Cardno
Shaping the Future

NORTHEAST BUSINESS PARK

Environmental Impact Statement Executive Summary

31 January 2008
Job No. 7800-40

Northeast Business Park Pty Ltd

EXECUTIVE SUMMARY

The Proposal

The Northeast Business Park (NEBP) is a proposed master planned mixed industry and business park, featuring an associated marina, marine industry precinct and complementary residential, commercial and community uses.

NEBP is located on a strategically significant 769 hectare landholding on the southern banks of the Caboolture River at Morayfield, close to the heart of Caboolture. The site has a unique set of strategic attributes, making it an ideal location for an integrated development.

The key features of NEBP are:

- Mixed Industry Business Area (MIBA) - 169 hectares of industry and businesses provided local and regional employment and training opportunities.
- 911 Berth Marina, 300-500 dry boat stacker, and associated Shipyard and Marine Industry Infrastructure, building on Queensland's growing national and international marine industry.
- A Marina Village, accommodating public spaces, cafés, restaurants, public promenades and a mix of villas and apartments.
- Community Facilities, including nodes in the MIBA, residential area, Marina and business facilities.
- Residential Housing areas incorporating a range of housing styles to meet community needs.
- Regional Open/Green Space; approximately 420 hectares of open space, heritage parks, walking tracks, golf course, clubhouse and environment centre.
- Flexibility to respond as demands change over time, with the potential inclusion of retirement living and a primary School.

Other points of note are:

- NEBP is intended to be a key catalyst for the strengthening of the Caboolture region as a regional destination.
- NEBP will generate local employment and economic prosperity and will deliver on the region's goals of building self contained communities.
- NEBP will provide a complementary relationship with Caboolture and Morayfield's role as the Principal Activity Centre for the region.
- Public transport between NEBP, Caboolture and Morayfield will provide positive benefits to all three areas.
- NEBP will accommodate uses not able to be accommodated within Caboolture or Morayfield.

Introduction

This Environmental Impact Statement (EIS) has been prepared for Northeast Business Park Pty Ltd by Cardno (Qld) Pty Ltd (Cardno), in accordance with the Terms of Reference (ToR) which was prepared by the Queensland Department of Infrastructure and Planning ('DIP') on behalf of the Coordinator General (CG), in December 2006.

The proponent is Northeast Business Park Pty Ltd (NEBP Pty Ltd). NEBP Pty Ltd is a Queensland registered company with shares held by Port Binnli Pty Ltd (50%), Laing O'Rourke Caboolture Developments Pty Ltd (25%) and a number of smaller shareholders (25%). Port Binnli Pty Ltd and Laing O'Rourke Pty Ltd have joined forces to undertake the development of the Northeast Business Park.

Background to the Application

Two planning applications for Preliminary Approval have previously been lodged over the NEBP site. The original application was lodged by Lensworth Ltd in 2002, and sought a Preliminary Approval for a mixed-use Business Park over the western portion of the site. In 2004, Noosa Events Pty Ltd (now Northeast Business Park Pty Ltd) purchased the neighbouring parcels to the east and proceeded to lodge an application for Preliminary Approval over that land for a marina precinct. The locality of the site is shown on Figure 1.

The proponent realised that substantial synergies were possible between the two developments. Consequently, it was believed that the full potential could only be achieved if development of the two sites was planned as an integrated mixed use precinct. Accordingly, the proponent commenced negotiations and subsequently purchased the Lensworth properties in 2005, and an integrated development concept was formulated which incorporates business, industry, commercial uses, marina facilities, residential development, heritage and recreational open space. The proposal is known as the Northeast Business Park and will provide a high quality master planned riverside precinct in which to live, work and play.

In view of the size and strategic significance of the site, the needs of the Caboolture region, the particular nature of the development proposal, and the natural attributes of parts of the site and surrounding areas, the NEBP proposal was nominated to the DIP as a project of significance under the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

NEBP was declared to be a "significant project" pursuant to the SDPWO Act by the CG on 21 June 2006, and the proponent was required to prepare an EIS for the project. Cardno has been appointed to co-ordinate and prepare the EIS, which will form the basis of local, State and Commonwealth approvals for the project.

Proposal Masterplan

Master planning for the NEBP aligns with the Queensland Government's key priorities and is consistent with all of the relevant strategic directions of the Southeast Queensland Regional Plan, including:

- creating a more sustainable future;

- identifying land to accommodate future growth;
- promoting land use efficiency;
- enhancing the identity of regional communities;
- providing infrastructure and services; and
- integrating land use, transport and economic activity.

The NEBP is also consistent with the key state priorities including:

- growing a diverse economy and creating jobs;
- realising a Smart State through eduction, skills and innovation;
- managing urban growth and building Queensland's regions, with protection of the environment for a sustainable future;
- tourism; and
- total water cycle management.

A Structure Plan has been formulated for the site, and this is presented as Figure 2. The Structure Plan incorporates the retention of over half of the site as open space, including public open space, golf course, rehabilitated riparian zones, playing fields and wetlands. It is proposed to develop the NEBP site into a quality mixed use development, creating a hub for business and employment in Caboolture and addressing the growing demand for marina berths and associated marina industries and facilities. Development of NEBP is therefore expected to enhance the social and economic status of Caboolture Shire.

A computer visualisation of the developed NEBP site has been prepared by V2i, and this presentation is attached to this EIS in CD format.

An assessment of the proposed development against relevant provisions of local, and State planning policies has been undertaken by PMM and is presented in the Planning Report appended to the EIS.

The Northeast Business Park Area Plan (NEBP Area Plan) has been created to provide detailed land use intents and controls for the site. Its purpose is to ensure that NEBP is planned and developed in an orderly fashion and has the necessary infrastructure and services. When approved by the Local Government the NEBP Area Plan will override the Planning Scheme and will become the framework for future development of NEBP. The NEBP Area Plan ensures that adequate assessment processes and standards are established to guide future development of the site and preserve environmental assets. The NEBP Area Plan's objective is also to ensure that development is of an intensity that is appropriate to the local development constraints, and is consistent with the aims of regional and local planning instruments.

Site Description

NEBP is located in Caboolture Shire, South East Queensland. NEBP is a strategically important site covering 769 hectares at Morayfield. The site is situated on the southern banks of the Caboolture River, with 9km of river frontage.

The site has direct access to the Bruce Highway and is about 4km radially south east of the Caboolture town centre and about 3km east of Morayfield rail station. The NEBP site is 45 kilometres from the Brisbane CBD and 35 minutes drive from Brisbane Airport.

Presently a largely cleared, ecologically degraded site, the NEBP site provides substantial opportunities for rehabilitation, sustainable development and enhanced community accessibility to the Caboolture River. With the majority of the site is designated for urban purposes, the scale of the site is sufficient to accommodate a wide range of activities, taking advantage of the site's limited physical and visual relationships with existing communities.

The 769ha site is a former pine plantation that is currently privately owned and used for cattle grazing. An aerial photograph of the existing site is presented as Figure 3, and further aerial photography of the site its environs is attached to the EIS.

The site comprises 7 lots, which are described below. The existing cadastral boundaries of the land parcels are presented in Figure 4.

The land comprises seven freehold titles, including one freehold lot owned by the State of Queensland, as described in the Table below.

Table E1 Summary of Site Details

Real Property Description	Frontage	Area (ha)	Registered Owners
L2 RP902072	Nolan Drive	28.83	Northeast Business Park Pty Ltd
L7 RP845326	Farry Road	55.90	Northeast Business Park Pty Ltd
L10 RP902079	Nolan Drive	515.24	Northeast Business Park Pty Ltd
L12 RP145197	Trafalgar Drive	4.86	Northeast Business Park Pty Ltd
L15 RP902073	Nolan Drive	1.91	Northeast Business Park Pty Ltd
L17 RP902072	Interchange	1.88	State of Queensland (Queensland Transport)
L24 SP158298	Farry Road	160.38	Northeast Business Park Pty Ltd
	Total	**769.00**	

The lands surrounding NEBP are predominantly freehold in nature. A small number of parcels near to the site are held by the State, predominantly as reserves for open space, generally administered by Caboolture Shire. Two lots are held by the State as freehold land adjacent to the Buchanan Road interchange.

The NEBP site is relatively flat ranging in elevation from 3m AHD to 17.5m AHD. Tidal levels of the Caboolture River adjacent to the NEBP site are approximately 1.34m AHD for Highest Astronomical Tide (HAT) and 0.81m AHD for Mean High Water Springs (MHWS). Existing site elevations are presented in Figure 8. Raff Creek traverses the NEBP site and flows from the southwest to the northeast boundary.

The NEBP site previously supported exotic pine plantations and was utilised for forestry purposes. As such, with the exception of a 1.3ha area of remnant vegetation located at the south west corner of the NEBP site, the majority of the NEBP site is devoid of native vegetation. Some areas of marine vegetation fringe the Caboolture River and associated waterways and tidally influenced drainage channels.

The EIS

An Initial Advice Statement (IAS) was submitted to the CG in May 2006 to support the nomination of NEBP as a "significant project" pursuant to the SDPWO Act.

NEBP was declared to be a "significant project" under section 26(1) (a) of the SDPWO Act by the CG on 21 June 2006. The declaration initiates the statutory environmental impact assessment procedure of Part 4 of this Act, which requires the proponent to prepare an EIS for the project.

The EIS process, managed by the DIP on behalf of the CG, required the preparation of a Draft Terms of Reference (ToR) which was finalised in December 2006. A copy of the ToR is provided in Appendix A.

In addition to the CG's involvement in the EIS process, the statutory impact assessment process is the subject of a Bilateral Agreement between the Queensland and Commonwealth Governments under the SDPWO Act. This agreement relates to environmental assessment under the Commonwealth's *Environmental Protection and Biodiversity Conservation Act 1999* ('EPBC Act') which requires the proponent to refer the proposal to the Australian Minister for the Environment and Water Resources. On 12 July 2005, the Australian Minister stated the proposal constituted a controlled action pursuant to Section 75 of the EPBC Act under the following controlling provisions.

- Sections 16 and 17B (wetlands of international importance).
- Sections 18 and 18A (listed threatened species and communities).
- Sections 20 and 20A (listed migratory species).

The objective of the EIS is to provide information to community and decision makers on the concepts, aspects and impacts of the development proposal, through comprehensively identifying, evaluating, and providing mitigation for issues associated with the development.

The EIS also serves the purpose of identifying all necessary planning and environmental approvals including requirements pursuant to State and Commonwealth legislation, and appropriately addresses these requirements.

All potential environmental impacts of the proposal have been identified, and mitigation measures have been proposed, where appropriate, to minimise or compensate for any adverse impacts. Mitigation measures may take the form of infrastructure and facility design, or construction and operational methods.

Wherever possible, the Proponent has sought to achieve net benefit through the implementation of environmental, social and economic mitigation measures.

The EIS has been informed by a range of technical studies and reports which have been commissioned to assess the potential impacts of the proposed NEBP development, both positive and negative. The technical studies are appended to the EIS along with other relevant supporting documentation, as listed below.

Table E2 Appendices to the EIS

Title	Author	Date	Appendix Reference
Terms of Reference	Coordinator General	22 December 2006	Appendix A
Proponent Details	PMM	May 2006	Appendix B1
Study Team	Cardno	November 2007	Appendix B2
Master Planning Vision Document	PMM	November 2007	Appendix C1
Planning Report	PMM	January 2008	Appendix C2
NEBP Area Plan	PMM	November 2007	Appendix C3
Net Benefit Assessment	AEC Group	January 2008	Appendix D
Economic Benefit Assessment	Urbis	September 2007	Appendix E1
Attached Dwelling Demand	Urbis	September 2007	Appendix E2
Business Park Assessment	Urbis	September 2007	Appendix E3
Bulky Goods	Urbis	September 2007	Appendix E4
Hotel Demand	Urbis	September 2007	Appendix E5
Golf Course Demand	Urbis	September 2007	Appendix E6
Caboolture City Marina Study	Pacific Southwest Strategy Group	14 March 2006	Appendix E7

Title	Author	Date	Appendix Reference
Marina Demand Update	Pacific Southwest Strategy Group	10 September 2007	Appendix E8
Community Context Study	The Hornery Institute	September 2007	Appendix F
Community Consultation Report	Three Plus	November 2007	Appendix G
Stormwater Management Plan	Parsons Brinckerhoff	October 2007	Appendix H1
Groundwater Impact Assessment	Coffey Geotechnics Pty Ltd	18 September 2007	Appendix H2
MIKE21 Flood Study	Parsons Brinckerhoff	4 October 2007	Appendix I
Riverbank Erosion Assessment	Cardno Environment	22 October 2007	Appendix J
Traffic Impact Assessment	Cardno Eppell Olsen	January 2008	Appendix K1
Traffic Impact Assessment-Addendum Report	Cardno Eppell Olsen	January 2008	Appendix K2
Terrestrial Ecology Assessment Report	Cardno Environment	9 November 2007	Appendix L1
Aquatic Ecology Assessment Report	The Ecology Lab	November 2007	Appendix L2
Matters of National Environmental Significance	Cardno Environment	23 November 2007	Appendix L3
Caboolture River Siltation Study	Cardno Lawson Treloar	16 November 2007	Appendix M1
Caboolture Waters: Waterways, Soils and Water Quality Management	4Site & Natural Solutions	13 August 2004	Appendix M2
Noise Impact Assessment	Cardno Environment	19 October 2007	Appendix N
Air Quality Assessment	Katestone Environmental Pty Ltd	October 07	Appendix O
Landscape Masterplan	PLACE Planning and Design	27 September 2007	Appendix P
Scenic Quality and Visual Impact	Studio Tekton	17 October 2007	Appendix Q
Geotechnical Interpretative Report	Coffey Geotechnics Pty Ltd	8 January 2007	Appendix R1

Title	Author	Date	Appendix Reference
Caboolture River Dredging - Geo-environmental investigations.	Coffey Geotechnics Pty Ltd	3 May 2007	Appendix R2
Dredging Site Based Management Plan	Cardno Environment	19 November 2007	Appendix R3
Acid Sulfate Soil Management Plan	Cardno Environment	19 November 2007	Appendix R4
Site Management Plan	Douglas Partners	2003	Appendix R5
Good Quality Agricultural Land Assessment	PLACE Environmental	7 March 2007	Appendix S
Cultural Heritage Assessment of Lot 10 on RP902079 and Lot 2 on RP902079 Caboolture Shire	Davies Heritage Consultants Pty Ltd	October 2003	Appendix T1
Indigenous Cultural Heritage Study of Lots 24 SP158298 and Lot 7 RP845326	Davies Heritage Consultants Pty Ltd	August 2006	Appendix T2
Cultural Heritage Survey Report	Gangalla Pty Ltd	August 2006	Appendix T3
Cultural Heritage Management Plan	Davies Heritage Consultants Pty Ltd & Gubbi Gubbi	May 2007	Appendix T4
Non-Indigenous Cultural Heritage Plan	Port Binnli Pty Ltd	October 2007	Appendix T5
Hazard & Risk Analysis	Simmonds & Bristow	October 2007	Appendix U
EIS Energy Report	Lectel Pty Ltd	25 September 2007	Appendix V
Environmental Impact Assessment- Water Supply & Sewerage Systems	GHD	October 2007	Appendix W
Construction Staging Plans	Laing O'Rourke	October 2007	Appendix X1
Construction Environmental Management Plan	Cardno Environment	19 November 2007	Appendix X2
Marina Site Based Management Plan	Cardno Environment	19 November 2007	Appendix Y1
Waste Management	Cardno Environment	22 November 2007	Appendix Y2

Title	Author	Date	Appendix Reference
Technical Report (includes a Waste Management Plan)			
Bushfire Assessment Report	Cardno Environment	November 2007	Appendix Z

Community Consultation

From the outset, community input was sought to inform the development of the EIS technical studies. Communication and engagement activities included:

- establishment of a dedicated website and a toll free project inquiry line;
- presentation of two Community Information Days and two Agency Reference Group Information Days
- an ongoing survey to canvas community views between November 2006 and August 2007;
- local resident newsletters and survey to 1,100 households to canvas specific neighbourhood benefits, impacts and views;
- a community information booth at the Caboolture Sustainability Expo, Sydney Boat Show and Sanctuary Cove Boat Show;
- two business sector information evenings and one breakfast to canvass views of the commercial and light industry sector;
- two community and Chamber of Commerce presentations and individual local councillor representatives briefings;
- two all agencies meetings and a key stakeholder group meeting hosted by the Proponent which included site tours;
- media meetings including site tours;
- a meeting with recreational anglers, recreational boat club members and aquaculture industry representatives;
- an Indigenous Australians tour of the site;
- meetings with local authority staff, including working party, social planning and technical staff meetings to address development application and EIS requirements;
- web-based information for ease of access to community engagement activity with links to the CG site, ToR, the NEBP concept map, newsletters and fact sheets/posters (83,305 hits were recorded);
- individual (246) resident and stakeholder responses to enquiries and comments via, phone, facsimile, face to face discussion, letter or email; and

- radio interview and public announcements to publicise the project and promote major milestone events using local community radio including Indigenous AAA broadcasting and 4EB radio (translated announcements into local community languages).

Five project newsletters were distributed to 52,000 households in the study area and newsletters were posted or emailed to stakeholders on the NEBP and CSC databases.

In this way NEBP Pty Ltd has undertaken open community consultation in addition to the legislated environmental impact assessment process. The outcomes of the ongoing community consultation process have informed the technical studies on which this EIS is based.

NEBP Pty Ltd has invested in understanding the local community, identifying its positive attributes and exploring its issues and challenges. The team acknowledges that the development is occurring in the context of rapid growth and urbanization shire wide and is committed to delivering a sensitive mix of use and urban design response that will respect the existing character of the local area and enhance its amenity level.

The opportunity to deliver social, recreational and community infrastructure, socio-cultural activities and place making strategies with a structured approach to “place management” allows the project to be sensitively integrated with its context whilst developing a strong identity and sense of place from the outset.

The sustained program of community engagement combined, with the proposed community development strategy will work with existing residents in the core catchment and begin the process of developing local ownership during the construction phase.

Need for the Development

The NEBP site has a unique set of strategic attributes that make it an ideal location for an integrated, master planned development.

Some of the NEBP site’s key attributes which support the selected location of the proposed development include:

- strategically beneficial location on the southern banks of the Caboolture River, linking Caboolture to Moreton Bay;
- 9km of Caboolture River frontage, including deepwater access at the proposed marina site;
- direct access to the Bruce Highway;
- close proximity to Morayfield and Caboolture centres;
- close proximity to North-South rail line;
- a largely cleared, ecologically degraded site;

- sufficient size to accommodate a range of land uses, thereby enabling integration and synergies between the uses;
- the majority of the site is designated for urban purposes;
- infrastructure requirements are able to be accommodated by existing public utilities and projected upgrades which are commensurate with the scale of the proposed development;
- limited direct physical or visual interface to existing residential communities; and
- opportunities to provide the community with greater public access and use of the Caboolture River, relieving the community's current 'disconnect' with the river which has resulted from successive private ownership of the majority of the river frontage (on both sides of the river).

Benefits of the Proposal

Both the quantitative and qualitative assessments undertaken of the NEBP demonstrated a positive net benefit in keeping with the vision of the project.

The quantitative Cost Benefit Analysis (CBA) for the total project found that development of the NEBP is expected to deliver a total net benefit aim of $2.5 billion in present value terms, with present value of revenues of $3.8 billion and a present value of costs of $1.3 billion. Overall, the NEBP development provides a benefit cost ratio (BCR) of 2.88 (i.e. returns $2.88 for every dollar spent in delivery of the project).

The total project provides a positive direct net benefit (i.e. to the proponent) in present value terms of $174 million with a BCR of 1.43. The project delivers a positive indirect net benefit (i.e. to stakeholders other then the proponent) in present value terms of $2.3 billion with a BCR of 3.51.

It is clear that the NEBP development is desirable from the point of view of the Proponent and the broader community with a BCR of greater than one for all assessments, with the direct, indirect and overall impacts of the project being positive.

Table E3 Quantitative Cost Benefit Analysis Summary for the Total Project

Impact	Present Value of Revenues ($M)	Present Value of Costs ($M)	Net Present Value ($M)	Benefit: Cost Ratio
Direct Impacts	$575	$401	$174	1.43
Indirect Impacts	$3,251	$926	$2,324	3.51
Total Impacts	**$3,826**	**$1,328**	**$2,498**	**2.88**

Source: AEC*group*

The qualitative CBA found that all aspects across the triple bottom line (economic, social and environmental) are expected to realise a net benefit to the State as a result of the NEBP development.

Qualitative economic impact assessment shows that the NEBP is expected to return a considerable positive net economic benefit, with a significantly higher score for benefits (22) than costs (-7). Net social and environmental benefits are also expected, with a net score of 11 for social and 11 for environmental.

Since the positive impacts of development across the economic, social and environmental aspects of the triple bottom line outweigh the negative impacts, the total development is deemed to deliver a positive net benefit for the State.

Table E4 Qualitative CBA Summary for the Total Project

TBL Aspect	Average Likelihood	Average Consequence	Average Impact	Number of Impacts	Total Score
Economic					
Benefits	Almost Certain	Moderate	High	8	22
Costs	Almost Certain	Major	Very High	2	-7
Net Position					**15**
Social					
Benefits	Likely	Moderate	Medium	9	29
Costs	Likely	Moderate	Medium	9	-18
Net Position					**11**
Environmental					
Benefits	Likely	Minor	Medium	10	19
Costs	Possible	Minor	Low	8	-8
Net Position					**11**

Source: AEC*group*

A quantitative and qualitative CBA was also undertaken for the project elements that trigger specific net benefit policies under South-east Queensland Regional Coastal Management Plan (medium scope assessment) including policies:

- 2.1.3 Coastal-dependent land uses;
- 2.1.4 Canals and dry land marinas;
- 2.1.5 Maritime infrastructure;
- 2.1.9 Reclamation; and
- 2.8.1 Areas of state significance (natural resources).

The quantitative CBA for the medium scope assessment found that development of the NEBP is expected to deliver a total net benefit aim of $1.01 billion in present value terms, with present value of revenues of $1.61 billion and a present value of costs of $598 million. Overall, the NEBP development provides a BCR of 2.69 (i.e. returns $2.69 for every dollar spent in delivery of the project).

The medium scope assessment also shows a positive direct net benefit (i.e. to the proponent) in present value terms of $82 million with a BCR of 1.46. The project elements as they relate to net benefit policies deliver a positive indirect net benefit (i.e. to stakeholders other then the proponent) in present value terms of $928 million with a BCR of 3.20.

The 'net benefit' approach adopted by the proponents has resulted in the following key benefits being proposed.

- Substantial and sustainable injection of funding into the local and regional economy and the creation of up to 27,150 jobs.
- Rehabilitation of a 100 metre wide riparian zone along the site's 9 kilometre river frontage, providing a habitat connection, improving water quality, decreasing bank erosion and creating a pleasant backdrop to the development.
- Helping to address a substantial and growing unmet demand for marina berths and accommodating a shipyard and marine industry precinct underpinning the MIBA and strengthening SEQ's pre-eminent role in marine related construction and export.
- Utilising Water Sensitive Urban Design (WSUD) and stormwater management processes polishing stormwater from internal and external catchments aimed at improving water quality in the Caboolture River.
- Use of reticulated recycled water for appropriate uses, reducing potable water demand and nutrient and pollutant loads in the Caboolture River.
- A focus on quality urban design and built form, creating efficient buildings and businesses, based on sustainability principles.
- Clustering of complementary uses encouraging efficient knowledge and/or resource flows using Industrial Ecology (IE) principles.
- Facilitating the creation of a strengthened public transport system linking NEBP with Caboolture and Morayfield, increasing the vitality of all three areas, whilst strengthening Caboolture/Morayfield's role as a Principal Activity Centre under the SEQ Regional Plan.
- Use of Community Title to create an effective structure and process to proactively guide the development in such areas as building design and landscaping standards, whilst creating a mechanism to fund maintenance costs in perpetuity.
- Creating a social heart for Burpengary and a regional social and recreational destination.

Existing Environmental Values

Climate and Natural Hazards

The NEBP site is subject to average daily temperatures of between 14 and 25^{o}C, and receives an average of 957mm of rain each year. Parts of the NEBP site, being low lying, are subject to periodic flooding.

The majority of the NEBP site is identified by the Queensland Rural Fire Service and the CSC Planning Scheme as being situated in a Medium Bushfire Hazard area. A site inspection identified that because slopes across the site are generally low, and the majority of the site is covered by disturbed grassland, the site is rated as the lower end of the Medium Bushfire Hazard scale.

Land

The NEBP site is currently zoned in the CSC Planning Scheme for 'District Industry', 'Rural' and 'Rural Residential' uses. The NEBP site is mapped by the CSC Planning Scheme as containing the following attributes which are illustrated in Figure 6.

- Catchment Protection Areas for the protection of waterways and Declared Fish Habitat Areas.
- Ecological Corridors to strengthen and improve links between areas of State, regional, local and other conservation significance and areas of potential conservation significance that may currently be degraded.
- Regional and State Conservation areas including significant wetlands mapped in the Regional Coastal Plan.
- Scenic Amenity Areas in which development is to be regulated such that adverse impacts on the scenic qualities of the area are minimised.

Little built landform exists within the NEBP project area that is dominated by natural elements including ridgelines, waterways, and vegetation. The landscape character within the NEBP project area has been highly modified since European settlement from a long history of agriculture with the most predominant landscape features being the tree lined river and waterways. Previous clearing and farming activities, including pine planting, has resulted in patches of native vegetation existing within the NEBP site, particularly associated with watercourses. The dominant feature is cleared paddocks invaded by exotic weeds.

The NEBP site is surrounded by areas of environmental sensitivity, which are identified on Figure 7 and are detailed below.

- The Deception Bay Declared Fish Habitat Area, which extends along the entire length of the northern boundary, within the bounds of the Caboolture River. This area is protected by the *Fisheries Act 1994* due to the estuarine habitats that support commercial and recreational fisheries in close proximity to developing communities.
- The Habitat Protection Zone of the Moreton Bay Marine Park which is located within the Caboolture River and begins at the north-eastern

boundary of the NEBP site then extends eastward along the Caboolture River.

- The Moreton Bay Ramsar wetlands which traverse the same area within the Caboolture River as the Moreton Bay Marine Park.
- South East Queensland Wader Bird Sites are mapped approximately 500m to the east of the NEBP site.

A view shed analysis identified very few localities surrounding the NEBP site where it is possible to achieve any significant ground elevation to be able to look down and or across the area. All potential viewpoints and receptors are either a sufficient distance that visual impacts are not a concern, or will be masked from the NEBP site by existing or proposed vegetation.

A preliminary site contamination investigation was undertaken, which included a review of the NEBP site history and soil sampling. It was determined that approximately 20m^3 of soil within of Lot 10 RP902079 is potentially contaminated. The potential contamination is limited to the immediate area surrounding the approximate location of an underground storage tank and fuel bowser. The area of potential contamination is identified in Figure 9. It is recommended that the contaminated soil be removed and disposed of to an appropriately licensed facility under the requirements of a Remediation Action Plan (RAP) approved by the Queensland Environmental Protection Agency (EPA).

The NEBP site's underlying geology consists of sedimentary estuarine and alluvial deposits, with some sandstone conglomerate occurring in the south of the NEBP site. Soils consist of sand, silt, mud and clay in varying proportions. The NEBP site soils are generally classified as having a low to moderate erosion potential, except for some areas of sandy soils which exist on the more sloping areas in the south and south-west of the NEBP site, which are classified as having a moderate-high erosion potential. The soils on site were assessed as being suitable for reuse for construction purposes, although mixing with alternative fill may be necessary for some uses, e.g. road or building foundations.

The geology and soils occurring on the NEBP site are illustrated on Figure 11.

Transport

The NEBP site is located to the east of the Bruce Highway, which currently forms part of the western boundary of the site. Buckley Road enters the site in the south. The major vehicular access to the NEBP site will be achieved from the Bruce Highway via the Buchanan Road interchange, with secondary access via Buckley Road.

The Department of Main Roads (DMR) has identified a road corridor to the east of the NEBP site to allow for the future construction of an arterial road (the North South Arterial). The corridor between Caboolture-Bribie Island Road and Deception Bay Road was notified under the *Transport Infrastructure Act* in 1994 and identified in the CSC Planning Scheme and SEQ Regional Plan. In its current alignment, the proposed North South Arterial (NSA) would require the construction of a bridge structure immediately to the west of Beachmere. The crossing of the Caboolture

River at this point on its floodplain would require the North South Arterial to be elevated to allow for conveyance of flood waters. In addition, the proposed crossing west of Beachmere would traverse significant "protected" coastal wetlands adjacent to the mouth of the Caboolture River.

Through a workshop process and additional follow on meetings with DMR officers, a potential solution that re-routed the proposed alignment of the NSA through the NEBP site was discussed. The road layout makes provision for the major internal road corridor to potentially form part of the north-south link or a connection thereto. However the functioning of the NEBP development and access thereto is not reliant on a potential link to Bribie Island Road or the NSA connection.

Representatives from DMR have acknowledged the work undertaken by the NEBP Study team in providing the alternative route for the NSA. In addition, a study of alternatives for the NSA will be undertaken by DMR however this is considered to be unlikely to significantly affect the NEBP project.

Water Resources

Surface Water Quality

The proposed NEBP site is located adjacent to the middle estuary of the Caboolture River. Large parts of the NEBP site are within the Caboolture River floodplain, and tidal and freshwater wetlands occur throughout the lower areas of the NEBP site. Raff Creek traverses the NEBP site along with several natural, unnamed channels and some constructed channels.

The Caboolture River catchment, while largely undeveloped, has been extensively cleared for agriculture. As a result, the sediment and nutrient loads in the river are high, and the water quality can be described as poor. This is evidenced by the SEQ Ecosystem Health Monitoring Program, which issued a 2006 report card for the Caboolture River with a grading of D.

The *Environmental Protection Policy (Water) 1997* (EPP Water) has been used to identify the environmental values for the Caboolture River. The values that are relevant to the tidal estuary include:

- high value: secondary recreation, visual recreation, cultural heritage, aquaculture, drinking water;
- moderate to high value: human consumer;
- moderate value: aquatic ecosystem, wildlife habitat, irrigation, stock water, farm supply, oystering; and
- low value: primary recreation, industrial use.

Water Quality Objectives (WQOs) have been derived for water entering the Caboolture River from the site to achieve the protection of existing environmental values. The adopted WQOs for the NEBP site are based on mean annual load reduction targets, as defined by the CSC Planning Scheme. Where additional criteria apply, these have been adopted. The median pollutant concentrations as detailed in the EPP Water have not been adopted as an assessment benchmark,

but instead will be achieved through the application of the WQOs and the principles of WSUD.

The following reduction targets are adopted as WQOs for the NEBP.

- 80% reduction in total suspended solids.
- 60% reduction in total phosphorous.
- 45% reduction in total nitrogen.
- 90% reduction in gross pollutants.

Water Quality

The CSC Planning Scheme Stormwater Code (CSC Stormwater Code) gives specific outcomes required for water quality control in the Caboolture region. Specific outcome SO14 of the CSC Stormwater Code states:

Stormwater discharge is to be disposed of adequately and achieve the following:

- no worsening of downstream conditions;
- no adverse impacts on adjoining or upstream lots;
- discharge from the site does not cause nuisance to any person, property of premises;
- any discharge onto downstream properties does not result in an increase in concentration of stormwater; and
- any discharge does not cause erosion.

The CSC Stormwater Code is used as the primary guide to achieve water quality objectives for NEBP. However, it is acknowledged that guidance from Healthy Waterways will be considered during the next design stage, as the application of WSUD principles (capturing of runoff and limiting the peak one-year ARI flow) are a practical means of stormwater management. Allowance is made in the Stormwater Management Plan for conceptual design of any post-development structures required to meet WSUD principles.

Groundwater

Standing groundwater levels were recorded in 44 shallow drilled boreholes and in 9 shallow and 3 deep standpipe piezometers across the NEBP site. Monitoring of groundwater levels demonstrated that rainfall strongly influences groundwater recharge, with the rate of such recharge influenced by soil infiltration rates and rock porosity.

Standing water levels in bores were observed to follow the topography gently and no high hydraulic gradient was observed in the shallow water system. Daily changes in standing water levels were observed close to the Caboolture River, which suggests tidal influence on groundwater levels in this area. Tidal influence was also shown to have an impact on water chemistry.

Groundwater quality was assessed over three water sampling rounds. In some shallow boreholes, water quality parameters including ammonia, chloride, pH, sulfate, sodium, total dissolved solids exceeded the limits in the Australian Drinking Water Guidelines (ADWG). Some shallow groundwater samples collected near the Caboolture River and associated tributaries within the NEBP site had high total dissolved solids which indicated a brackish water type and some interaction between surface water and groundwater. Further investigation would be required to fully understand the extent of the surface water/groundwater interaction, particularly that of saline intrusion. Deeper samples further from the Caboolture River exhibited lower total dissolved solids indicating a deposit of fresh water, and this groundwater has the potential for use in irrigation.

Water samples at shallow bores can be categorised into a group with higher magnesium, sodium, chloride and sulfate. Water samples at deeper bores exhibited a trend of lower sodium and chloride, and higher bicarbonate.

Sulfate levels in groundwater samples from shallow bores were higher than sulfate levels in deep bores indicating that there is some sulphide oxidation reaction occurring within the upper groundwater systems. Sulfate in shallower waters may be related to the presence of acid sulphate soils at some locations.

Within the NEBP site there are two existing boreholes located close to the homestead which are currently used to supply drinking water for cattle on site. Existing groundwater users within 3km of the NEBP site were identified from a search of the bore database managed by the Queensland Department of Natural Resources and Water (DNRW). There are 18 existing bores in this area, and these are generally privately owned and used for domestic or agricultural purposes.

Ecological investigations since 2004 have identified ecosystems within the NEBP site which are potentially groundwater sensitive, specifically the Paperbark Swamp and Tidal– and Mangrove/Swamp Oak and Tidal– Saltmarsh communities. Due to the thick presence of low permeability clay units at these locations, it is believed that these ecosystems are likely to be more dependent on rainfall and tidal inundation than groundwater.

Coastal Environment

Coastal Values

The Caboolture River and the NEBP site have a range of natural coastal features. Part of the Caboolture River is included within the Moreton Bay Marine Park. The river has been shown to support a diverse range of benthic and pelagic fish species, and the majority of the tidal reach of the river falls within the Deception Bay Fish Habitat Area. The eastern portion of the NEBP site's northern boundary adjoins the Moreton Bay Ramsar wetlands and Moreton Bay Marine Park. The entire frontage of the NEBP site adjoins the Deception Bay Fish Habitat Area.

The Coastal Management District (CMD) is declared under the *Coastal Protection and Management Act 1995*, and is generally defined as land up to HAT or extending 40m inland from MHWS, whichever is the greater. The mapped extent of the CMD has been ground truthed by Cardno and the appropriate CMD is presented in relation to the proposed Structure Plan in Figure 15.

Marine Vegetation

Small areas of marine vegetation including mangroves and saltmarsh exist on the NEBP site, mainly associated with tidal creeks and drains. At the location of the proposed entrance to the marina, few mangroves have been observed, as land is predominantly cleared of vegetation from past activities.

Outside the site, a mangrove forest exists approximately 3 kilometres upstream from the mouth on the northern side of the river, just downstream of the confluence with King John Creek. Nearer the NEBP site which is further upstream, the mangrove forests cover much smaller areas. The largest upstream mangrove forest occurs opposite the existing marina and slipway "Monty's Marina" whilst a smaller stand occurs within the north eastern portion of the NEBP site.

Water Quality

Investigations of the Caboolture River have concluded that the overall water quality of the Caboolture River adjacent to the NEBP site is poor in relation to the WQOs which have been published by the EPA for the Caboolture River. This is evidenced by concentrations of dissolved oxygen, turbidity and nutrients. It has been documented that the water quality in the Caboolture River over time has been deteriorating. This result has been linked in all studies to the following pressures (in no particular order of importance):

- coastal development;
- the installation of a weir 19km upstream from the estuary;
- unmanaged stormwater runoff; and
- wastewater releases.

Sediment Quality

Sediment samples were collected and analysed from the Caboolture River adjacent to the NEBP site and nearer the river mouth, where dredging is proposed. Results show that concentrations of metals are generally low compared to ANZECC (2000) Sediment Quality Guidelines, although nickel and copper were slightly elevated in some samples.

Riparian Corridor

WQO's for riparian areas have also been developed under the EPP Water framework. WQO's for riparian areas located within the estuarine reaches of the Caboolture River catchment are presented below.

Table E5 Aquatic Ecosystem Environmental Value: WQO for Riparian Areas

Riparian Function		
Ecological processes	**Habitat**	**Bed and bank stability**
Maintain or restore marine plants to achieve: • shade over the near bank areas; • moderation of temperature and dissolved oxygen extremes; • organic cycling of leaf litter for nutrients and energy; and • transformation of diffuse nitrogen inputs.	Eradicate weeds and maintain or restore: • in-stream debris; and • marine plants, trees, shrubs and ground cover on the banks.	Maintain and restore bank vegetation to minimise erosion.

Coastal Processes

The tidal range at the mouth of the Caboolture River is approximately 2.6m. HAT is +1.34m AHD and Lowest Astronomical Tide (LAT) is -1.26m AHD. To date no specific storm tide assessment within Caboolture Shire has not been undertaken. but 100 year Average Recurrence Interval (ARI) storm tide levels in the region vary from 1.3m AHD to 2.2m AHD.

Since 1998, bathymetric survey shows that the bed level of the lower estuarine section of the River has increased, causing the water depth to become shallower. The installation of the weir 19km upstream from the Caboolture River estuary has played a key role in loss of sediment transport downstream to the tidal reaches of the river. Sedimentation in the lower estuarine section of the Caboolture River is likely to be associated with reduced river flows during drought conditions and natural coastline drift processes.

Air

Air Quality

The Bruce Highway and local government roads surrounding the project area are the most significant existing sources of air pollutants in the area. The main pollutants which affect human health are those that are emitted by motor vehicles including carbon monoxide, oxides of nitrogen, volatile organic compounds and particulate matter. Existing industrial facilities within Caboolture Shire (such as the Narangba Industrial Estate located approximately 10km from the NEBP site) include activities such as poultry farming, sawmilling, gravel and sand quarrying, wood product manufacturing, pet food preparation and petroleum storage. The NEBP is well removed from these sources and it is therefore considered unlikely that the existing air quality of the NEBP site is greatly influenced by industrial emissions. All facilities in the region which have reported to the National Pollutant Inventory in 2004 have relatively low emission rates of all reported substances, compared to other facilities of similar nature in Australia.

Existing sensitive places which may be affected by adverse air quality emissions from the construction and operation of the proposed NEBP are:

- dwellings surrounding the NEBP site and adjoining local government roads;
- the Moreton Bay Marine Park; and
- the adjacent Moreton Bay Ramsar wetlands.

Dust

Background dust levels are required for the modelling to represent all regional sources and to quantify the potential impact of air pollutants from the proposed development. Data from the Queensland EPA's monitoring site at Mountain Creek (~47km north of the NEBP site) for the period 2001 to 2005 was obtained for analysis to determine a suitable background level for PM_{10}. The 24-hour average, 95th percentile, and annual average background concentrations used in the modelling assessment are 30 $\mu g/m^3$ and 17 $\mu g/m^3$, respectively.

Total Suspended Particles (TSP) is not recorded at any of the EPA monitoring stations. Data collected in Brisbane found PM_{10} to be an annual average background level of 24.2 $\mu g/m^3$ for TSP.

There are no known measurements of dust deposition rate within the NEBP area. A background of 20 mg/m^2/day was used in the Air Quality Assessment based on information collected in Southeast Queensland.

Air Quality Objectives

National standards and goals for air quality are set by agreement between the Federal and State Governments through the National Environment Protection Council (NEPC) and published in the National Environment Protection Measure (NEPM) for Ambient Air Quality. The standards and goals serve to control exposure of the general population to air pollutants and protect against adverse health effects resulting from emissions of carbon monoxide (CO), nitrogen dioxide (NO_2), sulphur dioxide (SO_2), ozone (O_3) and particulate matter with aerodynamic diameter less than 10µm (PM_{10}). These pollutants are relevant because they commonly occur due to direct emissions from industry, traffic and domestic activities and as such, are generally used as indicators of urban air pollution. Deposition of particulate matter can result in dust nuisance which is a common issue during construction works.

Noise and Vibration

The NEBP site does not contain any noise sensitive places within the development area. However dwellings exist in the environment adjacent to the NEBP site which can potentially be impacted on by an increase or change in the noise and vibration in the locality.

The most significant noise source in the locality of the NEBP site which contributes to the ambience of the existing environment is road traffic from the Bruce Highway and local government roads. These roads include Trafalgar & Nolan Drive, Coach Road, Buckley Road and Farry Road which surround the NEBP site. Additional noise sources from rural activities exist such as those noise emissions from a horse training yard and stables (located on Trafalgar Drive).

Existing noise sensitive places which may be affected by noise from the construction and operation of the proposed NEBP are:

- dwellings surrounding the NEBP site and fronting the local government roads nominated above;
- Moreton Bay Marine Park; and
- adjacent Moreton Bay Ramsar wetlands

Background noise monitoring identified that dwellings surrounding the NEBP site are significantly affected by road traffic noise from the Bruce Highway and local government roads. A sound pressure level (SPL) of 55 dB(A) $L_{Aeq,\ 24\ hours}$ was recorded in the locality of residences on Nolan and Trafalgar Drive. Lower noise levels were recorded at Coach Road and Farry Road because of the increased distance between the Bruce Highway at these locations, but the contribution of road traffic noise from local government roads to the background noise levels still exists.

Table E6 Ambient Sound Pressure Levels Recorded from 29 July 2007-1 August 2007

Sensitive Place	SPL L_{Amax}	SPL L_{A10}	SPL L_{A90}	SPL L_{Aeq}
Residential A	75 dB(A)	56 dB(A)	48 dB(A)	55 dB(A)
Residential B	65 dB(A)	54 dB(A)	48 dB(A)	52 dB(A)
Residential D	59 dB(A)	46 dB(A)	41 dB(A)	45 dB(A)

Nature Conservation

Terrestrial Flora

Historically the NEBP site has been subject to episodes of broad-scale vegetation clearance associated with native timber getting, livestock grazing and exotic pine plantation forestry. Currently, the NEBP site is being utilised for livestock production and as such, the majority of the site supports highly disturbed grassland vegetation. Interspersed throughout the grassland landscape are small areas of marine vegetation, paperbark swamps, eucalypt forest, native pine vegetation and heathland. The Caboolture River, which delineates the northern boundary of the NEBP site, supports riparian vegetation that has been reduced to a narrow fringe of terrestrial and marine plants with varying levels of weed incursion. There are also groves of cultivated exotic trees remaining along the banks of the Caboolture River where old homesteads used to exist.

A review of flora records from the NEBP site locality indicated 11 species of conservation significance that may potentially occur. Of these, four were considered to have a moderate likelihood of occurrence on the NEBP site, and seven were considered to have a low likelihood of occurrence. None of these or any other threatened flora species were recorded on the NEBP site, during field surveys.

A number of weed species were recorded on the NEBP site, including five species that are considered major pest plants in Queensland, and five species that are classified as significant weeds.

Terrestrial Fauna

The NEBP site and adjacent reaches of the Caboolture River provide habitat resources that are exploited by a diversity of terrestrial fauna. Whilst past and current land use practices have resulted in substantial modifications to the NEBP site's natural ecosystems, the modified ecosystems that remain provide food, shelter, breeding sites and movement corridors for species of native and introduced mammals, birds, reptiles and frogs. The diversity of terrestrial fauna that either permanently inhabit or periodically utilise the site is also a function of the following factors.

- The relatively large area of the NEBP site and diversity of vegetation and fauna habitats that occur therein.
- The position of the NEBP site adjacent to the Caboolture River.
- The relatively close proximity of the NEBP site to Moreton Bay to the east and the D'Aguilar Ranges to the west.

A total of 51 species of terrestrial mammal have been recorded in the EPA Wildlife Online database within a 10km radius of the NEBP site. During the various field surveys that have been carried out on the NEBP site a total of 20 species of terrestrial mammal have been recorded.

Birds are by far the most diverse group of terrestrial vertebrates in the NEBP site locality, with a total of 309 bird species recorded in the EPA database within a 10km radius of the NEBP site. A total of 89 bird species have been recorded during field surveys of the NEBP site.

A total of 45 species of terrestrial reptile and 26 species of amphibian have been recorded in the EPA database within a 10km radius of the NEBP site. A total of 13 species of terrestrial reptile and 6 species of amphibian have been recorded on the NEBP site.

A review of terrestrial fauna records from the NEBP site locality indicated 28 species that are listed as threatened species pursuant to either the NC Act or EPBC Act may potentially occur in the NEBP site locality.

The habitat requirements of each species have been examined to assess the likelihood that the species would utilise areas to be affected by the NEBP development. Each species has been allocated a likelihood of Very High, High, Moderate or Low. Two of threatened species have been observed on the site (Koala and Tusked frog) and a further four are considered to have a high probability of occurring on the NEBP site. The species observed on site or considered to have a high probability of occurring are listed below.

Table E7 Threatened Fauna Species Known or Likely To Occur At the NEBP Site

Common Name	*Species Name*	Status
Koala	*Phascolarctos cinereus*	Vulnerable- Queensland
Grey-headed flying-fox	*Pteropus poliocephalus*	Vulnerable- Commonwealth
Grey goshawk	*Accipiter novaehollandiae*	Rare- Queensland
Black-necked stork	*Ephippiorhynchus asiaticus*	Rare- Queensland
Wallum froglet	*Crinia tinnula*	Vulnerable- Queensland
Tusked frog	*Adelotus brevis*	Vulnerable- Queensland

A review of fauna records from the NEBP site locality indicated that 18 species of migratory bird species are known, or considered likely, to utilise available habitat resources in the NEBP site locality.

Whilst the NEBP site is not recognised as an important habitat area for migratory bird species, the NEBP site's complex of open grasslands, freshwater and saline wetlands, fringing forests and woodlands, do make a functional contribution towards the internationally recognised migratory shorebird habitat values of Moreton Bay. Also of note is the presence of a White-bellied Sea-eagle nest within a large Queensland Blue gum located adjacent to the old homestead site.

Two species of vertebrate fauna that are known to occur on the NEBP site are listed as Class 2 pests within the *Land Protection (Pest and Stock Route Management) Regulation 2003* (LP Act). These species are:

- Red fox (*Vulpes vulpes*); and
- feral Pig (*Sus scrofa*).

Other non-native vertebrate species that are not specifically listed under the provisions of the LP Act but which may be considered pest species due to their capacity to have adverse environmental or economic impacts include:

- Black rat (*Rattus rattus*);
- House mouse (*Mus musculus*);
- Brown hare (*Lepus capensis*);
- feral Cat (*Felis catus*);
- Indian miner (*Acridotheres tristis*); and
- Cane toad (*Bufo marinus*).

The main invertebrate pest species that are known to occur in the NEBP site locality are species of mosquito and biting midge.

Aquatic Biology

Investigations to date have identified the following features in relation to aquatic ecology.

- The NEBP site comprises several areas of aquatic habitat, the most significant being Raff Creek and areas of mangroves and saltmarshes fringing the NEBP site boundary and Caboolture River. The tidal portion of Raff Creek habitat appears to be included within the Deception Bay Fish Habitat Area. Upstream of the tidal influence, this creek forms a drainage line. Further upstream and beyond the southern boundary of the NEBP site, a series of artificial, freshwater ponds have been excavated amid residential properties.
- The proposed entrance to the marina is in a section of the river subject to some erosion and with few aquatic plants. Several small, mangrove-lined channels occur to the east of the proposed marina entrance. Three species of mangroves have been identified on the NEBP site – grey mangroves (*Avicennia marina*), milky mangroves and river mangroves (*Aegiceras corniculatum*). The channel closest to the proposed entrance contains little water and, at this stage, is considered to be of limited value as aquatic habitat.
- The weir on the Caboolture River forms a major barrier to fish passage (despite the presence of a small fishway) and has significant effects on the distribution of aquatic plants and on water chemistry.
- Whilst the Caboolture River retains significant features, there has been obvious alteration of the river by human activities in addition to the weir. Downstream of the NEBP site is Monty's Marina and slipway. This contains moorings within the main river channel and along the northern boundary of the river; it also has a large hardstand area and slipway running directly into the river. Further upstream, near the entrance to Goong Creek, there is a small residential area with several large vessels moored on the side of the river channel. In addition, there are small foreshore works, bank stabilisation and private slipways. Finally, there are two Sewage Treatment Plants (STP's), one discharging into the Caboolture River just downstream of the weir and one near the entrance to the river, discharging into Burpengary Creek. These STP's have been identified as problematic to water quality in previous studies.
- Parts of the Caboolture River are in areas prone to shoreline erosion, particularly where natural vegetation has been cleared to the edge of the river channel. Mangroves have provided some stabilisation of banks, particularly by the growth of pneumatophores (peg roots) which hold the sediment together.
- On the NEBP site there is evidence of degradation due to unauthorised access onto the property. This includes debris such as vehicles dumped on the shoreline and even in the river, and erosion of dirt tracks exacerbated by 4WD vehicles. Significant opportunities exist to improve the shoreline of the NEBP site by implementing appropriate management practices.
- Surveys of benthic invertebrates indicated a relatively low-diversity assemblage occurring both in the river channel (sub-tidal) and on river banks not colonised by mangroves. Fish communities in tidal creeks in and around the NEBP site were dominated numerically by mosquito fish, an introduced species. Sampling did, however, yield a number of native species, including ones of economic interest. Sampling in the river channel

yielded more species of fish, but the sampling method was hampered by strong currents and limited areas available for sampling.

- Further work on invertebrates and fish in the navigation channel proposed for capital dredging and on adjacent intertidal flats revealed that assemblages of benthic invertebrates were relatively distinct between the navigation channel and flats, although fish assemblages were quite similar at the two habitats, suggesting that fish may range from the channel over the flats at mid to high tide.

Cultural Heritage

Indigenous Cultural Heritage

The NEBP site, located as it is adjacent to the Caboolture River, with some low ridgelines, as well as high banks and terraces, would have been suitable for the location of Indigenous campsites. The few remaining mature trees are evidence that the NEBP site was once densely vegetated. The tidal river coupled with other permanent water supplies, abundant vegetation and stone material for making artefacts means that there was a plentiful supply of good quality resources available to both Indigenous and non-Indigenous people to utilise.

However, the NEBP site has been subject to many degrading activities including cultivation, plantations and clearing. Other activities such as trail bike riding, furrowing and the construction of roads and trails may have damaged or scattered artefacts. The banks of the river are also actively eroding which may have exposed and transported some artefacts; and some non-Indigenous sites may have been vandalised. The NEBP site is also infested with weeds such as Lantana, but its dense cover may have provided some protection to cultural heritage material from both environmental and human impact. Because of the degrading activities and dense weed cover, it was difficult to establish the cultural significance, if any, of the artefacts that were found.

A 2003 cultural heritage survey on Lot 10 RP902079 and Lot 2 RP902075 identified the following cultural heritage sites:

- Area A: Site Complex—Shell and Artefact Scatter.
- Area B: Site Complex—Stone Artefact Scatters.
- Area C: Site Complex—Shell and Artefact Scatter.
- Location 1: Isolated Stone Artefact.
- Location 2: Isolated Stone Artefact.

A 2006 cultural heritage survey on Lot 24 SP158298 and Lot 7 RP845326 identified the following cultural heritage sites:

- Site 1: Shell Scatter - an extension of Area C.
- Site 2: Shell and Artefact Scatter.

The locations referred to above are illustrated in Figure 17.

The cultural heritage surveys estimated that the existing level of disturbance on cultural heritage sites was considered as "Significant - Category 4" pursuant to the Duty of Care Guidelines. This generally means that it is unlikely that future activities, such as the development of the NEBP will further harm Aboriginal cultural heritage, and that the activity can proceed provided that principles of cultural heritage management are considered and addressed. An Indigenous Cultural Heritage Management Plan has been prepared for the project.

Non- Indigenous Cultural Heritage

The following sites of non-indigenous cultural heritage have been identified:

- Area D: "Morayfield Complex" - remains of buildings and other structures.
- Area E: Boiler and Associated Dam.
- Area F: 1950s House Complex.
- Location 3: Exotic Plantings.
- Location 4: Memorial Stone.

The non-indigenous sites are of varying significance. However areas D, E and Location 4 were considered to be of greatest significance as these areas are associated with a prominent citizen and the first non-indigenous settlement of the area. This area also marks the introduction of Pacific Islander labour to the area (the memorial stone site is considered to be that of a member of the Pacific Islander community).

The remaining non-indigenous sites were not considered to be significant, although it was recommended that the vegetation plantings in Location 3 be retained as a feature.

A Non-Indigenous Cultural Heritage Management Plan (Non-Indigenous CHMP) has also been developed specifically for the project.

Social

The current resident population of the existing Caboolture Shire (at the time of the 2006 Census) was 132,473 persons, including a small but stable Indigenous population.

The social values of the population are relatively diverse, although most residents have a strong sense of local identity and community. Like much of SEQ, Caboolture is undergoing strong growth and in-migration, which is changing the local population. However, the high population growth has resulted in some pressure on social infrastructure, such as access to social and community services, and also to perceived threats to liveability, public health and safety.

Community infrastructure, like schools, places of worship, hospitals and other related services are relatively close to the NEBP site, and are also clustered around established centres such as Morayfield, Caboolture and Narangba. Community infrastructure is predominantly found along the main transport corridors, and most

of the region has adequate basic amenities such as banks, post offices, shops and community organisations.

Primary health care is a key issue for the local community. General practitioners are located in most population centres (with specialist centres in Caboolture), and some larger communities, such as Bribie Island, have access to community health centres. There is also a possible shortage of doctors, with residents reporting that some medical practices were not taking on new patients.

Educational facilities are relatively evenly distributed, and are found in all towns and regional centres. Both State and private schools are present. Tertiary and specialised infrastructure, such as TAFE and the Queensland University of Technology (QUT), is located close to the principal activity centre of Caboolture.

The region has dispersed sporting facilities, clustering around the urban spine and on Bribie Island. These include aquatic centres, bowls clubs, golf courses and water sports.

The Community Context Study showed that the image and identity of Caboolture are markedly different. The image (by outsiders) is one of negative social issues such as welfare dependency, low cost housing, the Woodford Correctional Facility, and increased traffic congestion on the Bruce Highway. However, the identity (as seen by those living and working in the community) is very different. The Cultural Context Study shows that residents saw the area as having diverse coastal and hinterland experiences, and is friendly, safe and relaxed, with a welcoming urban yet country feel. It is also home to major cultural events, such as Farm Fantastic and the Woodford Folk Festival.

Residents of the Core Area (the four Census collection districts closest to the NEBP site) appreciated the area's convenience; its proximity to the highway and rail transport. They liked the semi rural area, with its natural environment and open space, mentioning the many parks, open bushland and waterways. However, negative perceptions included the increasing traffic congestion and rapid development, inadequate public transport and youth anti social behaviour such as graffiti and crime. Residents also wanted more local job opportunities and industrial and business developments. They wanted better public transport, a broader range of entertainment and dining options, and better activities and facilities for youth.

Economy

The Caboolture Shire, like much of South East Queensland, is experiencing a high population growth rate; for example, in the 5 years to June 2006, the Caboolture Local Government Area experienced one of the highest growth rates in Queensland.

The Caboolture Shire and surrounding area is an attractive coastal region, so is an appealing residential area. The SEQ Regional Plan has identified a target for Caboolture of 15,000 new dwellings by 2016, and an overall target of 26,400 new dwellings by 2026. Since June 2004, 4,755 new dwellings have been approved for development (3,637 detached and 1,118 other (mainly attached) dwellings). If the

population growth and current development trends are to continue at the same rate, then Caboolture will run out of urban land between 2012 and 2017.

The existing housing market in Caboolture Shire is similar to the rest of SEQ, with low supply and high demand. The area within 2km of the NEBP site (the Core Catchment) as well as Burpengary and Narangba have relatively high property prices. Other areas, like Caboolture Central, are more affordable. However, in comparison with Brisbane and the Sunshine Coast, property values still represent reasonable value for money, and because of this, the region is attracting many new residents in search of more affordable housing.

The area has pockets of significant social and economic disadvantage as well as relative affluence. It is characterized by an ageing population, increasing ethnic diversity, increasing housing costs, decreased proportions of social housing and continuing strong population growth. Those living in the more disadvantaged areas of Deception Bay, Bribie Island and Caboolture Central are more likely to be unemployed and are less well educated, with lower than average household income levels. They are also more likely to rent rather than own their home and live in a household with reduced connectivity (no access to motor vehicle and internet).

Those living elsewhere, such as in the Core Catchment, Burpengary and Narangba, are more likely to live in a family with children under 15, have high qualifications and work in a professional job. They are more likely to earn comparatively high incomes, be purchasing their home, and own more than two cars and a broadband internet connection.

A summary of economic benefits of NEBP are as follows.

Table E8 Summary of Benefits

Economic Benefits	FTE jobs	Expenditure/ Value Added ($ Million)
Development Phase		Annually
Direct	777	$1,912.5
Indirect	770	$1,999.8
Govt Revenue		$335.4
Operational Phase		Annually
Industry /Business Park Direct	12,423	$1,151.7
Industry /Business Park Indirect	12,248	$1,327.44
Residential Direct	899	$34.4
Residential Indirect	850	$40.2
Marina Precinct Direct	348	$34.6
Marina Precinct Indirect	345	$40.3
Golf Course Direct	15	$2.7
Golf Course Indirect	21	$3.2
Total Operational Direct	13,685	$1,223.4
Total Operational Indirect	13,464	$1,411.1
Govt Revenue		$291.1
Total Operational (ex Govt)	**27,150**	**$2,634.5**

Source: Urbis

Impact Assessment

Potential impacts of the NEBP proposal have been identified in the technical reporting undertaken in relation to NEBP, and where appropriate, suitable mitigation measures have been identified to control and manage impacts. Offsets and benefits have also been proposed where appropriate.

A summary of identified positive and negative impacts, key commitments and mitigation measures are outlined in the Impacts and Mitigation table presented below. An assessment of the residual impact has also been made that is, the impact remaining after the proposed mitigation measures have been implemented.

Table E9 Impacts and Mitigation

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
Matters of National Environmental Significance (Section 1.7 and Appendix L3)	Direct physical impacts on most of the site's terrestrial ecosystems and associated native flora and fauna species as a consequence of the clearance of native vegetation communities, cut & fill to achieve acceptable flooding outcomes and associated development works. Impacts upon the Caboolture River and Moreton Bay associated with the dredging of the navigation channel and alterations to the patterns of usage of the Caboolture River that will result from the establishment of a marina at the NEBP site.	The provision of environmental off-sets are required to compensate for the clearance of some areas of existing vegetation and fauna habitat that will occur as a result of the NEBP development. The establishment and on-going maintenance of substantial revegetation and habitat enhancement works within the Open Space precincts of NEBP. Management of the construction & operation of NEBP in accordance with a number of management plans.	**Adverse Low**
Climate (Section 4.1)	Potential for impacts on property and flooding during flooding or storm tide events greater that 1 in 100 year ARI.	Preparation of an evacuation plan and emergency response plan for the construction phase and for each development precinct.	**Adverse Low**
	Potential for NEBP property, residents and workers to be impacted to be affected by bushfire.	Design of the site in accordance with SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide.	**Adverse Low**
Soils (Section 4.2.1.3)	Release of acid waters resulting from the exposure of acid sulfate soils.	Handling of all bulk earthworks and dredging material in accordance with the ASSMP, which includes details of monitoring, treatment and validation. Monitoring of all water discharged from the site following dewatering of the marina basin during construction, and treatment if necessary prior to discharge.	**Adverse Low**
Land Use Suitability (Section 4.2.2.1)	Over-irrigation of effluent, potentially leading to loss of nutrients to groundwater; runoff of effluent to surface waters and decrease in capacity of soil to assimilate effluent.	Effluent irrigation of a Class A+ quality over a minimum 140 hectare irrigation area with grass cover (e.g. kikuyu), and no irrigation to occur on wet weather days.	**Adverse Low**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
	Need for off-site disposal of soils if material is not suitable for reuse on site.	Geotechnical investigations have identified measures which can be implemented to render all material suitable for reuse, including mixing & compaction.	**Neutral**
Land Contamination (Section 4.2.2.2)	Release of contamination from contaminated lands, impacting on human health or groundwater.	Contaminated land will be fully remediated.	**Positive Low**
Soil Erosion (Section 4.2.2.3)	Soil erosion during construction works.	Progressive stabilisation and rehabilitation of disturbed areas to protect exposed earthworks. Installation of engineer-designed erosion protection measures in accordance with the Institution of Engineers (Qld Division) Manual for Erosion and Sediment Controls.	**Adverse Low**
Soil Erosion (Section 4.2.2.3)	Soil erosion during operation.	Installation of engineer-designed permanent erosion protection measures in accordance with the Institution of Engineers (Qld Division) Manual for Erosion and Sediment Controls. Re-establish edge vegetation at property boundaries within MIBA and access roads.	**Positive Low**
Landscape Character (Section 4.2.2.4)	Impacts on Landscape Character arising from changes in landform and vegetation clearance.	Protection of existing vegetation where practicable. Open space planning incorporated into the Structure Plan to ensure that the significant components of the landscape character are retained whist protecting the NEBP from flood impacts.	**Neutral**
Visual Amenity (Section 4.2.2.5)	Minor visual impact on views from Weier Road & Captain Wish Avenue, Farry Road & Buckley Road.	Proposed vegetation planting will screen views. Design of the NEBP structures to ensure that the views of taller structures in the centre of the site are mitigated by a transition zone of either lower buildings or	**Low**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		vegetation, generally a combination of both, that does not dominate the views or impact on the visual amenity from view points surrounding the site.	
Lighting (Section 4.2.2.6)	Light spillage from fixed lighting. Glare and intrusion of fixed lighting. Glare and intrusion from headlights associated with vehicles accessing the site.	Minimisation of light spillage will be considered in detailed design of lighting design, including the use of landscaping and site fencing to contain of lighting, use of low-level bollard lighting where possible and the use of low-glare external advertising signage. The Structure Plan allows for effective buffering of the surrounding areas from light spillage by vegetation or single residential precincts or landscaping in the case of the marina village precincts.	**Low**
Transport (Section 4.2.2.7)	Increase in traffic leading to impacts on the ability of the external road network to function efficiently, in particular: • the Buchanan Road/Bruce highway interchange; • the Uhlmann Road/Buckley Road intersection; and • Bruce Highway on & off ramps between Uhlmann Road & Buchanan Road.	Upgrade of Buchanan Road access and intersections with the Bruce Highway on and off-ramps. Minor upgrading to a dual lane roundabout at the Buchanan Road/Bruce Highway northbound. A further intersection upgrading to a signalised layout will be required prior to the completion of Stage 2 for further stages of the development. Minor upgrading to a dual lane roundabout of Buchanan Road/Bruce Highway southbound Intersection. A further upgrade to a signalised form, with additional turn and through lanes will be required prior to completion of Stage 2 to accommodate further development traffic. Upgrade to the Uhlmann Road/Buckley Road Intersection to a signalised layout with additional lanes on the eastern and northern approaches and slip lanes for left turns from the south and west. Upgrade to the Uhlmann Road/Bruce Highway northbound Intersection to allow for additional through	**Positive Medium**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		and turn lanes. Upgrade to the Uhlmann Road/Bruce Highway southbound Intersection.	
	High dependency on car use causing increased impacts on the internal road network.	Provision of sustainable transport modes throughout the development, such as public transport, bicycle and pedestrian networks.	**Neutral**
Waste (Section 4.3)	Waste spills and loss of containment of waste resulting in impacts to soils, surface water, groundwater, terrestrial and marine fauna, and human health.	Wastes to be managed in accordance with the *Environmental Protection (Waste Management) Regulation 2000*, and in accordance with the Waste Management Plan developed for the NEBP. Waste avoidance, minimisation, reuse and recycling principles to be utilised wherever possible. No disposal of solid or hazardous wastes on the NEBP site. Design of marina waste facilities in accordance with 'Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand'. Operation of the marina with regard to the Marina Industries Association of Australia (MIAA) 'Clean Marinas' accreditation programme.	**Neutral**
Water Resources (Section 4.4)	Increase in pollutant loads discharging to the Caboolture River arising from a change in land use.	The following reduction targets have been adopted for the surface water quality objectives for the development. • 80% reduction in total suspended solids. • 60% reduction in total phosphorous. • 45% reduction in total nitrogen.	**Neutral**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		• 90% reduction in gross pollutants. A baseline water quality monitoring program will be established to determine long term trends in ecosystem health as a result of the proposed development.	
	Increase in pollutant loads relating to the disposal of additional sewage effluent generated by the development to Caboolture River.	Irrigation of 2.3 ML of treated effluent per day to landscaped areas of the site. This is equivalent to the entire sewage flows generated by the site. Therefore, removal of effluent discharged to the Caboolture River.	**Neutral**
	Damage to foreshore habitats as a result of increased public access	Control over shoreline access will be far greater than at present, which would help to enhance the management and ultimately the value of foreshore habitats. Management would be likely to include walkways and educational signage along foreshore habitats, increasing public awareness.	**Positive Medium**
	Pollution from sewage and bilge discharge from boats.	Effluent discharge from boats will be prohibited. A sewage and bilge waste pump out facility will be provided at the marina.	**Neutral**
	Increase in quality of stormwater runoff due to an increase in impervious area.	Stormwater design will incorporate the following objectives: • capture and manage the first 15 mm/day of runoff from all impervious surfaces; and • limit the post-development peak one-year Average Recurrence Interval (ARI) event discharge to the receiving waterway to the pre-development peak one-year Average Recurrence Interval (ARI) event discharge.	**Adverse Low**
	Potential for development on the site to be affected	The development of the site includes a cut and fill plan to ensure the majority of the built form development will	**Neutral**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
	by flooding.	be located above the 1 in 100 year (Q100) flood level.	
	Increase in flood levels on the site or on other properties upstream or downstream of the development as a result of changes in ground level on the site.	Flood mitigation measures including flood bypass channels, mitigation cut areas and earth diversion bunds have been included in the design to ensure no adverse impacts on flood storage or flood levels. Decrease in flood levels in areas surrounding the NEBP.	**Neutral**
Coastal Environment (Section 4.5)	Impacts on tidal prism, altering flow velocities in the Caboolture River.	Installation of lock system with pumped water exchange system to isolate marina basin from tidal flows.	**Neutral**
	Disturbance to coastal wetlands.	Coastal wetlands to be conserved and protected by a buffer zone. Provision of open space with the objective of retaining, rehabilitating and conserving protected values including aquatic ecosystems, primary and secondary recreation and visual recreation identified in the 'Caboolture River Environmental Values and Water Quality Objectives' report by the EPA. Retention and enhancement of areas of coastal wetland associated with Raff Creek.	**Adverse Low**
	Erosion of riverbank resulting from an increase in marine traffic.	Implement a monitoring program to assess the level of riverbank erosion over time. Raising of levy on boat berths to facilitate a program of rehabilitation works in the Caboolture River corridor external to the site. Contribution to the stabilisation and rehabilitation of the erosion prone area by planting riparian vegetation at a density and composition to enhance ecological	**Adverse Low**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		processes. In consultation with the EPA, investigate the feasibility of utilising material dredged from the Caboolture River navigational channel to create additional high tide roost sites for migratory wading birds.	
Air (Section 4.6)	Dust generation during construction works causing nuisance at surrounding sensitive places.	Technical reports demonstrate that dust levels will be in compliance with relevant standards. Implementation of the air pollution control strategies outlined in the Construction Environmental Management Plan.	**Adverse Low**
	Generation of dust, odour or other air emissions during operation of MIBA precinct impacting on sensitive places within or outside the NEBP.	Consideration of type of industry permitted to occupy MIBA precincts. Compliance with Marina Site Based Management Plan developed for the site. Provision of 420 hectare open space area as a buffer zone for dispersion of air pollutants.	**Adverse Low**
	Increase in greenhouse gas emissions as a result of the construction & operation of the development.	Sourcing of a proportion of energy from renewable sources, including biofuels & green electricity. Monitoring of energy & fuel consumption. Design of NEBP with a network of pedestrian & cycle routes to encourage the use of non-motorised transport.	**Adverse Low**
Noise and Vibration (Section 4.7)	Noise impacts during construction causing nuisance at surrounding sensitive places.	Implementation of the noise control strategies outlined in the Construction Environmental Management Plan.	**Adverse Low-medium (short term)**
	Noise impacts arising from uses with the MIBA precincts causing nuisance to sensitive places	Provide acoustic treatments (such as noise barriers) where required having regard for land area and the	**Adverse Low**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
	within or outside the NEBP.	character of the adjacent sensitive use. Acoustically attenuate noisy equipment where the operation of this equipment can adversely impact existing environmental values. Comply with noise conditions of relevant approvals.	
Nature Conservation (Section 4.8)	Clearance of 13 hectares of remnant vegetation in the south-western sector of the NEBP site.	Establish a vegetation offset in accordance with DNRW's 'Policy for Vegetation Management Offsets - 23 August 2007'.	**Adverse Low**
	Direct physical impacts on terrestrial ecosystems arising from vegetation clearance necessary for landform changes and flood mitigation.	Establish and maintain substantial revegetation and habitat enhancement works within the Open Space precincts. Establish cooperative partnership arrangements and other opportunities for community based groups such as Caboolture Regional Environmental Education Centre (CREEC). Undertake extensive rehabilitation of degraded habitats within the site, including the Caboolture River riparian zone.	**Adverse Low**
	Potential for construction of flood mitigation banks to impact on habitat within Coastal Management District.	No mitigation is proposed for the direct impacts, as the proposed earth banks are necessary for the mitigation of flood impacts. Rehabilitation of riparian and coastal areas in other parts of the site will be undertaken which will provide an offset for these direct impacts. Construction works will be undertaken in accordance with the Construction Environmental Management Plan to minimise the potential indirect impacts of construction.	**Adverse Low**
	Increase in nutrient loading arising from increased sewage loading to Burpengary East STP.	NEBP will provide area for irrigation of 2.3ML/day of treated sewage effluent on site. This effluent will be	**Neutral**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		sourced from the South Caboolture STP, and is equivalent to the volume of effluent produced on the site.	
	Water quality and aquatic habitat changes due to the construction and operation of a marina.	Lock system for access by boats to and from the marina controls potential impacts of the marina basin on the tidal regime of the Caboolture River. Potential build up of contaminants in the water and sediment will be mitigated somewhat by the pump system associated with the perched marina. A Marina CEMP, SBMP and ongoing marina water quality monitoring has been prepared.	**Adverse Low**
	Noise, vibration and artificial lights impacting aquatic flora and fauna.	During construction of the marina basin it will be isolated from the estuary. No blasting required for construction. The lock system and speed limits will be implemented for boat traffic. Lights to be directed away from the water, where possibly.	**Adverse Low**
	The predicted replenishment of sediments in the navigational channel from adjacent banks represents potential for impacts beyond the channel and hence within the designated Fish Habitat Area.	As dredging is contained within the navigation channel, which is the responsibility of Queensland Transport, no specific mitigation measures are proposed.	**Adverse Medium**
Cultural Heritage (Section 4.9)	Disturbance to or destruction of items or places of indigenous cultural heritage significance.	Provision of a dedicated Heritage Park. Nominate a staff member as the Cultural Heritage Coordinator. The Cultural Heritage Coordinator shall form a part of the Cultural Heritage Team and will maintain regular contact with the Gubbi Gubbi people. The Cultural Heritage Team to undertake archaeological	**Adverse Low**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		excavations of sites in areas A, B, C, Location 2 and selected areas of the high banks and terraces adjacent to the Caboolture River. Document all results and develop a management report based on the findings. In the event of discovering cultural heritage material the Cultural Heritage Coordinator will notify the Indigenous Coordinator and the Archaeologist, who will collectively find, analyse, document, record and salvage the material if it is located in the disturbance area. In the event of discovering human remains, all works will immediately cease and the Cultural Heritage Coordinator will immediately contact the Police.	
	Disturbance to or destruction of items or places of non- indigenous cultural heritage significance.	Provision of a dedicated Heritage Park. Prior to removal of the 1950's house complex it shall be documented, surveyed, photographed and plan drawings prepared according to the standards of the Australian Heritage Commission. The memorial stone on the southern bank of the Caboolture River, shall be protected and preserved, and further historical research undertaken.	**Adverse Low**
Social (Section 4.10)	Benefits to the wider community by the creation of a community infrastructure.	Implementation of social infrastructure such as a Post Office, cycle and footpaths, walking trails and library, where appropriate. Establishment of a community association and development strategy to help blend existing and emerging communities. Contribute funding from each residential lot sale to a Housing trust for the provision of affordable housing in Caboolture.	**Positive Medium**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		The introduction of a skills hub that provides pathways into the emerging employment opportunity will strengthen the tertiary educational provision available to the regional community (as well as to local residents). The planned and timely delivery of a primary school and primary health care facilities in the community to the east of the highway will ensure that there is no negative impacts on the existing infrastructure base in the area and will deliver a net benefit to the local community in the core catchment.	
	Benefits through creation of construction jobs	1,632 direct & indirect construction jobs predicted to be created.	**Positive Medium**
	Benefits to Caboolture Shire by creation of long term employment.	Development of integrated development which includes residential, business, industry, recreation & community facilities, and contributing to the CSC's goal of 2 out of 3 residents living and working in Caboolture. 13,685 FTE direct employment opportunities predicted, and a further 13,464 indirect FTE jobs.	**Positive High**
	Impacts on housing affordability.	Voluntary provision of an affordable housing levy to be directed to a trust fund used by a non-profit agency to help leverage the provision of affordable housing in the area.	**Neutral**
Health and Safety (Section 4.11) & Hazard and Risk (Section 4.13)	Heath & safety risks introduced during construction works.	Develop and implement a Workplace Management Plan which shall contain procedures to ensure that workplaces are managed in such a way that safety hazards are continually identified and reviewed. Develop Safe Work Method Statements (SWMS) across the site to identify all potential hazards, the associated risks and the relevant control methods.	**Neutral**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
	Health & Safety risks introduced by the use of dangerous or hazardous substances during the operation of the MIBA.	The MIBA is not intended to accommodate high risk industries. However, the following measures are proposed to minimise any risk. • Ensure all hazardous substances brought onto the NEBP site are accompanied by a Material Safety Data Sheet and are entered in the Hazardous Substance Register. • Develop and implement Emergency Response and Evacuation Plans which shall include a notification procedure and system in the event of a toxic substance or sewage release. • Provide induction training, quality assurance training, safety and emergency response training and site management and supervision training to all personnel, where relevant. Record details of all training programmes undertaken by each staff member. • Conduct internal workplace health and safety audits of the management system, hazard information and records, shift processes, safety measures and staff personal protective equipment. Maintain records of all audits • Conduct external workplace health and safety audits of the management system, hazard information and records, shift processes, safety measures and staff personal protective equipment. Maintain records of all audits. • Implement and provide detection and alarm systems, shut-down systems for gas release, fire protection systems, containment areas for spills and runoff, personnel protective equipment, first aid equipment and clean-up procedures at	**Adverse Low**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		designated locations throughout the MIBA precinct.	
	Health & Safety risks introduced by storage & transport of fuel on the site.	Pursuant to the requirements of the *Dangerous Goods Safety Management Act 2001,* notify the Chief Executive Officer of the Department of Emergency Services of a Large Dangerous Goods Location (LDGL) for the storage of unleaded petrol within the marina. Store all flammable and combustible liquids in accordance with 'AS 1940-2004 The storage and handling of flammable and combustible liquids'. Transport fuels to the site using approved road tankers in accordance with the *Australian Code for the Transportation of Dangerous Goods by Road and Rail.*	**Adverse Low**
	Potential for nuisance from mosquitoes and midges, and for spread of mosquito borne diseases.	Monitor mosquito types and populations. Liaise with CSC to develop and implement appropriate mosquito management programmes. In addition to Council spray programmes, utilise low impact insecticides to control mosquito populations.	**Adverse Low**
	Public health risk from contact with recycled water used for irrigation & in gardens.	Effluent to be Class A+ standard, suitable for public contact. Effluent irrigation to be conducted in accordance with the Queensland Water Recycling Guidelines.	**Adverse Low**
Economy (Section 4.12)	Benefits to local & regional employment.	Provide employment & training opportunities to local and regional workforce. Where possible, engage the services of existing local and regional businesses in place of interstate and overseas trade. Liaise with, and provide business and contracting	**Positive High**

Element & Relevant EIS Section	Potential Impact Identified	Commitment / Mitigation Measure	Residual Impact
		opportunities to Indigenous people.	
	Benefits to regional and State economy.	Delivery of net direct & indirect benefit of $2.4 in net present value terms.	**Positive High**

Environmental Management

Several environmental management plans have been prepared in line with the values and vision of the NEBP development. The environmental management plans have been prepared to guide the development and provide a framework for the management of environmental impacts during construction and operation of NEBP. The management plans which have been prepared are appended to the EIS, and are listed below.

1. Dredging Site Based Management Plan.
2. Acid Sulfate Soil Management Plan.
3. Site Management Plan (Contamination).
4. Cultural Heritage Management Plan.
5. Non-Indigenous Cultural Heritage Management Plan.
6. Construction Environmental Management Plan.
7. Marina Construction Environmental Management Plan.
8. Remediation Action Plan.
9. Marina Site Based Management Plan.
10. Marina Water Quality Management.
11. Stormwater Management Plan
12. Waste Management Plan.
13. Transport Management Plan (part of the Traffic Impact Assessment).

The aforementioned plans have been developed based upon the findings and outcomes identified in the EIS, and aim to address the following matters.

- Achieve the levels of environmental performance required by legislation, relevant guidelines and company policies.
- Prevent, minimise and control potential impacts on the environment and the surrounding community by providing environmental management strategies and mitigation measures.
- Provide opportunities for continual improvement by setting measurable targets and objectives.
- Identify responsible parties.
- Outline procedures for complaint handling and incident investigation, including corrective action and reporting procedures.
- Identify emergency response procedures.
- Establish performance indicators.
- Specify a monitoring program.

Environmental audits are recommended during construction and operation of the development. The construction and operational environmental management plans are to be reviewed not less than annually, or as required following an audit.

Environmental training, including site inductions is to be provided to ensure best practice and due diligence is achieved by construction staff and contractors, and operational staff.

An overarching Emergency Response and Evacuation Plan is to be developed for NEBP. Individual premises may also be required to prepare an Emergency Response and Evacuation Plan.

A Safety Management System and Workplace Health and Safety Plan should also be produced for the construction and operational phases of the development.

Conclusions

The EIS has been based on technical reports which have thoroughly assessed the potential environmental, social and economic impacts of every aspect of the proposed NEBP. The findings of the technical reporting have informed the design of the NEBP and have driven the final form of the Structure Plan.

Where potential adverse impacts have been identified, appropriate mitigation measures have been proposed to manage and control the impacts. Mitigation measures that have been proposed within the EIS take the form of physical infrastructure works, rehabilitation works, financial contributions and ongoing environmental management strategies and commitments.

In addition, the proposal has been assessed as provided a number of significant social, economic and environmental benefits, and the overall net benefit assessment of the project by AEC Group identified that quantitatively and qualitatively, the development of the NEBP will provide a net benefit in environmental, social and economic terms.

It is concluded that the project is suitable for approval subject to reasonable and relevant conditions.