regards to emissions reporting.

Department of Environment and Climate Change – Climate Change Action Plan

The NSW Government *Climate Change Action Plan* (10 March 2008) sets the policy objectives designed to mitigate the unavoidable impacts of climate change. The then Premier highlighted the areas where NSW needs to focus its efforts:

- Working with the building industry to consider whether current design standards for homes in storm and flood prone areas are strong enough to withstand harsher weather events in the future.
- Working with local councils and planners to respond to the impacts of long term sea level rise.
- Readying ourselves for more intense and frequent bushfires.
- Planning to support the elderly and vulnerable – particularly those with chronic heart and lung disease – to cope with the expected increase in heatwaves. This could involve expanding our understanding of heat related illness and developing prevention and health promotion programs.
- Preparing our economy for the challenges and opportunities that will come in a carbon-constrained economy.
- Ensuring we look after our natural environment as the climate changes, especially vulnerable areas like the alpine region
- Ensuring that our agricultural communities have the technology and science they need to adapt to changing weather patterns.

Draft sea level rise policy statement

The NSW Government has acknowledged that increased sea levels will have significant medium to long-term social, economic and environmental impact. To assist coastal communities adapt to sea level rise, a draft policy statement has been released (calling for submissions until 3 April 2009), which outlines the government's objectives and commitments to sea level rise.

The policy recognises that provisions under the EP&A Act require consent authorities to consider coastal and flooding hazards in their planning and development approval decisions. It also notes that the NSW Coastal Policy (considered in section 5.3) requires consideration of sea level rise.

The sea level rise planning benchmark will support consistent consideration of the impacts of sea level rise on any development or redevelopment site. The benchmark is not intended to be used to preclude development of land projected to be affected by sea level rise, but 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 and design.

Port Macquarie-Hastings Council Greenhouse Action Strategy

Port Macquarie-Hastings Council aims to reduce its corporate greenhouse gas emissions from 1999 levels by 20 per cent, by 2010, and stabilise community greenhouse gas emissions at 1996 levels by 2010. These targets were adopted by Council in 2002.

A greenhouse action strategy has been developed to provide the direction for implementing effective and practical greenhouse abatement actions in order to achieve these emission reductions. A DCP is intended to be developed to provide baseline energy efficiency measures for new commercial and industrial buildings and establish regulatory and other mechanisms to ensure that new developments maximise resource energy efficiency.

Green Building Council of Australia (GBCA) rating tools

The GBCA has recently released a new voluntary tool to rate new or redeveloped shopping centres to assess their environmental attributes. The eligibility of the proposal for a green star rating will be examined when the design is progressed.

6.8.2 Potential impacts

Sea level rise on the NSW coast is expected to be in the range of 0.18m to 0.91m by 2100. Assuming the worse case scenario of 0.91m and an existing mean high water summer solstice level of 0.986m, the potential climate change induced mean high water summer solstice water level at the mouth of the Hastings River would be 1.9m AHD.

Another possible outcome of climate change could be increased frequency and magnitude of flood events due to increased rainfall intensities. Indications are that increased rainfall intensity in the order of five to ten per cent is possible for the Northern Rivers area, which this may lead to increased flood levels.

The contribution of the development to climate change will be determined by the combination of the embodied carbon in the expansion and the ongoing increased requirement for non-renewable energy. Since there will be no electricity generation or primary production activities on the site, the potential for Scope 1 greenhouse gas emissions is minimal. Scope 2 emissions will be the primary driver of emissions contribution.

6.8.3 Mitigation measures

Table 22 Proposed climate change mitigation measures

Potential impact	Proposed mitigation measure
Sea level rise	Given that design ground floor levels are 3.65m, approximately 1.66m above the worst-case scenario of 1.9m AHD, it is concluded that sea level rise poses minimal additional risk to the proposal.
Increased flooding	Increased rainfall of 5–10% and the increased likelihood of flooding can be readily accommodated by the provided 710mm freeboard between the current one per cent annual exceedance probability and the adopted site finished floor levels of 3.65m.
Greenhouse gas emissions	Implementing energy demand measures in design and operation will reduce the contribution of the greenhouse gas emissions. Such measures include: • Providing the option of accredited GreenPower to tenants. • Using fluorescent lighting. • Maximising the use of north facing aspects during design. • Insulation. • Light coloured surfaces to minimise heat absorption. • Intelligent switching for lighting. • Modular heating and cooling systems.

Further information in regards to the effects of climate change is provided in Appendices E and F.

6.8.4 Conclusion

The potential climate change impacts of the proposal are satisfactorily addressed by the above mitigation measures.

6.9 Water cycle management

6.9.1 Sediment and erosion control

During the construction phase of the proposal, there will be potential for soil erosion and sedimentation impacts on adjacent waters. These have potential to cause detrimental impacts on downstream aquatic ecosystems. It is therefore necessary for an appropriate sediment and erosion control plan to be prepared and implemented.

Potential impacts

The proposal is expected to result in positive outcomes for the health of the adjacent Hastings River through minimisation of the quantity of stormwater being discharged from the site, however proper protection measures will need to be implemented to prevent impacts during construction.

Stormwater harvesting will reduce the potential for sediment-laden discharges from the development site by reducing the overall volume, and hence scouring velocities, of runoff leaving the site.

Pollution of the Hastings River could potentially result from erosion, sedimentation and accidental spills of oils, fuel or chemicals during construction.

Turbidity and plumes from construction could result from untrapped sediment discharges into the river. This is of particular concern given the proximity of the redevelopment to waterways and the intense adjacent residential and recreational use.

Mitigation measures

Table 23 Proposed sediment control and erosion mitigation measures

Potential impact	Proposed mitigation measure
Contamination of waterways from oil, fuel or chemical spills.	An Environmental Management System and Construction Environmental Management Plan will be developed and implemented prior to construction and include procedures for the containment and clean up of spills and any necessary reporting.
	The site will be equipped with adequate spill kits.
	Where required, bunded areas will be established.
Sediment laden waters discharged from site	The site will have a Construction Environmental Management Plan developed and implemented prior to construction. Key elements will include: • Sediment fences to be installed down slope of significant excavation and construction works and along the canal boundaries prior to commencement of construction. • Sediment curtains to be suspended in the adjacent waterways enclosing the extent of the construction area. • Sediment control devices (hay bales) to be installed in natural watercourses and drainage lines from the construction site. • Provisions for proper storage of soil and spoil stockpiles to minimise the chance of sediment-laden runoff. • Provisions for additional protection of the site during wet and/or windy weather. • Visual inspection and technical monitoring of adjacent watercourses during construction. • Contractor and employee induction procedures highlighting individual and group obligations for environmental protection. • Regular machinery and plant inspections.
	All sediment controls will be implemented in accordance *with Landcom's Soils and Construction, managing urban stormwater* guidelines (Landcom's Blue Book).

6.9.2 Water

Existing environment

Current water supply to the site is from a 450mm diameter trunk mains along the south side of Bay Street. A 200mm diameter connection runs into the site. On the basis that the existing commercial development occupies an area of 19,157m^2, it is estimated that the current peak water demand is approximately 1.73L/s (based on a typical peak hourly demand rate of 0.9L/s/ha for commercial developments, from the WSA *Water Supply Manual*).

Potential impacts

The project is assumed to add a peak hourly demand of 1.5L/s. An increase in the peak hourly demand may result in water shortages during peak times.

Increased demand on the town's water supply is unlikely to be an impact as the stormwater harvesting and re-use strategy is likely to reduce demand on the town's overall water supply by using stormwater for non-potable requirements.

Mitigation measures

Table 24 Proposed water mitigation measures

Potential impacts	Proposed mitigation measures
Water shortages arising from increased demand during peak times.	The existing 200mm connection is considered adequate for this supply. Detailed analysis to confirm this is to be completed at detailed design stage. An upgrade of the 200mm connection will be undertaken, if necessary.

6.9.3 Stormwater

Existing environment

The site is highly developed, with the majority of land surface being covered by impervious surfaces, such as buildings, roads and car parking areas. Only a minor portion of the site is covered with pervious landscaping in the form of boundary planting, along internal roads and in car park areas.

Drainage is currently through a pit and pipe system, which drains to the canal system (north and west) or to a mangrove inlet beyond the eastern site boundary.

No formal stormwater treatment devices were observed in the site drainage system.

Potential impacts

Due to an increase in landscaping and pervious surfaces in the south eastern part of the site, post-development stormwater flows will be less than pre-development flows by approximately 1.4 per cent for that catchment, and for the rest of the site pre-development flows will equal post-development flows.

The proposal will improve stormwater quality through a reduction in bitumen car park areas and replacement with roofed areas and concrete car parks. A decrease is expected in the generation of contaminants such as sediments, oil and grease. However, the current site does not comply with ecologically sustainable development principles. This may lead to inefficient use or ineffective treatment of stormwater on site.

The local environmental outcome will be improved through reduction of stormwater discharges, improvement of local water quality and reducing demand on local water supply, as a result of the stormwater harvesting and re-use strategy.

Stormwater impacts arising from construction are considered under erosion and sediment control above.

Mitigation measures

Table 25 Proposed stormwater mitigation measures

Potential impact	Proposed mitigation measure
Inefficient use or ineffective treatment of stormwater on site	Include stormwater quality controls on new pipe systems.
	Rain water harvesting of stormwater from metal roof areas for non-potable uses.
	Humeceptor treatment systems (pollutant traps to reduce sediment, nutrients, oil, grease and litter loads) shall be used where possible.
	Site layout and grading will be designed to maximise infiltration of overland flow through pervious areas, with excess runoff conveyed by the road stormwater system. Along the northern and western site boundaries, landscaped fringes would allow excess runoff to drain directly to the canal system by overland flow.
	The use of stormwater for toilet flushing in new amenities, site irrigation and external washdown.
	No on-site stormwater detention is proposed as there is no increase in the amount of stormwater being produced onsite, nor is there Council policy to require it. Stormwater harvesting will provide a degree of retention capacity, thus achieving a reduction in overall stormwater flows from the site.

6.9.4 Wastewater

Existing environment

Site wastewater reticulation is currently provided by gravity drainage to one of two site pump stations, which then transfer to the town sewage treatment plant by 100mm rising mains, which then connects to the town sewer mains on Bay Street. The site has a third private pump station and 50mm rising main servicing the petrol station.

Based on site area, current peak wastewater flows for the site are 1.92L/s.

Potential impacts

It is estimated that the proposed re-development will add a further 1.17L/s to this peak flow rate. This may have an impact on the existing sewage system, however discussions with Council have indicated that this is unlikely.

The current rising mains may not have enough capacity and this could lead to sewer overflows and contamination of nearby waterways. However, this is also considered unlikely as site rising mains are understood to have adequate capacity for the increased demand

Where feasible, the proposed expansion and partial redevelopment will be connected to the existing site sewage pumping stations (SPS).

Mitigation measures

Table 26 Proposed wastewater mitigation measures

Potential impact	Proposed mitigation measure
Increased pressure on existing sewage system	Site sewage reticulation requirements shall be confirmed by detailed analysis to be completed at construction certificate stage. Once impacts are known, there will be ongoing consultation with Council to effectively manage any impacts that may arise.
Insufficient capacity of current rising mains	Site sewage reticulation requirements shall be confirmed by detailed analysis to be completed at construction certificate stage. If necessary, further rising mains will be constructed and connected to the Council's sewage system.
Unable to connect new sewage pipes to the current pumping station.	If necessary, an additional SPS shall be constructed on the site and connected to the town reticulation system. Site sewage reticulation requirements shall be confirmed by detailed analysis to be completed at construction certificate stage.

Further information in regards to the impacts of the proposal on water cycle infrastructure and management is provided in Appendix L.

6.9.5 Conclusion

The potential impacts from water cycle management will be adequately addressed by the above mitigation measures.

6.10 Flora and fauna

6.10.1 Existing environment

A flora and fauna assessment was prepared by Ecological Australia Pty Ltd. The results of the investigations determined that the study area comprises predominantly built environment (ie the existing Settlement City, Panthers and associated car parks). Some planted vegetation on the western edge of the study area and scattered plantings within car parking areas and landscaped garden beds offer some value for terrestrial fauna, including the koala (vulnerable under the *Threatened Species Conservation Act 1995* (TSC Act)) and grey-headed flying-fox (vulnerable under TSC Act and EPBC Act).

The western and northern edge of the study area was considered to offer corridor value for terrestrial fauna, in particular koala. Aquatic ecosystems were observed on the outer edge of and directly adjacent to the north and western boundaries of the study area. This included scattered and poor quality areas of saltmarsh species and grey mangrove.

Some portions of the study area contained primary browse species for koala (ie the western edge and northwest corner) and were considered as Core Koala Habitat under SEPP44 (Koala Habitat Protection).

Ecological constraints were mapped, classified into high, moderate and low levels of constraint. The majority of the site was considered of low ecological constraint due to the level of development in those areas. Scattered vegetation and plantings in some of the areas of the site, such as car parks, was considered to be of moderate ecological constraint and the corridor areas of the western and northern boundaries were considered to be of high ecological constraint, as shown in Figure 14.

Figure 14 Ecological constraint mapping

6.10.2 Potential impacts

A potential impact that may occur from the proposal is the removal and disturbance of terrestrial habitat during construction. Terrestrial habitat within the footprint is limited. A number of native and introduced tree plantings located in existing car parks will be removed as a result of the redevelopment. Introduced trees are not of high ecological significance, and their removal is unlikely to cause a significant impact on the ecology of the site and its surrounds. However, the removal of primary browse species for koala is likely to result in a decrease in foraging material for the species. Construction fences may also cause disturbance to habitat and impact on the condition of the vegetation corridor.

There may also be a disturbance and potential impact to estuarine aquatic habitat. Whilst the footprint of the redevelopment does not encroach on existing shoreline habitat, there is potential for stormwater runoff to impact on these areas.

The increase in the use of the site by the community may lead to increased anthropogenic impacts. While this use is expected to remain within the footprint of the development, there is potential for increased littering and disturbance to occur in the surrounding environment. This may cause a decrease in the health and condition of the surrounding vegetation and adjacent shoreline environment along the northern and western slopes of the site.

6.10.3 Mitigation measures

Table 27 Proposed flora and fauna mitigation measures

Potential impact	Proposed mitigation measure
Removal and disturbance of terrestrial habitat during construction	Where possible the proposed expansion and partial redevelopment will be focused within areas of low ecological constraint.
	Provide compensatory plantings for any proposed losses of native vegetation in areas of moderate ecological constraint.
	Conserve and enhance the existing wildlife corridor values and/or connective importance of vegetation along the western and northern edges of the site by avoiding areas of high ecological constraint and undertaking strategic compensatory plantings.
	Incorporate water sensitive urban design principles and the appropriate management of saltmarsh species into the Construction Environmental Management Plan.
	Traffic calming devices such as koala signage, speed limit signs and speed bumps should be considered to reduce traffic collision threats for koalas.
	All construction fencing is to be positioned outside of high constraint areas and to have sufficient gap (ie 20cm) along the base of the fence to allow koala passage.
Disturbance and potential impact to estuarine aquatic habitat.	This will be managed as per the measures proposed in section 6.9, *Stormwater* and section 6.9, *Erosion and sediment control*.
Anthropogenic impacts.	Appropriate signage and recycle and waste bins will be provided both during and after construction.

Further information in regards to the impacts of the proposal on flora and fauna can be found in Appendix I.

6.10.4 Conclusion

Potential impacts on flora and fauna will be sufficiently addressed by the mitigation measures above.

6.11 Noise

6.11.1 Existing environment

Heggies acoustic consultants have assessed the subject site to find all noise sources and receivers. Noise sources have been identified as mechanical services (air conditioning, ventilation plant and equipment, refrigeration plant and equipment), car park noise (car movement and door slams) and loading dock operation. Traffic generated by the shopping centre is also a source of noise, with shopping centre customers and employees accessing the site by car and bus, and service delivery vehicles also contributing to noise levels.

Noise receivers are identified as the residential areas to the west and north of the site (across the waterways), the Panthers Club, Sails Resort and St Josephs Primary School, located across Bay Street. The most sensitive noise receiver is the residential area, which is located 80m from the subject site.

Heggies have completed a noise monitoring program to assess the likely impact at the identified receivers. This report can be found in Appendix K. The background noise levels were taken by noise loggers at three locations. These locations are:

Table 28 Ambient noise monitoring locations

Logger location	Description	Notes
1	11 Ballina Crescent, Port Macquarie	Used to determine ambient noise at nearby residential properties to the west of the site.
2	3 Commodore Crescent, Port Macquarie	Used to determine ambient noise at nearby residential properties to the north of the site.
3	Existing roof of Settlement City Shopping Centre – at the southern boundary	Used to determine ambient noise at nearby primary school to the south of the site.

The noise loggers recorded the background noise for a seven day period. The results of this monitoring are as follows:

Table 29 Measured residential ambient noise levels

Logger location	Noise level – dBA re 20 µPa					
	Daytime 0700 hrs – 1800 hrs		Evening 1800hrs – 2200 hrs		Night-time 2200 hrs – 0700 hrs	
	RBL[1]	LAeq[2]	RBL	LAeq	RBL	LAeq
Location 1	39	51	37	46	32	43
Location 2	43	58	42	48	43	48
Location 3	46	55	40	51	36	47

Note 1: The RBL noise level is representative of the average minimum background sound level (in the absence of the source under consideration), or simply the background level.

Note 2: the LAeq is essentially the average sound level. It is defined as the steady sound level that contains the same amount of acoustical energy as a given time-varying sound.

The Bay Street road traffic noise levels were also monitored. The results are:

Table 30 Measured existing Bay Street road noise traffic levels

Descriptor	Period	Measured noise levels
Laeq	Day 1-hour (7:00 am to 10:00 pm)	54 dBA
	Night 1-hour (10:00 pm to 7:00 am)	47 dBA

Note: Noise levels measured from location 3, the roof of Settlement City Shopping Centre

6.11.2 Potential impacts

The NSW industrial noise policy was used to establish the appropriate noise criteria for the noise assessment. Since the land uses proposed for the partial redevelopment and expansion are similar in nature to the existing shopping centre, no new operational noise sources are expected. However, due to extended hours of operation from the cinema, bowling alley and gym, the noise may be generated at differing times to that which already occurs.

Noise during the construction phase of the proposal is expected to originate from equipment such as bulldozers, compactors, cranes, hand tools and compressors. Based on the offset distance between the proposed redevelopment and residences, vibration levels during construction activities are unlikely to impact nearby residences.

Mechanical plant associated with the shopping centre, for example air conditioning units has the potential to adversely impact on nearby residential properties, as its operation will create a consistent noise source.

Additional traffic generated by the proposal has the potential to impact on nearby residential receivers. The ambient noise monitoring carried out along Bay Street indicates that current daytime noise level of 54dBA are within the *Environmental Criteria for Road Traffic Noise* daytime criterion of 55dBA.

In this instance, it is expected that, at a minimum, traffic arising from the proposed redevelopment should be within the traffic noise levels of $L_{Aeq\ (1hour)}$ 55dBA during the daytime period between 7am and 10pm at the nearby residences on Bay Street to the west of the Centre. The proposed project is not expected to add 0.5 dBA to existing noise levels.

The additional traffic may, however, result in an increase in the amount of noise generated from carparks and loading docks, which are in some cases close to residential receivers.

6.11.3 Mitigation measures

Table 31 Proposed noise mitigation measures

Potential impact	Proposed mitigation measure
Operation	
Noise arising from changed trading hours	A complaints hotline will be available for residents to register a complaint about excess noise.
	Appropriate signage will be installed, reminding people of the nearby, sensitive receptors.
	Monitoring will be undertaken if necessary.
Construction	
Noise from construction equipment	A noise management plan will be prepared prior to construction beginning.
	Temporary barriers, enclosures and silencers will be installed, where necessary, to comply with NSW DECC construction noise criteria.
Mechanical plant	
Noise arising from the operation of mechanical plant on site	Noise generating equipment shall be located away from noise sensitive receivers.
	Existing and new building structures shall be used to shield plant from residences and mall areas.
	Where possible, equipment will be located within plant rooms inside the car park.
	Low noise appliances will be selected where possible (while minimising the energy use of the appliance).
	Acoustic barriers and enclosures will be used if noise levels are found to be beyond acceptable levels.
	Duct openings will be directed to the east and south away from residential receivers.

Potential impact	Proposed mitigation measure
	Roof exhaust fans will be mounted as close as possible to the roofline.
	Plant equipment will use timers and variable speed fans to minimise their noise output.
Traffic	
Noise from extra traffic generation	The use of public transport will be encouraged.
	Walking and cycling will be encouraged, particularly due to the flat nature of surrounding topography. Foot and bicycle paths will be provided, as well as bicycle racks.
	The noise from additional traffic has been assessed as being within acceptable limits.
Carparks and loading docks	
Noise arising from car parks and loading dock patronage.	Loading dock hours of operation will be managed appropriately and in accordance with current approvals.
	Noise control measures in the form of barriers will be considered if noise from the loading dock becomes a concern.
	A damping material will be applied to the underside of metal dock levellers to reduce noise generated by trolleys.
	Rubber matting will be installed where impact is likely to occur.
	Notices will advise drivers not to leave vehicles idling during delays using the loading docks.
	Metal grates shall be supported on rubber and clamped vertically so that vehicles passing over them cannot dislodge and generate rattling sounds.

Further information in regards to the acoustic impacts of the proposal can be found in Appendix K.

6.11.4 Conclusion

Impacts arising from noise generation will be adequately addressed by the mitigation measures above.

6.12 Social impacts

This section considers the social impacts of the proposal on the Port Macquarie community. The proposal is largely beneficial to the community and is unlikely to have a significant social impact, therefore a full social impact assessment was not undertaken.

6.12.1 Existing environment

The population of the Port Macquarie-Hastings LGA has been growing steadily in recent years, and is one of the fastest growing residential areas in NSW. This growth is forecast to continue, and therefore it is vital to ensure that retail and entertainment facilities are able to meet the needs of the growing population.

The increase in population in the Port Macquarie-Hastings LGA is largely due to migration from other parts of NSW, with the majority of these coming from Sydney.

The catchment area for Settlement City is home to an ageing population of modest wealth. These residents have a relatively low disposable income and would be expected to seek value in their shopping requirements. Around 30 per cent of residents are aged 60 or over, and there is a lower proportion of younger residents than the non-metropolitan average for NSW.

Tourism is a major source of income for the region. Around 690,000 overnight visitors spend around 2.8 million nights per annum in Port Macquarie alongside 625,000 day trips. Expenditure by tourists and visitors in the Settlement City trade area, including retail spending has been estimated at between $137 and $190 million in 2006. These visitors require the use of high quality and easily accessible retail facilities including restaurants, supermarkets and recreational facilities.

According to the 2006 Census, the most popular industry sectors for employment in the Port Macquarie-Hastings Council area were:

- Retail trade (15.4 per cent).
- Health care and social assistance (13.3 per cent).
- Construction (9.5 per cent).

6.12.2 Potential impacts

Construction

As can be seen from the demographic data above, the construction sector is an important source of employment for the Port Macquarie-Hastings Council. The construction activities at Settlement City are expected to provide jobs in this sector equivalent to employment of 419 workers for one year.

During construction there would be a short-term impact on some existing retailers in the centre who may need to close or relocate. Customers who use the centre may be inconvenienced due to construction activities impacting on some areas of the centre and parking area. Other potential social impacts during the construction period would include noise, vibration, dust and traffic. These impacts and mitigation measures are addressed in sections 6.6 and 6.11 of this report.

Operation

The long-term social impacts of the proposed development are seen as largely beneficial to both the residential and tourist population of the Port Macquarie-Hastings Council area.

The proposed development will increase the number and variety of retailers and introduce a range of new recreational facilities and restaurants that will broaden the appeal and convenience of the centre to both local and tourist populations.

Additional facilities will include six cinemas, a bowling alley, gymnasium, new restaurants, a larger food court, and new retail stores that currently do not have a presence in the Port Macquarie area.

Results of consumer research conducted by Urbis for Settlement City Shopping Centre in 2007 showed that local residents:

- Are unhappy with the range of entertainment options currently available in Port Macquarie.
- Want a greater number and variety of restaurants.
- Would welcome choice and increased competition from new stores, particularly those not currently located in Port Macquarie.

- Want a greater diversity of retailers including upmarket fashion, menswear, giftware, home wares and cafes.
- Want a 'one stop' shopping destination rather than having to visits multiple locations.

It is anticipated that the proposed development at Settlement City will positively impact these areas of concern by introducing new recreation and entertainment facilities, increasing the number and variety of retailers and eating establishments, and ensuring that customers can do all their shopping, and other activities such as banking, in one location.

Other consumer benefits would include more convenient and efficient traffic circulation, improvements to parking and access, a greater range and choice of products, and the possibility of additional business and personal services to complement the retail service offering.

The centre will facilitate social cohesion by offering a range of uses and activities, providing social meeting places and encouraging people of all ages to make use of an active community space.

The revitalisation of Settlement City will help to cement Port Macquarie's role as the economic hub of the region and a centre for tourist activity. The number of parking spaces in the development would be sufficient to accommodate seasonal demands during peak periods for tourism in the Port Macquarie region as well as the forecast increase in local patronage.

The retail sector is a major source of employment in the LGA, accounting for 15.4 per cent of employment in 2006. The expansion of Settlement City is anticipated to create around 703 additional full-time and part-time jobs. Further information on the economic benefits and multiplier effects of employment creation is included at Appendix C.

Cinemas, restaurants and car parks are likely to be open until late at night. It is possible that these areas may become a gathering place for youth who may engage in antisocial behaviour. If this is the case, then these areas could become areas requiring increased policing and may increase the prevalence of crime in the settlement city area.

Management measures such as increased security may be required to ensure that such behaviour is controlled to prevent potential impacts on other users of the centre or on neighbouring businesses and properties.

6.12.3 Mitigation measures

Table 32 Proposed social impact mitigation measures

Potential impact	Proposed mitigation measure
Construction	
Short-term impact on some existing retailers in the centre who may need to close or relocate.	Ensure safety and communications are enhanced throughout this period alerting customers to the new locations of stores and facilities.
	Use of flexible construction hours to limit the impact on retailers in terms of both closure and inconvenience from constructions activities.
Inconvenience to customers due to construction activities impacting on some areas of the centre and parking area.	Ensure safety and communications are enhanced throughout this period alerting customers to the new locations of stores and facilities.
	Appropriate temporary facilities will be provided, as needed.

Potential impact	Proposed mitigation measure
Operation	
Areas open until late at night becoming areas of antisocial behaviour and crime.	Crime prevention through environmental design (CPTED) principles have been considered in the current design drawings and will be adhered to during the detailed design stage.
	Existing centre security arrangements will be adapted and enhanced to cater for the proposed development. The police local area command will be consulted during the detailed design phase to ensure the design considers any crime prevention considerations they may have.

For more detail on the economic impact please see Appendix C. For more detail on the CPTED principles that have been used for the current design and will be used during detailed design, please see Appendix A.3.

6.12.4 Conclusion

The potential social impacts that the proposal may generate are suitably addressed by the mitigation measures outlined above.

6.13 Economic impacts

6.13.1 Existing environment

Using Leyshon's and Hill PDA's estimates of floor space in Port Macquarie, combined with Urbis' estimates from recent field work, it is estimated that there is currently around 150,000m^2 of retail floor space in Port Macquarie. This equates to an existing provision of around 2.2m^2 per person, slightly above the Australian average of 2.1m^{2}per person. Port Macquarie, however, has a large number of tourists and given the magnitude of tourism expenditure and net inflows, the provision per person could potentially be higher. In this case we have assumed around 2.3 m^2 per person.

Retail turnover generated from beyond the main trade area (ie from tourists and other visitors) is estimated at $173 million based on tourist visitation data, while turnover from the main trade area is estimated at $621 million. It is also expected that around $109 million of retail expenditure escaped the trade area in 2008. The resultant average trading level of around $5,300 is six per cent above the Australian average of $5,000m^2 reflecting the net inflow of tourism expenditure to Port Macquarie.

The existing notional undersupply of retail floor space is around 8,664m^2 based on an assumption of 2.3m^2 of retail floor space per person. This undersupply is consistent with the above average trading levels of retailers in Port Macquarie.

6.13.2 Potential Impacts

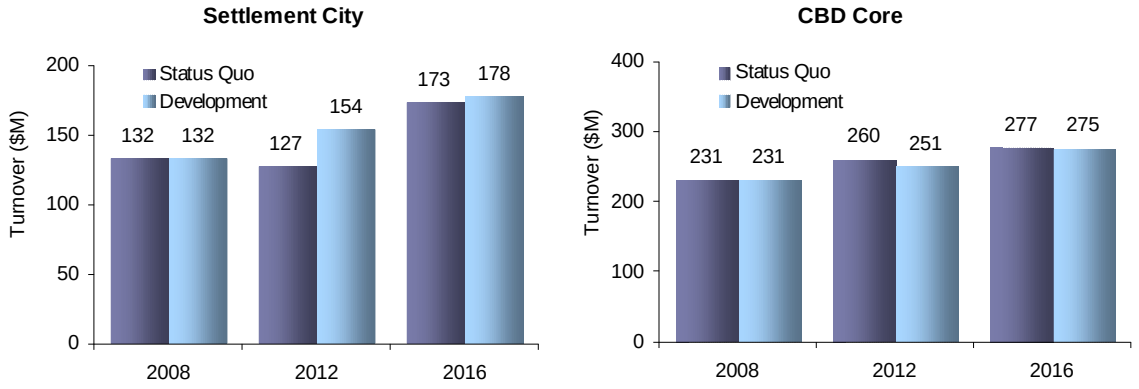
Market demand for the proposed expansion, and the additional retail floor space at Settlement City, can be primarily evaluated by having regard to the fundamental drivers of demand, namely population, spending and tourism growth driving demand for new retail floor space, as well as by noting existing gaps in the market. The rate of retail floor space provision in Port Macquarie, now and in the future, was analysed against national benchmarks to determine an appropriate level of retail floor space within Port Macquarie.

Assessing retail floorspace provision in Port Macquarie through market expenditure growth and population growth shows the market to have a notional overprovision of around 1,900m^2 of floor space in 2012. This assumes that the Settlement City application, other approved DA applications, and the proposal at Laurieton, all proceed prior to 2012 (ie a total of 20,000m^2 retail GLA). This is, however, expected to be corrected by 2013–14 with an under provision of between 8,100–10,100m^2 being evident by 2016, assuming the Future Stage 2 of the Settlement City application and approved DA applications all proceed by this time.

The expanded Stage 1 development at Settlement City, when fully operating in 2012, is forecast to generate $152.4 million or $26 million more than if the centre remained in its current form. The Future Stage 2 development in 2016 is forecast to generate $176.1 million, approximately $4 million greater than the centre would have achieved if only Stage 1 was developed. These forecasts take into account future competitive developments.

This additional turnover would be predominantly sourced from trade diversion from other centres within the trade area (refer Chart 1).

Settlement City and CBD Core : Forecast Centre Turnover **Chart 1**



Source : Urbis

The projected impacts of up to four per cent on any given centre in Stage 1 and 1.2 per cent on any given centre in Stage 2 are not excessive, and are well within the bounds of a normal competitive environment. Impacts of this magnitude are not expected to affect the viability of any individual centre, with market growth quickly mitigating any potential loss in turnover soon after opening.

As would be expected, the core area within the Port Macquarie CBA is expected to experience the greatest overall impact of around -$9.2 million in Stage 1 and -$1.6 million in the Future Stage 2. In both these instances however, the CBA core achieves a greater turnover volume post expansion in comparison to its existing turnover (refer Chart 1). Moreover, in percentage terms the impacts calculated are not particularly high.

6.13.3 Mitigation measures

The proposal is likely to enhance the economic success of the Port Macquarie area, as the assessments carried out to date indicate that the types of retailers proposed are in demand in the Port Macquarie area.

The research suggests that clothing, apparel, footwear and homewares are the types of retailers required most in Port Macquarie. Since these retailers benefit from co-location, and maximise their reach and potential in larger centres, Settlement City is the most realistic location to accommodate such

an extended range of shops. This may and can have some prospect of reversing the large volume of spending escaping Port Macquarie and the trade area generally.

Both methods of analysis undertaken in the EIA report support the Port Macquarie retail market being in equilibrium by 2013–14 even with the competitive developments and Settlement City occurring. After this time, the market is forecast to experience reasonably strong growth enabling other competitive developments to occur in due course. Therefore, the staged development of Settlement City enables the centre to meet some of the future demand for retail floor space within Port Macquarie and meet some of Council's objectives of consolidating the Greater CBA. Given that the proposal at Settlement City, with 6,372m^2 of retail space, corresponds to around 20 per cent of the additional floor space demand by 2016 (ie 6,372m^2 out of 31,359m^2), there remains potential for other retail developments to occur, particularly those already firmly proposed.

The proposed expansion of Settlement City addresses the deficiencies in Port Macquarie's retail structure. It has strong community support and responds to the expressed needs of a range of demographic and consumer segments, measured through primary research. It can be justified based on market growth, and meets the guidelines stipulated in *Settlement City Precinct Draft Structure Plan.* It will not present a major oversupply in retail floor space that will unduly impact the continued operation or long term viability of any centres in the trade area, particularly the core area within the CBA.

Overall, the potential impacts of both Stage 1 and the Future Stage 2 of the expansion are not significant and should not be cause of concern for Council. The expansion proposed is a practical development that meets the emerging needs of the market, noting also that retailing is an ever-changing industry and all responsible owners and operators strive to ensure continuing relevance in a competitive market. As such, in order to remain competitive, Settlement City requires an expansion and upgrade.

6.13.4 Conclusion

There are limited potential economic impacts as the proposal is likely to result in a net improvement in economic conditions for Settlement City and its surrounds.

7 Consultation

7.1 Methodology

Promotion of the expansion and redevelopment of Settlement City began in 2005. At that time, discussions were held with Council, and consultation with the Settlement City retailers, neighbouring landowners, and the wider community was undertaken.

As the proposal progressed, and development proposals for the neighbouring Warlters Street site emerged, a comprehensive stakeholder communications and consultation strategy was developed and implemented from late 2006 onwards.

Figure 15 illustrates the methodology adopted by ING for communicating and consulting with stakeholders about the proposal.

Figure 15 Communication and consultation methodology

7.1.2 Stakeholder scan

A stakeholder scan was undertaken to identify the various stakeholders involved in the proposal including local government, state government agencies, retailers, neighbouring landholders, residents, and interest groups. The stakeholder scan also included a preliminary assessment of stakeholders' key issues and level of interest in the proposal.

The results of the stakeholder scan were used to prepare the communications and consultation strategy, which identifies the objectives, key messages, tools and methods of communicating and consulting with stakeholders. A range of communication and consultation tools has been used, including meetings, focus groups and workshops, brochures, media releases and website information, to meet the differing characteristics and needs of stakeholders.

Figure 16 below identifies the stakeholders included in the communications and consultation strategy. Consultation with stakeholders was tailored based on their level of interest, influence and the level to which they are affected by the proposal. Consultation activities undertaken are described in the next section.

Figure 16 Identified stakeholders

7.2 Community consultation

A number of consultation initiatives with key stakeholders, Settlement City businesses and customers, and member of the general public have been undertaken since the project was first announced. These initiatives include:

- Face-to-face meetings with key stakeholders.
- Local roadshows.
- Customer focus groups.
- Print media.
- Dedicated website and phone line.

The details and timing of each activity are provided below.

7.2.1 Meetings

Throughout the development of the proposal, and particularly from late 2006 onwards, the proponent has provided regular and frequent personal project briefings by telephone and face-to-face to key stakeholders, including council staff and elected representatives, the state member for Port Macquarie, the Department of Planning, the Port Macquarie Chamber of Commerce and Retail Sub-Committee, and representatives of the Catholic Diocese of Lismore.

In each of these meetings/discussions, the features of the proposal at that point in time were described and feedback was sought from each stakeholder. Wherever practicable, stakeholder views have been reflected in the development of the proposal.

These briefings have been held on average every four to eight weeks over the duration of this project with all of the identified key stakeholders listed above.

Key meetings include:

- Department of Planning meeting, December 2006 – In addition to providing frequent briefings to the Department of Planning, the proponent agreed to meet with Mirvac and Council in December 2006 to try to establish an integrated approach with Mirvac's proposal for the neighbouring Warlters St site. The proponent agreed at this meeting to place its application temporarily on hold prior to a subsequent workshop (see below).
- Department of Planning workshop, January 2007 – The proponent agreed to participate in a roundtable discussion convened by the Department, to explore possible common ground between the two proposals. All parties participated in good faith, however the meeting concluded without agreement on the two commercially competing proposals.

7.2.2 Local roadshows – April and June 2007

The proponent held a series of roadshow presentations to Settlement City retailers and the Port Macquarie Chamber of Commerce board and members which commenced April 2007. Through these presentations, the proponent outlined the ideas and vision for the site, sought feedback and communicated the broad timeline for the project and set out the next steps in the planning process. The April 2007 roadshow presentation is included in Appendix J.

The roadshow also provided an opportunity for stakeholders to provide feedback. At the roadshow, representatives of the Chamber of Commerce highlighted the need to be aware of the impact of the proposal on the existing town centre shopping precinct and the effects on retailers within Settlement City. The Urbis economic study found that the staged provision of additional retail floor space in the proposal would not have a detrimental effect on existing retailers. This is addressed in detail in section 6.13.

Settlement City retailers were specifically asked to provide input on the features they would like to see incorporated into the refurbishment and redevelopment of the centre. A summary of the feedback provided is presented below, together with the consequent amendments made to the masterplan by the proponent. While some of the comments related to the existing centre rather than to the proposed redevelopment, the proposal will provide sufficient benefit to address most of the issues raised.

Table 33 Settlement City retailers initial feedback and proponent's responses

Retailer feedback	Proponent's response
Desire better atmosphere	Proponent has designed the redevelopment to improve amenity
Provision of parking during holiday periods	More parking has been provided as part of the masterplan
Lack of clear pedestrian crossings	Addressed with new layout and design
Lack of toilets for staff	Addressed with new layout and design
Customer information desk needed	Addressed with new layout and design

Retailer feedback	Proponent's response
Location of food court should be near the water	Addressed with new layout and design
More food choice; greater mix of shops	Larger food court will allow more food retailers
Speed of pedestrian traffic through the food court	Food court will be redesigned
No bank in the existing centre for small change	Bank will be included in the new arrangement
Dark car park	Additional lighting and paintwork has been installed
No childcare centre	A childcare centre is being sought
More independent retailers	Noted. Subject to leasing arrangements within the centre
Security opening the centre for extended hours of trading	Hours will be determined as a centre management issue
No Thursday night shoppers	Hours will be determined as a centre management issue
Protection from outside business, concern over casual mall lease	Leasing arrangements will be determined as a centre management issue
Roof leaks in the centre	Internal refit will address
Ugly main entrance	Building appearance improved
Insufficient security	Security has and will be provided to normal industry standard
Boat access to the development	Masterplan has allowed for boat access but proponent has no control over waterway development

In June 2007, a second series of presentations and workshops was held after the proponent had further developed the proposal. Participants included the Mayor and council's general manager, other councillors, council staff, the member for Port Macquarie, Settlement City retailers, the Chamber of Commerce and its retail subcommittee, and local media.

At these sessions, an update on current plans was provided, including a description of how the proposal had been amended to take into account feedback provided by stakeholders. A detailed discussion of the implications for Settlement City retailers during construction took place. The presentation is provided in Appendix J.

A multi-page colour brochure summarising the proposal was distributed to all attendees at these sessions. This brochure is included in Appendix J. A website was developed, including the brochure, and providing for responses, as well as a 1800 number (see below). No feedback was received, however.

In addition to the roadshow sessions, the proponent presented revised plans to a Council workshop on July 2 2007.

7.2.3 Customer focus groups – June/July 2007

Throughout June and July, six focus groups were held with current and potential Settlement City customers to seek feedback and conduct market research on the proposed retail offer.

The research findings showed that Port Macquarie residents would like to see improvements to the range and variety of shopping facilities available in Port Macquarie including:

- A greater mix of boutiques and new stores, especially women's and men's fashion.
- Large format stores such as a department store.
- Better 'one stop' shopping facilities so that all shopping can be done in one location.

Some of the weaknesses of Settlement City identified by the focus groups were:

- Centre ambience and atmosphere were not conducive to browsing or socialising.
- Poor lighting in the car park.
- Toilet facilities need to be improved and expanded.
- Seating comfort and quantity needs to be improved.

Other outcomes of the focus groups were:

- Customers would like to see a second supermarket that would appeal to the community-minded and/or price-minded consumer.
- Customers would like another discount department store such as Kmart, more fresh food retailers, and expanded range of food court eateries and cafes, a wider range of fashion stores and a good book store such as Dymocks or ABC Shop.
- There is significant interest in cinemas at Settlement City as it is regarded as a more convenient location than the city centre.
- Facilities such as a medical centre are needed and well suited to Settlement City.

7.2.4 Print media

In addition to the formal consultation activities described above, project information and updates have been made available to the wider Port Macquarie community through a media relations program with local newspapers.

7.2.5 Website and freecall 1800 number

The proponent has established a dedicated project website, http://www.settlementcity-panthers.com.au/. The website was published in July 2007 and includes comprehensive information regarding the proposal, including the masterplan, and details of the planning process. As the website has been accessed infrequently since publication, it does not appear to be the most effective means of communication and, as such, the domain name will not be renewed. A communications strategy for the delivery of the project will be established to make sure all stakeholders are kept informed of the project's progress.

At the same time as the website, a toll-free number was established and has been available to answer enquiries about the proposal. The number is 1800 759 322.

No feedback has been received via the website or 1800 number.

7.3 Council consultation

During the preparation of the draft structure plan for the wider Settlement City precinct (throughout 2008), council held three workshops to engage members of the community, landowners, business groups, government representatives and conservation groups. At the first two workshops, input into key issues, opportunities, vision for the precinct and design options was sought. At the final workshop reconfirmation of previous input and discussion on the preferred option was held.

ING participated in these workshops, along with other key stakeholders in the Settlement City precinct. Feedback received from the groups (as reported in the consultation report published alongside the draft structure plan) was that linkages and integration between the Settlement City precinct and the Port Macquarie CBD should be improved, streets should be activated, and the public domain and pedestrian amenity should be improved. Consultation identified 'a vibrant waterfront that will encourage recreation and tourism' as an opportunity.

The proposal is in accordance with the principles and methods of the *Settlement City Precinct Structure Plan.*

7.4 Government agency consultation

Consultation has been undertaken with a range of government agencies, to meet the DGRs for the environmental assessment.

A letter outlining the proposal and inviting each stakeholder to participate in face-to-face meetings was sent to the following agencies:

- Northern Rivers Catchment Management Authority.
- NSW Department of Lands.
- NSW Department of Primary Industries.
- NSW Department of Water and Energy.
- Birpai Local Aboriginal Land Council.
- Port Stephens Fisheries Institute.
- NSW Rural Fire Service.
- Roads and Traffic Authority.
- NSW State Emergency Service.

The table below provides a summary of the issues raised by those agencies that responded.

Table 34 Summary of agency consultation

Stakeholder	Dates	Issues raised	Where addressed
DoP	December 2006 January 2007	• Adjacent Mirvac development.	Section 7.2
DPI (Fisheries)	18 February 2009	• General proposal information.	Chapters 3 and 4
Port Macquarie-Hastings Council	January 2009 February 2009 June 2009	• Sourcing documents re: coastal processes. • Erosion at the northern boundary of the site. • Water supply infrastructure. • Flooding risk. • Traffic and infrastructure • Sewer infrastructure.	Section 6.9 Section 6.5 Section 6.8 Section 6.6
DECC	May 2009	• Further Acid Sulphate Soil testing required.	Section 6.7
DWE	4 June 2009	• Whether the project will intercept the groundwater table. • If it were to intercept the groundwater table, a license from DWE would be required.	Section 6.7 and Section 6.9

7.5 Ongoing consultation

The proponent is committed to communicating and consulting with stakeholders throughout the life of the project. Feedback received from stakeholders will continue to inform the proposal.

During public exhibition of this EA, the proponent will continue to communicate and consult with stakeholders and the community via the following methods:

- Further meetings will be held with key stakeholders.
- Newspaper advertisements will be published and a media release will be issued to raise awareness of the public exhibition period.

A community information display will be held to provide stakeholders and the community with information on the proposed project, answer questions and provide feedback.

8 Conclusion

8.1 Project justification

8.1.1 Economic, social, and environmental justification

Project level justification considers the project and its interaction with the immediate environment. It is concerned with the degree to which the project objectives are satisfied, and the performance of the project against a range of environmental, social, and economic factors.

The key project objective is to create a vibrant mixed-use destination that responds to its riverside setting and the context of the greater Port Macquarie CBD. The revitalised centre will create a major tourism, retail, and recreation destination for the Port Macquarie region.

Some impacts are likely to occur as a result of the proposed Stage 1 development. Appropriate mitigation measures have been presented as part of this report to minimise the impacts.

It is anticipated that the impacts will be manageable and overall, the project will be beneficial to the local retail and tourism economy. It is demonstrated that the numerous benefits of the proposal outweigh the potential impacts.

8.1.2 Ecologically sustainable development

Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration throughout the development of the project.

The EP&A Act recognises that ESD requires the effective integration of economic and environmental considerations in decision-making processes. There are four main principles supporting the achievement of ESD:

- Precautionary principle.
- Intergenerational equity.
- Conservation of biological diversity and ecological integrity.
- Improved valuation and pricing of environmental resources.

These are discussed below.

Precautionary principle

The precautionary principle deals with certainty in decision-making. It provides that where there is a threat of serious or irreversible environmental damage, the absence of full scientific certainty should not be used as a reason to postpone measures to prevent environmental degradation.

The environmental impact assessment provided in Chapter 6 of this document demonstrates that the potential impacts of the project have been thoroughly examined and identify no threat of serious irreversible environmental damage.

Inter-generational equity

Inter-generational equity is concerned with the distribution of economic, social, and environmental costs within the community, and focuses on minimising the distribution of costs to future generations.

While the project will have some impacts, they are not of a nature or extent that will result in disadvantage to any specific section of the community or to future generations. The project aims to provide an ongoing benefit to the community through provision of improved and additional services. Furthermore, by adopting a staged approach to development the proposal will ensure that both current and future retail needs are met in a timely manner.

Conservation of biological diversity and ecological integrity

This project will occur in a largely modified environment. Where ecological factors of a high value have been identified, management plans and mitigation measures have been developed to ensure that biodiversity and habitat values at the site are maintained or improved as a result of the project.

Improved valuation and pricing of environmental resources

The principle of internalising environmental costs into decision-making requires consideration of all environmental resources which may be affected by a project, including air, water, land, and living things. It is difficult to place a reliable monetary value on the residual environmental and social effects of the project. The environmental resources at the site have been considered, the project seeks to maximise opportunities to reduce environmental and social impact of the project. Measures outlined in section 6.4, *Sustainability* and 6.8, *Climate change*, demonstrate the high value placed on environmental resources.

8.1.3 Consistency with objectives of EP&A Act

The objectives of the EP&A Act provide a framework within which the justification of the project can be considered. The table below presents these objectives and their relevance to the project.

Table 35 Objectives of the EP&A Act

EP&A Act objective	Project response
Encourages 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 proposal will promote the social and economic welfare of the community by providing a boost to the regional economy, increasing tourism opportunities, providing increased recreation and entertainment opportunities for the community and tourists, and contributing to an improved wider town centre precinct in Port Macquarie.
Encourages the promotion and coordination of the orderly and economic use and development of land.	The proposal will be constructed in a number of stages to ensure that retail demand is met as it develops, and to minimise impacts on existing local businesses.
Encourages the protection, provision, and coordination of communication and utility services.	The proposal will result in augmentation of existing power supplies, including provision of two new substations. Existing power cables will be undergrounded, improving visual amenity and safety at the site.
Encourages the provision of land for public purposes.	The proposal does not dedicate land to the public but does improve public amenity, views and streetscape. The masterplan provides for improved and increased public space within the overall Settlement City site.

EP&A Act objective	Project response
Encourages the provision and coordination of community services and facilities.	Not relevant to the proposal.
Encourages the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats.	The statement of commitments includes specific measures designed to ensure protection of koala population and habitat, native flora on site, and the aquatic and estuarine environment surrounding the site.
Ecologically sustainable development.	See section *ecologically sustainable development* above.
The provision and maintenance of affordable housing.	Not relevant to the proposal.
Promotes the sharing of the responsibility for environmental planning between the different levels of government in the state.	Consultation with local, regional and state agencies was undertaken to ensure desired planning outcomes from all levels of government were taken into account.
Provides increased opportunity for public involvement and participation in environmental planning and assessment.	Consultation, road shows, meetings etc – the project is designed to benefit the public and the community is seen to be generally supporting of the proposal.

8.2 Conclusion

The proposal will satisfy the objectives of creating a vibrant mixed-use centre that will revitalise the Settlement City precinct and adjoining foreshore area.

Potential environmental impacts of the proposal have been fully assessed. Strategies to avoid, minimise and mitigate these impacts have been developed to ensure that the project does not have a negative impact on the community or environment.

It is determined that the project will provide economic and social benefits to the local Port Macquarie community, as well as contributing to Port Macquarie's position in the Mid North Coast area as a major tourist destination and regional retail centre.