

Riverside at Tea Gardens

**Preferred Project Report
Volume I– Report & Annexes A to F**

Crighton Properties

February 2013

0043707

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Approved by:	<i>Steve O'Connor</i>
Position:	Technical Director
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Date:	8 February 2013

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Crighton Properties Pty Ltd

Riverside at Tea Gardens
Preferred Project Report

February 2013

Reference: 0043707 Preferred Project Report

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EXECUTIVE SUMMARY

This Preferred Project Report (PPR) has been prepared in respect of a Concept Application for residential and tourist development of approximately 945 homes on an urban zoned site, located at Tea Gardens on the lower mid north coast of NSW. The PPR has been prepared subsequent to the public exhibition of the Concept Application in early 2012. The Concept Plan is a substantially reduced and revised version of a previous application (lodged in 2009) for the same site.

The 2009 application was the subject of a Planning Assessment Commission (PAC) assessment and follow up reports (Minority and Majority report). The PAC report(s) summarised a range of concerns with the (2009) application and provided feedback on issues which would need to be addressed in any new application. Additionally, the Majority PAC report recommended a development footprint within its findings, despite highlighting that its recommendations were based on what it believed to be inadequate baseline mapping.

The Minority Report instead, recommended that the baseline mapping be completely re-done before any suggestions of development upon the site could be considered in any detail.

Of greatest concern to the PAC at the time, were biodiversity outcomes upon the site in addition to the long term effectiveness and appropriateness of the proposed stormwater management system for the site. The 2009 application received little support from other government agencies.

In accordance with the recommendations contained within both PAC reports, new consultants were appointed and baseline ecological mapping has been completely re done for the site. As part of this process, OEHL have been widely consulted with respect to both methodology (prior to mapping being undertaken) as well as to results and conclusions from the mapping exercise. The new mapping is far more accurate, more detailed and has been widely reviewed and scrutinized by government agencies. It is understood that OEHL support the current mapping for the site.

The new baseline mapping and assessment work led to the formulation of a revised Concept Plan being prepared and lodged with DoPI, and exhibited in Feb 2012.

The revised application (2012), resulted in the receipt of 97 public submissions in addition to submissions from 10 government agencies. Despite the fact that the majority of submissions were in support of the proposal, it was clear that issues remained to be addressed before the Concept Plan could be approved.

Since the exhibition of the revised Environmental Assessment, significant consultation with government departments has occurred. This has led to a number of further significant amendments to the Concept Plan, as well as the preparation of further supporting materials. These amendments and revised reports have been widely discussed with government departments (and in some cases, these documents have been peer reviewed) prior to finalisation within the revised Concept Plan.

In particular, the following key issues have been the subject of significant revision.

WATER MANAGEMENT

New leading water management consultants were appointed to the project team and an entirely new stormwater management system is now proposed for the site – based upon “at source” treatment controls, rather than “end of line” controls. It demonstrates a beneficial effect on water quality leaving the site, both as groundwater and surface water. The proposal has been developed in close consultation with NoW, DoPI, OEH and DoPI review consultant - BMT WBM.

The revised water management system in combination with increased setbacks of development from conservation areas, demonstrates a maintenance or improvement of environmental conditions at downstream ecosystem receptors.

The proposal has addressed the key concerns of the PAC with regard to Water, and has been performance modelled in accordance with the PAC's and other agencies requirements. The system as proposed is more sustainable and has met higher water quality performance targets. In addition, the proposed measures utilize proven technology, regular maintenance regimes and due to fragmentation, protect against large scale failure.

It should also be noted that the revised water management system has greatly reduced the potential for environmental impacts (such as groundwater drawdowns etc.) extending outside of the development footprint. The need for setbacks to conservation areas is therefore substantially reduced, and changes a key constraint considered by the PAC in the formulation of a suggested development footprint.

ECOLOGY

Since the PAC originally assessed the 2009 application;

- new Ecology Consultants were appointed to the project team;*
- entirely new baseline ecological mapping has been undertaken for the site, in accordance with PAC (both reports) and OEH recommendations and requirements – it is understood the revised mapping has received OEH support. This has led to a greater understanding of biodiversity values upon the site and adjacent lands;*
- significant reductions in the proposed development footprint upon the site have been made – the development footprint has been reduced by more than 20 hectares since 2009 (more than 5 hectares has been removed from the development footprint since exhibition in 2012) providing corresponding increases in ‘on site’ conservation areas. These reductions have been strategically located within areas of greatest quality habitat or corridor value – as identified within the revised mapping. It is understood these measures are supported; and*
- a comprehensive ‘on site’ and ‘off site’ offsetting package is proposed to offset residual impacts in accordance with the legislation. This package will result in approximately 108 Ha of land being conserved on site (protected in perpetuity) in addition to the equivalent of approximately 192 – 260 Ha being protected off site to offset the total development footprint. It should be noted that NO offsets were previously proposed in 2009.*

It should be noted that proposed development footprint does not exactly match the size and shape of the development footprint recommended within the Majority PAC report in 2009. The new detailed baseline mapping requested by the PAC (both reports) has identified different ecological constraints upon the site (as was to be expected), than that which informed the PAC's initial majority recommendation. The premature nature of indicating a development footprint upon the site (as identified within the Minority PAC Report) appears to have been justified to a degree, given the results of the new baseline mapping.

Due to the flawed baseline data upon which the Majority report made its recommendations, variations from the Majority recommended foot print are contained within the current Concept Plan. Some areas suggested by the PAC (majority report) as potentially suitable for development, are instead proposed to be conserved - due to beneficial biodiversity habitat or corridor values in those locations.

Alternately, other areas suggested by the PAC (majority report) as potentially suited to conservation, have been assessed to be of lower significance, biodiversity habitat or corridor value (or requiring lesser buffering of potential impacts) and are, instead proposed for development or water management uses. It should be noted that development of these areas, is proposed to be offset at a ratio in excess of 3:1. Given the lower quality biodiversity value of these areas, the protection of more than three times the area of higher quality (and more strategically located) habitat either on or off site, is proposed as a superior biodiversity outcome. These beneficial outcomes were not presented to the PAC in the initial application for its consideration.

Whilst it would be technically possible to further reduce the development footprint or otherwise manipulate it to accord with the area contained within the footprint recommended by the PAC, the result of this would only be to conserve lower quality habitat on site, at the expense of corridor enhancement and a larger area of greater quality habitat which could be preserved within an off-site BioBank area. Hence the proposed footprint (and commitment to offsets) represents the preferred approach to enhancing biodiversity outcomes, as a result of development upon the site. Once again, these outcomes and benefits did not form part of the initial application reviewed by the PAC in 2009. It is understood that these initiatives are also supported by OEH and Great Lakes Council.

In addition to the amendments to the proposed development and on site conservation layout, the Concept Plan is accompanied by commitments to the provision of substantial offsite Biodiversity offsets.

Details are provided within the PPR which outline a two stage approach to the provision of biodiversity offsets. Commitments are made to establishing the on-site BioBank prior to any development consent being granted for the first stage of development. Further commitments are provided to the establishment of the off-site BioBank / retirement of credits, prior to development continuing beyond stage 8. In both cases, all applicable offsets are proposed to be provide ahead of impacts occurring.

GENERAL

All comments received during the submission period have been summarised and responded to in the PPR. Comments have led to either; further clarification, a modification of the proposed Concept Plan, the provision of additional information in support of the proposal or the inclusion of a commitment within the Statement of Commitments to address issues of concern.

CONCLUSION

This revised Concept Plan has been continually modified over a 3 year period in response to revised baseline mapping, feedback from the PAC and continuing feedback from state Government Agencies. It has been discussed extensively with all relevant government authorities (often with facilitation by DoPI), and has had the benefit of being informed by two alternative PAC reviews of an earlier, but very different Concept Plan and Project Application upon the site. It has been updated significantly in response to the most recent comments received within submissions.

The Concept Plan represents an efficient and effective response to site constraints, and has been demonstrated to achieve a maintenance or improvement of environmental values, post development. The proposal consists not only of the proposed development, but extensive commitments to biodiversity offsets beyond the boundaries of the site.

The current Concept Plan seeks to develop only 37% of the Riverside site for urban / tourist uses, in addition to a further 11% of the site which will be utilised for water management and open space recreation. 52% of the site (116 Ha) will be set aside in perpetuity for conservation and managed under a conservation agreement. More than half of this conservation area is land that is already zoned for urban uses, being returned to conservation. In addition to this, a further 258 Ha (approximately) of better quality, more strategically located habitat will be set aside 'off-site' and conserved and managed within a further conservation agreement, to offset any residual site impacts.

The water management system for the site is based on sound proven principles, and is able to be developed in proportion to development. It has been demonstrated to protect downstream environments.

The Riverside site has long been a key component of the growth strategy for Tea Gardens, and the Great Lakes area. This proposed compact and efficient development footprint will help to realise this growth whilst protecting and enhancing key ecological assets both on and around the site, and within the region.

1

INTRODUCTION

1.1

BACKGROUND

An Environmental Assessment Report for a previous Concept Plan and Project Application was prepared in accordance with the Director-General's Environmental Assessment Requirements (DGR's) issued on 16 September 2008. The Environmental Assessment Report was placed on public exhibition for a period of 30 days from 19 February 2009 to 20 March 2009 (see *Figure 1.1*).


The Department of Planning (DoP) appointed an Independent Hearing and Assessment Panel (IHAP), which was subsequently modified to the Planning and Assessment Commission (PAC), to undertake an expert review of the proposed development. The terms of reference of the PAC were focused on the review on two main areas: the ecological constraints of the site and the hydrological issues associated with groundwater, the SEPP14 wetland and flooding.

The PAC could not reach a unanimous view on recommendations concerning the ecological constraints of the site, and subsequently issued two reports, one being a majority report, the other a minority report. The PAC submitted its reports to the DoP in July 2009. The PAC concluded in its majority report that the vegetation mapping contained within the EAR was "*grossly deficient*" and that it was "*not possible to define the boundaries of the endangered ecological communities and threatened species habitat with certainty*". The PAC strongly suggested that new vegetation mapping and fauna habitat mapping be undertaken with any revised proposal so as to properly inform any impacts upon the site and required mitigation measures.

Prior to the Minister for Planning making a determination on the Concept Plan and Project Application, Crighton Properties withdrew the application. The application was withdrawn to enable additional information to be provided and studies to be undertaken to address issues raised by the PAC, DoP and other government agencies.

Following on from this initial application, an Environmental Assessment (EA) for a Concept Plan for Riverside was prepared by ERM (2012) for Crighton Properties Pty Ltd (Crighton) for the proposed revised 'Riverside' residential and tourist development at Tea Gardens. It was prepared in accordance to the revised Director Generals Requirements (DGRs) issued on the 14 October 2010. The EA was publically exhibited from 8 February, 2012 to 9 March, 2012 (see *Figure 1.2*).

Legend

-  Riverside at Tea Gardens Site Boundary

Distance to:	
Pacific Hwy	12 km
Karuah	24 km
Bulahdelah	39 km
Raymond Terrace	51 km
Newcastle	76 km
Sydney	215 km

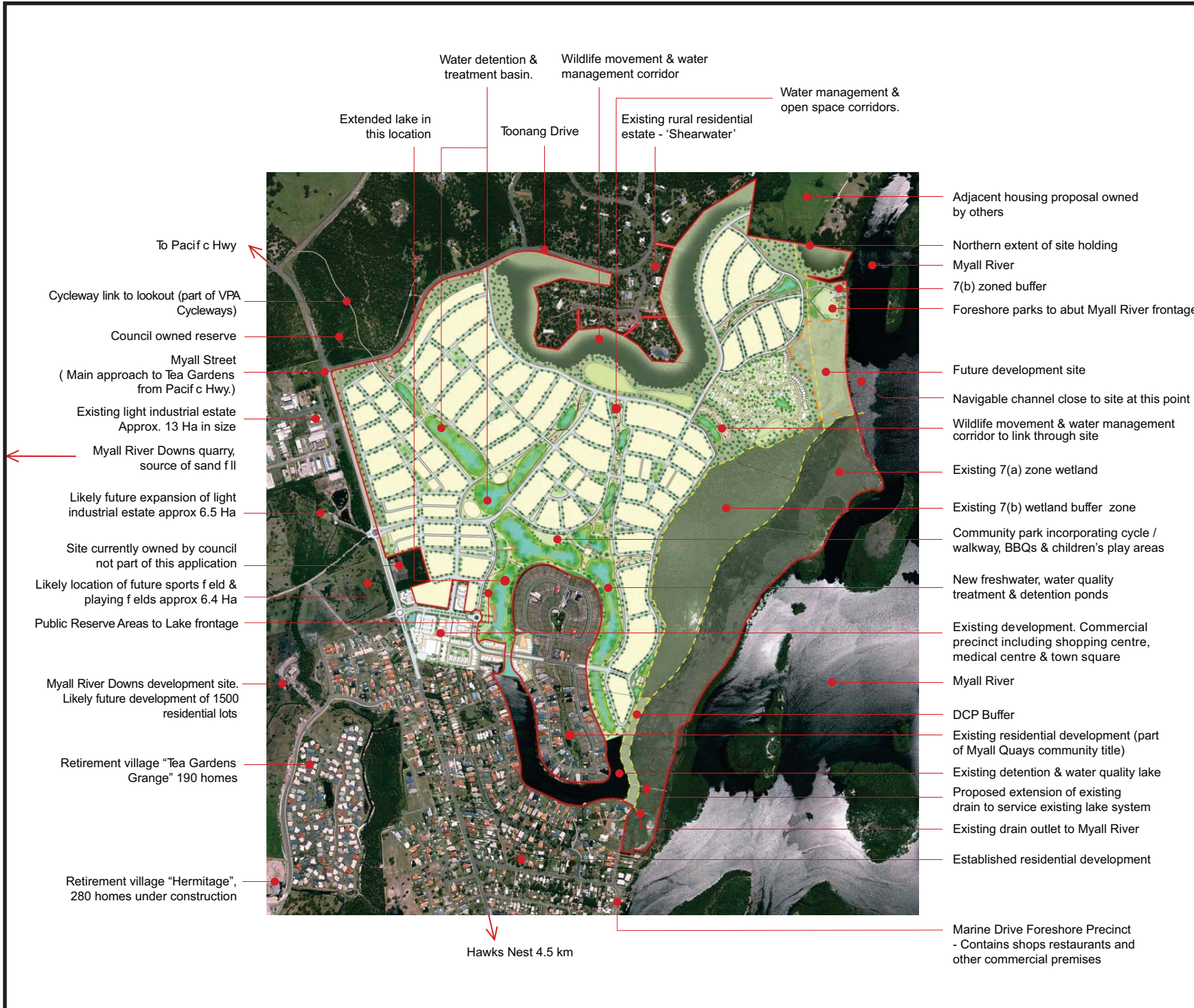


Figure 1.1
Original 2009 Concept Plan for Riverside at Tea Gardens

Client:	Crighton Properties Pty Ltd		
Project:	Preferred Project 2012 Riverside at Tea Gardens		
Drawing No:	0043707h_PP_2012_C001_R0.cdr		
Date:	29/11/12	Drawing size:	A4
Drawn by:	JD	Reviewed by:	SO'C
Source:	Crighton Properties Context Plan RC .01		
Scale:	Refer to Scale Bar		



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Legend

Riverside at Tea Gardens Site Boundary

Item	Description
1	Extent of concept plan area 'Riverside' at Tea Gardens.
2	Existing 7(a) wetland zone.
3	Existing 7(b) buffer zone.
4	Wildlife movement corridor.
5	Water management & open space corridors.
6	Community parks incorporating walking/cycle ways, BBQs, children's play area equipment.
7	Community pocket parks.
8	Not Applicable
9	Not Applicable
10	Existing detention and water quality lake.
11	New fresh water, water quality management & detention ponds.
12	Existing residential development.
13	Foreshore Setback line.
14	Future precinct community facilities.
15	Site area currently owned by Great Lakes Council.
16	Separate medium density/commercial precinct (not part of this application-current waver issued by DoP.)
17	Tourist lodgings precinct.
18	Additional land proposed for conservation
19	Proposed residential lot development to be developed under community title.
20	Future development site.
21	Existing house.
22	DCP buffer.
23	Location of known midden & buffer.
24	Existing drain outlet to Myall River.
25	Existing drainage swale
26	Existing shopping centre/medium density approvals
27	Future connecting road

Source:

Crighton Properties - Concept Plan R.C. - 03/ November 2011 Revision N

Figure 1.2

Updated 2011 Concept Plan for Riverside at Tea Gardens

Land Use Legend		
Total Site	Ha	%
Open Space		
- Wetlands (zoned 7a)	28.6	12.9
- Buffer Zones (zoned 7b)	21.0	9.4
- Additional Conservation Buffer	17.8	8.0
- Wildlife Corridors	41.9	18.8
- Drainage Corridors, Ponds & Large Parks	23.1	10.4
- Pocket Parks	2.6	1.2
- Existing detention & water quality lake	6.7	3.0
Total	141.7 Ha	63.7%
Built Upon Area		
- Residential (including roads & community facilities)	67.1	30.2
- Tourist/Residential (Lodgings)	8.1	3.6
Total	75.2 Ha	33.8%
Future Development Site		
Total	5.6 Ha	2.5%
Total	222.5 Ha	100%

Client: Crighton Properties Pty Ltd

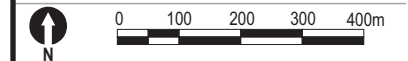
Project: Preferred Project 2012
Riverside at Tea Gardens

Drawing No: 0043707h_PP_2012_C002_R0.cdr

Date: 29/11/2012 Drawing size: A4

Drawn by: JD Reviewed by: SO'C

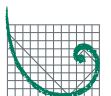
Scale: Refer to Scale Bar



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ERM

In accordance with section 75H(6) of the Environmental Planning and Assessment Act 1979(EP&A Act), the proponent has reviewed, considered and responded to the issues raised in the submissions received as a result of the public exhibition of the EA. Additionally the applicant has met with various state (and federal) government departments and based upon feedback from these meetings, the proposal has been further modified and additional information has been provided in support of the modified proposal.

Subsequent to submissions being received in response to the public notification, the NSW Department of Planning and Infrastructure (DoPI) also engaged WBM BMT to undertake a peer review of the water management system proposed for the site. The proponent has been advised of the outcome of this peer review. The proponent has continued to liaise with the peer reviewer (under the direction of DoPI) in the preparation of a revised water management strategy.

The purpose of this report is to provide a response to submissions received during the public exhibition period, to detail changes made to the Concept Plan resulting from consideration of the issues raised by Government Agencies, Great Lakes Council (Council), the local community and peer review consultants (in addition to the outcomes and recommendations made by the PAC in relation to the previous Concept Plan Application). The Preferred Project Report also contains a final Statement of Commitments.

This Preferred Project Report (PPR) should be read in conjunction with the EA prepared (2012) by ERM and forms part of the Concept Plan application.

1.2 *OUTLINE OF PROJECT*

1.2.1 *Site Description*

The Riverside at Tea Gardens site ('the site') comprises Lot 10 DP 270100, Lot 40 DP 270100, and Part Lot 1 DP 270100 and is approximately 222.5 hectares in area. The site is bounded by Myall River to the east and Myall Street to the west. The Shearwater Residential Estate lies to the north of the site and residential development of Tea Gardens is to the south. The site has approximately a one kilometre frontage to Myall Street and two kilometre frontage to the Myall River. State Environmental Planning Policy No. 14 – Coastal Wetlands (SEPP 14) applies to wetlands within a portion of the eastern boundary of the site adjacent to the Myall River. These wetlands were clearly identified along with a buffer to the wetlands and zoned for environment protection when the site was rezoned in 2000.

The site is flat with generally sandy soils. The majority of the site was previously used for a pine plantation and has been substantially cleared of native vegetation. Some scattered isolated occurrences of both pines and natives currently exist on the site.

1.2.2

Project Description

Riverside at Tea Gardens will include a residential component for the most part and a tourist and residential component located within the north eastern portion of the site. Approximately 32.6% of the site is proposed to be developed for urban uses, the remaining 67.4% will be set aside for conservation, water management, open space or eco tourist and recreational uses.

The subdivision will occur under Community Title, as part of the existing approved Community Title residential development, and a neighbouring new Community Scheme.

The key elements of the overall concept plan include residential development of the site which will include the potential to create approximately 945 dwellings, comprised as follows:

Development	Approx. Number of Dwellings
Residential (variety of lots)	880
Tourist Precinct - lodges	50
Tourist Precinct - houses	15
Total	945

Other elements of the proposed work include water sensitive urban design (WSUD) measures; a residentially zoned open space network and conference centre as part of the tourist precinct area; open space / wildlife movement corridors; environmental protection areas; drainage reserves and large parks; upgrading of intersections and associated road works; access from Toonang Drive and Myall Street; an internal road network; and associated landscaping and infrastructure works.

The Concept Plan for Riverside at Tea Gardens is provided in *Figure 1.3*.

1.3

PUBLIC EXHIBITION

The EA for the proposed development was publically exhibited for four weeks between the 8 February 2012 and 9 March 2012.

1.4


SUBMISSIONS RECEIVED

A total of 97 submissions were received in response to notification during exhibition period of which:

- 55 submissions received supported the proposed development;
- 22 submissions received objected to the proposed development; and
- 20 submissions made comment in response to the proposed development.

Distance to:	
Pacific Hwy	12 km
Karuah	24 km
Bulahdelah	39 km
Raymond Terrace	51 km
Newcastle	76 km
Sydney	215 km

Legend

-  Riverside at Tea Gardens Site Boundary

Source:

Crighton Properties - Concept Plan R.C.- 01/ November 2012 Revision 0

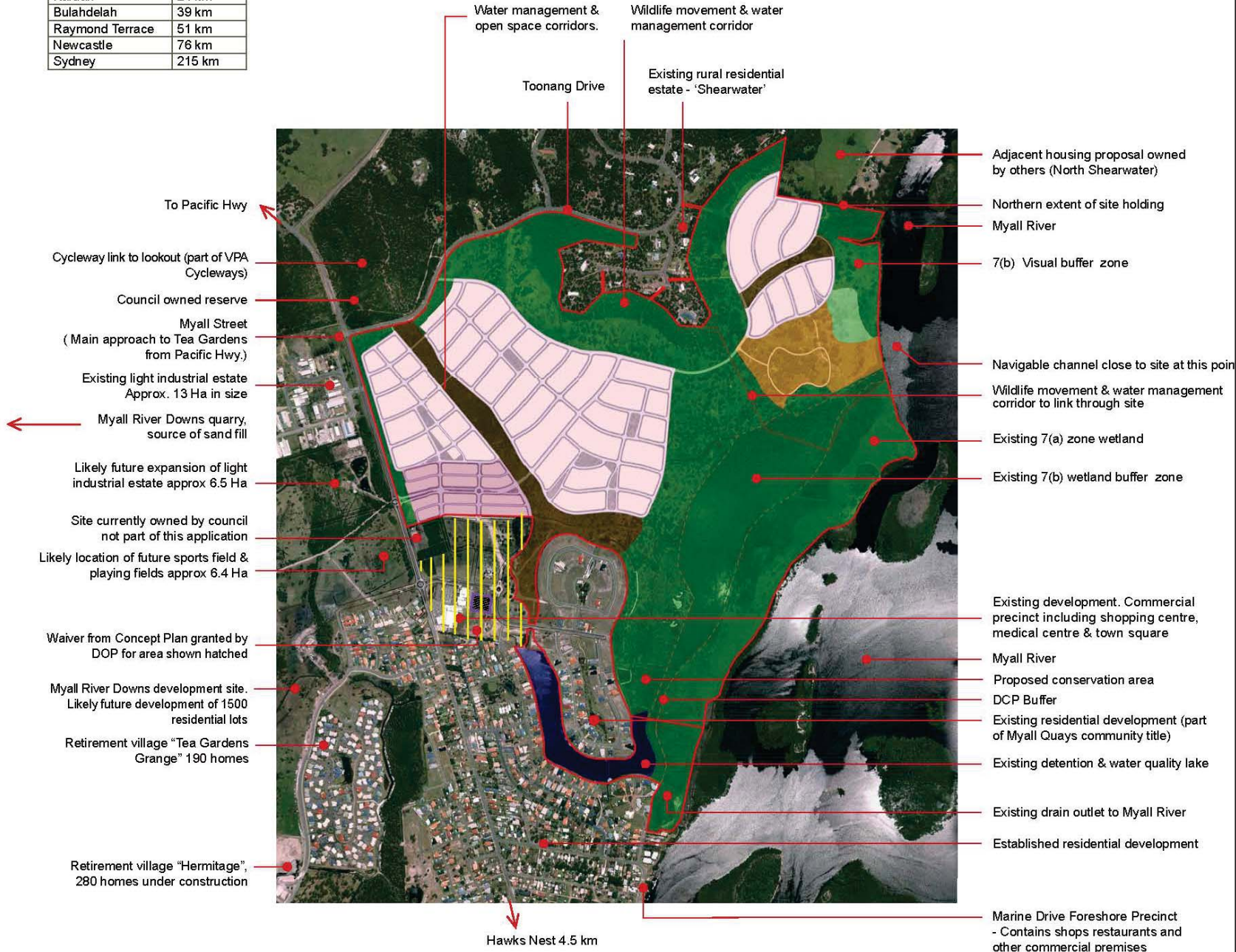


Figure 1.3

Current Concept Proposal

Client: Crighton Properties Pty Ltd

Project: Preferred Project 2012
Riverside at Tea Gardens

Drawing No: 0043707h_PP_2012_C003_R0.cdr

Date: 29/11/2012 Drawing size: A4

Drawn by: JD Reviewed by: SO'C

Scale: Refer to Scale Bar



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Submissions were also received from various Government Agencies including:

- Great Lakes Council;
- NSW Department of Planning and Infrastructure;
- NSW Department of Primary Industries – Office of Water;
- NSW Department of Primary Industries – Fisheries;
- MidCoast Water;
- NSW Rural Fire Service;
- NSW Marine Parks Authority;
- Hunter – Central Rivers Catchment Management Authority;
- NSW Roads and Maritime Services – Transport; and
- NSW Education and Communities.

In response to the issues raised in submissions, in addition to modifications to the proposed Concept Plan Application, a Statement of Commitments has been prepared to clarify and strengthen future planning and management actions. The Statement of Commitments is located in *Chapter 4* of this report.

2 RESPONSE TO SUBMISSIONS

2.1 SUBMISSIONS RECEIVED AND RESPONSES IN SUMMARY

A detailed summary of submissions received and responses to the issues raised by various Government Agencies and the community are contained in *Annex N*.

In summary, the 'key' comments made within submissions fell into the following categories;

2.1.1 Ecology/Biodiversity

Respondents commented that ecological mapping and reporting was flawed, inadequate, contradictory, and in some instances out of date. Further, comments suggested that the proposal did not adequately protect conservation values on the site, provide adequate environmental corridors or achieve a 'maintain or improve' outcome as part of the proposal. Respondents also registered concerns with potential impacts on downstream dependant ecosystems (DDEs) and the long term sustainability of the proposed mechanism for protection. Some of these concerns are similar to those raised by the PAC in its report to the DoP in 2009.

Since exhibition of the Environmental Assessment, a number of meetings and discussions have been held with key government agencies with regard to ecology and biodiversity, these include;

- Office of Environment and Heritage;
- Department of Planning and Infrastructure;
- Great Lakes Council; and
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) - Federal.

These discussions and further analysis and reporting have led to significant changes in the development footprint (these are outlined in further detail in *Chapter 3* of this report), a significant increase in the area of the site to be set aside for conservation (and management), as well as further development of an offsetting package for the proposed development. Wildlife corridor widths have been increased, vegetation mapping information has been updated and a revised BioBanking Assessment which reflects these advances is provided in *Annex D*.

Discussions have also lead to a better understanding of available offsetting mechanisms, to ensure security of offsets in perpetuity. It is understood that a greater level of support for the proposal (inclusive of these changes) now exists within the government departments involved in the review process.

The changes to the proposed Concept Plan are set out in greater detail in *Chapter 3*.

Further, commitments have been added to the Statement of Commitments with respect to the finalisation of an Offsetting Package (incorporating the various management plans), as well as timing for the securing of both on site offsets and off site offsets via staged implementation.

The current referral of the project to DSEWPaC is in the process of being withdrawn (under the recommendation of DSEWPaC) and a new referral incorporating the updated proposal is currently being prepared.

2.1.2 *Water Quality Management*

Respondents commented that further detailed information was required with regard to flooding. Concern was registered (particularly with regard to the proposed fresh water ponds) relating to effectiveness, long term viability and management of water quality devices. Concerns were also registered as to potential impacts on adjacent wetlands and conservation areas due to potential for changed water quality, water quantity and ground water heights.

In addition to submissions, DoPI engaged consultants BMT WBM to undertake a review of the water management system proposed, and to make recommendation (if appropriate) for an alternative approach. In summary, the review recommended a different approach to water management, one which relied more heavily upon “at source” water management controls and infiltration, rather than ‘end of line’ treatment.

The BMT WBM review echoed many of the concerns documented in the PAC report, despite the revised water management proposal being substantially different from the original Concept Plan and Project Application.

The PPR details an entirely new water management system for the site, designed to reflect the feedback provided by government agencies and DoPI appointed review consultant BMT WBM. The new water management system for the site is detailed within “Concept Integrated Water Management Strategy (Revised)” (CIWMS) prepared by Martens and Associates (see *Annex C*).

The new water management proposal for the site is entirely different to the exhibited proposal in that it focuses upon the use of ‘at source’ treatment and infiltration (through the use of bio-retention devices) rather than the use of ‘end of line’ treatment and infiltration (using wetlands and open water bodies) as was previously proposed in the Concept Application.

The proposed system has been designed to address the many shortfalls of the previous system (as highlighted by the PAC and government agencies), and has been critically reviewed by BMT WBM through the preparation and reporting phase.

The system as now proposed has the following key benefits;

- the existing Myall Quays freshwater lake is not utilised as part of the water quality treatment train;
- the proposal does not rely upon the creation of open water bodies to undertake water quality treatment;
- there is a significant reduction in potential drawdown of the water table, due to the deletion of the open water bodies;
- the use of at source treatment is to be incrementally developed in proportion to development – as such it does not rely on large scale device implementation and management to be effective;
- the use of many small water quality devices at the street level greatly lessens the potential for catastrophic failure and consequential downstream environmental impact;
- the effectiveness of similar WSUD mechanisms has been demonstrated in other projects elsewhere – it is a known quantity; and
- the use of predominantly ‘dry’ water quality treatment mechanisms has allowed for the retention of existing vegetation in some areas and the planting of new vegetation within the proposed infiltration areas which will provide an improved biodiversity outcome on site, compared to the previously proposed open water bodies.

MUSIC modelling of the full development area is provided within the CIWCMS and demonstrates that the proposed system will meet or exceed the Neutral or Beneficial Effect targets (NorBE) for the system with regard to nutrient reductions. MUSIC modelling also demonstrates that gross pollutant reduction ratios have also been achieved within the system.

Further, the proposal has demonstrated a matching of pre and post flow rates and water quality to downstream receptors, thus reducing the likelihood of environmental impacts.

A completely revised groundwater model has also been prepared for the proposal (incorporating additional ground water monitoring data) which demonstrates a maintenance of ground water flow rates and quality, as well as water table heights at (in particular) adjacent environmental receptors.

The water management system has been demonstrated to function both now and in 100 years time (post climate change). The revised water management system is understood to have the support of BMT WBM.

2.1.3

Flooding

Concerns were registered with regard to potential flooding impacts, particularly during PMF events, and those impacts on emergency services operations. Requests were made by government agencies to provide further flood modelling which considered additional flood events not previously modelled, and to consider modelling parts of the site not previously modelled.

The impact of filling on the flood behaviour on adjacent sites was also requested to be considered in more detail.

To address the flooding and other issues raised, a partial redesign of the hydraulic regime and a complete remodelling of the entire proposal has been undertaken. A detailed 2D analysis replaces the previous 1D analysis, which also incorporates current tailwater conditions as defined by the recently completed Port Stephens Design Flood Levels Climate Change Review. The full revised Stormwater Management Report can be seen in *Annex C*.

Numerous storm intensity/tailwater condition combinations were modelled to assess the impact of the development. In all cases a full range of durations, (1hr, 2hr, 3hr, 6hr, 9hr, 12hr & 18hrs storms) and Average Recurrence Intervals (0.25yr, 1yr, 5yr, 20yr, 100yr, 100yr+30% and PMF) were simulated to determine critical durations for both individual elements within the study area, and the catchment as a whole.

In summary;

- minor rainfall events (quarterly and annual ARI) were modelled to demonstrate existing stormwater discharge patterns into the wetland buffer are maintained for regular rainfall events;
- critical major storm (100yr ARI) scenarios were checked to ensure peak (potentially scouring) velocities into the wetland buffer were not increased due to the development;
- 5yr, 20yr and 100yr events were checked to ensure no detrimental impact on flooding of downstream or upstream lands as a result of modifying drainage structures and filling on the site;
- critical 100yr flood levels were assessed to determine the appropriate Flood Planning Levels for future dwellings on the site, including an assessment of the sensitivity of these results to possible future Climate Change induced intensity increases; and
- PMF/extreme flood levels and hazards were mapped to demonstrate access to emergency services and ensuring public safety within the development in even the worst conceivable flood conditions.

The revised flood modelling has demonstrated that the proposed Riverside Project will not have an adverse impact on the flood behaviour on or around the site, and that the developed areas will remain essentially flood free.

More specifically:

- the combination of the storage and low flow discharge structures ensure existing regular 'environmental' flows into the wetland buffer are maintained post development;
- high flow discharge via the level spreader over the full downstream frontage of the site ensures the development will not result in any increase of 100yr peak flow velocities in the downstream wetlands;
- existing flood levels in surrounding areas are not adversely impacted post development;
- the proposed development includes sufficient lot filling / floodway capacities to allow all lots to remain flood free in the design 100yr event. Relevant Flood Planning Levels (FPLs) have been determined for the entire development. This includes an assessment of the possible impact of climate change induced rainfall intensity increases on the Flood Planning Level assessment; and
- the 'worst case' Probable Maximum Flood assessment demonstrates that the proposal sufficiently caters for the safety of all future residents.

2.1.4

Traffic / Transport

Respondents commented that traffic data was out of date, additional modelling of further intersections was required, preferred bus/pedestrian/cycle arrangements and road design standards were not indicated, and recommendations were made for the replacement of the two main roundabouts with signalised intersection control.

These issues have been addressed within a revised report provided by Better Transport Futures (see *Annex L*) which provides the requested information. In particular;

- the two main roundabouts have been substituted for signalised intersections;
- traffic data has been updated utilising 2012 observations;
- modelling for the Toonang Drive intersection has been undertaken which resulted in a commitment to upgrading the intersection as part of the Riverside Development; and
- bus, pedestrian and cycleway details have been updated.

2.1.5 *Future Development Site*

Respondents commented that the use of the future development site in the north/east of the Concept Plan should be included within the application, rather than left for consideration at a later date. Concern was registered that the site may be proposed for use as a large scale marina facility.

The Concept Plan now includes proposed uses for this area of the site, which are intended to be approved as part of the Concept Plan. These uses include a combination of open space, conservation, tourist amenity and board walk / boating facilities (see *Figure 2.1*). The proposal has been discussed in further detail with Great Lakes Council (Council) and it is understood that Council is in support of the proposal.

2.1.6 *Bushfire*

Additional reporting dealing more specifically with the provision of adequate asset protection zones (APZ) to protect development areas was requested.

A revised Bushfire Threat Assessment (BTA) has been prepared by Conacher Environmental which demonstrates the provisions of bushfire protection measures are in accordance with Rural Fire Service (RFS) requirements (See *Annex E*). The updated BTA confirms that APZs do not impact upon proposed conservation areas.

2.1.7 *Format and Content*

The DoPI provided additional comments with regard to desired format and content of revised application documentation.

These comments have been incorporated into the preparation of the Preferred Project Report (PPR).



Individual lodge houses:
Permanent residential & tourist

Wild life movement corridor

Screen planting to perimeter of site

These houses (shown beige) for permanent residency only (not tourist accommodation)

Water management corridor



TABLE OF ACCOMMODATION	
	10 Permanent Residential
	40 Tourist / Perm
	15 Units

- Continuation of Walking Trail
- Public Car Park
- Conservation
- Open Park for Active Recreation
- BBQ Gazebo
- Secondary entrance and alternative emergency access
- Public Woodland Park
- Lodgings area to be managed as as IPA
- Pedestrian & Service Road
- Boat Hire
- Jetty to Foreshore Edge
- Coffee Shop / Bar & Tackle / Boat Hire / BBQ Area
- Temporary Boat Berthing (For Visiting Boats)
- Restaurant / Coffee Shop (Public & Private)
- Conservation
- Swimming Pool (Resort Style) for use by Eco Lodge guests
- Existing house to be used as communal amenity building / function centre
- Known hollow bearing trees to be retained (Shown Crossed)
- Water quality management area to engineering detail
- Line of APZ (20m) to residential development
- Line of APZ (80m) to residential development
- This area (outside of midden) to be managed as VPA
- Known archeological midden & buffer shown hatched. Area to be managed in accordance with archeological recommendations
- 7B zone boundary
- 7A zone boundary
- 20m wide APZ

Source:
Crighton Properties - Concept Plan R.C. - 09/ November 2012 Revision O

Figure 2.1
Tourist Precinct Plan

Client: Crighton Properties Pty Ltd
 Project: Preferred Project 2012
 Riverside at Tea Gardens

Drawing No: 0043707h_PP_2012_C004_R0.cdr
 Date: 29/11/2012 Drawing size: A4
 Drawn by: JD Reviewed by: SO'C

Scale: Refer to Scale Bar

0 50 100m

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3 *PREFERRED PROJECT*

3.1 *INTRODUCTION*

Following consideration of the issues raised by government agencies, Council and the local community, a number of amendments have been made to the project to further minimise any potential negative environmental impacts and enhance the creation of sustainable urban outcomes. These amendments are discussed in detail in the following pages. The amendments are also described in respect of the way in which they have addressed the issues raised by the PAC in its July 2009 report(s) and how these relate to the PAC suggested footprint.

3.2 *AMENDMENTS TO THE PROJECT*

The project has been amended as follows:

- the overall development footprint (inclusive of both the development area and water management area) has been reduced by a total of 5.47 hectares (ha) compared with the Exhibited Concept Plan (see *Figure 3.1*). This amendment has been made in order to enhance biodiversity outcomes upon the site. It should be noted that this represents a reduction of the development footprint of 25.7 ha from the proposal which was lodged in 2009 and assessed by the PAC;
- final development uses for what was previously referred to as the “Future Development Site”, have now been detailed as part of the Concept Plan. The proposed uses for this part of the site conform with discussions held with Council. This area is now proposed to be a combination of open space, conservation and recreational tourist uses (see *Figure 2.1*). This amendment enhances biodiversity outcomes in this location, as well as providing security of future uses upon the site;
- the surface water management concept for the site has been completely redesigned, following further feedback from DoPI, NoW and peer review consultant BMT WBM (see *Figure 3.2*). The revised water management system focuses more on ‘at source’ treatment and infiltration, rather than the use of ‘end of line’ treatment and large scale infiltration ponds; and
- the two proposed roundabout accesses to the site have been deleted and instead signal controlled intersections are now proposed (at the request of government agencies). Commitments have been made within the Statement of Commitments (SOC) to upgrade the Toonang Drive intersection, as part of the development programme.


Distance to:	
Pacific Hwy	12 km
Karuah	24 km
Bulahdelah	39 km
Raymond Terrace	51 km
Newcastle	76 km
Sydney	215 km

Water management & open space corridors.
Wildlife movement & water management corridor

Toonang Drive

Existing rural residential estate - 'Shearwater'

Legend

 Riverside at Tea Gardens Site Boundary

Source:

Crighton Properties - Concept Plan R.C.- 01/ October 2012 Revision 0

Figure 3.1

Footprint Modification Summary

Client: Crighton Properties Pty Ltd

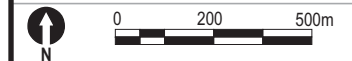
Project: Preferred Project 2012
Riverside at Tea Gardens

Drawing No: 0043707h_PP_2012_C005_R0.cdr

Date: 29/11/2012 Drawing size: A4

Drawn by: JD Reviewed by: SO'C

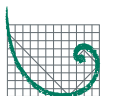
Scale: Refer to Scale Bar



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ERM

To Pacific Hwy

Cycleway link to lookout (part of VPA Cycleways)

Council owned reserve

Myall Street
(Main approach to Tea Gardens from Pacific Hwy.)

Existing light industrial estate
Approx. 13 Ha in size

Myall River Downs quarry,
source of sand fill

Likely future expansion of light industrial estate approx 6.5 Ha

Site currently owned by council
not part of this application

Likely location of future sports field & playing fields approx 6.4 Ha

Waiver from Concept Plan granted by DOP for area shown hatched

Myall River Downs development site.
Likely future development of 1500 residential lots

Retirement village "Tea Gardens Grange" 190 homes

Retirement village "Hermitage", 280 homes under construction

Hawks Nest 4.5 km

Adjacent housing proposal owned by others (North Shearwater)

Northern extent of site holding Myall River

7(b) Visual buffer zone

Navigable channel close to site at this point

Wildlife movement & water management corridor to link through site

Existing 7(a) zone wetland

Existing 7(b) wetland buffer zone

Extent of January 2012 Proposed footprint

Existing development. Commercial precinct including shopping centre, medical centre & town square

Myall River

Proposed conservation area

DCP Buffer

Existing residential development (part of Myall Quays community title)

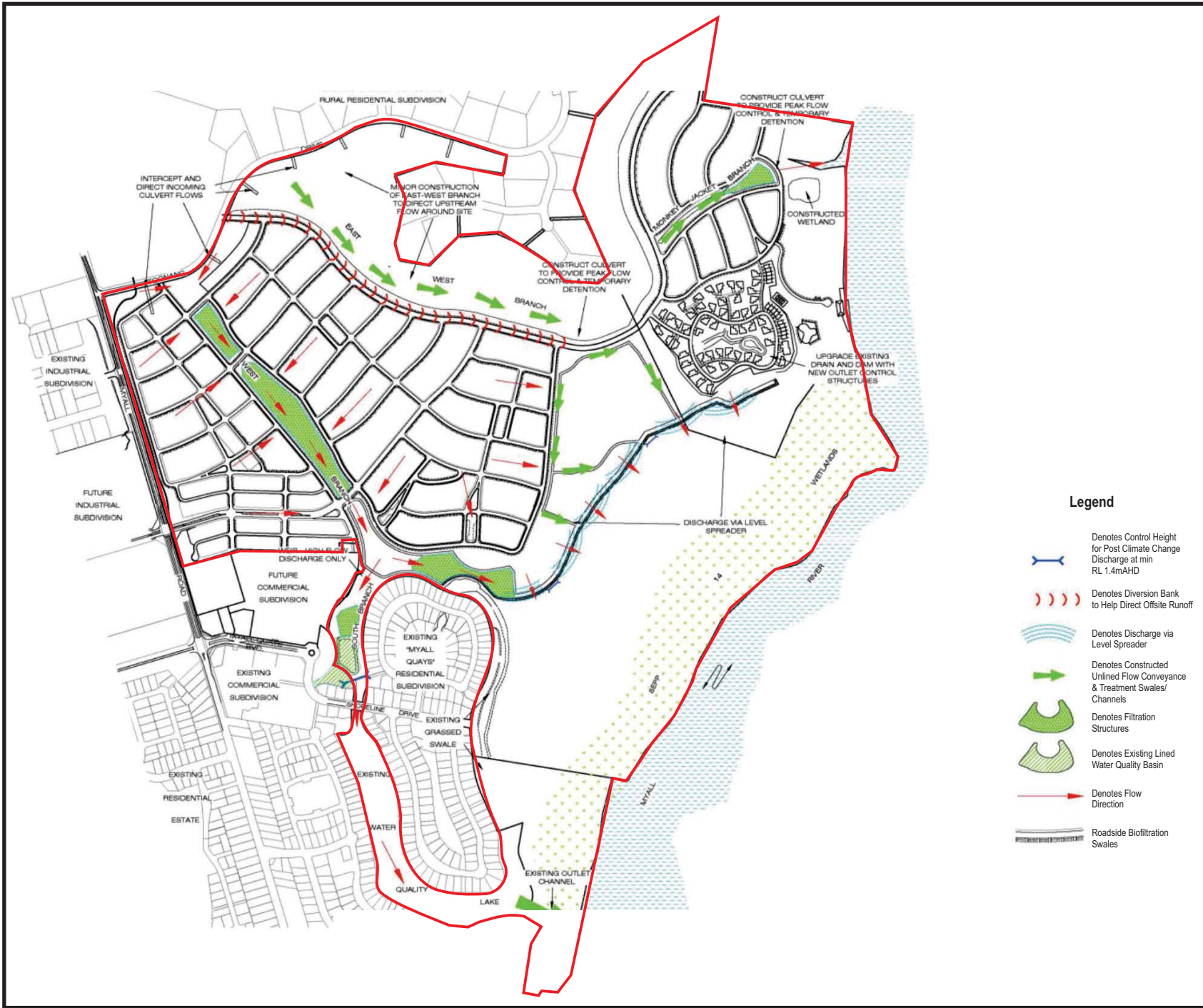
Existing detention & water quality lake

Existing drain outlet to Myall River

Established residential development

Marine Drive Foreshore Precinct - Contains shops restaurants and other commercial premises





Legend
 Riverside at Tea Gardens Site Boundary

Source:
 Tattersall Lander Pty Ltd - Fg2 201479 Revision E August 2012

Legend

- ⋈ Denotes Control Height for Post Climate Change Discharge at min RL 1.4m AHD
-))) Denotes Diversion Bank to Help Direct Offsite Runoff
- ~~~~~ Denotes Discharge via Level Spreader
- Denotes Constructed Unlined Flow Conveyance & Treatment Swales/Channels
- ◐ Denotes Filtration Structures
- ◑ Denotes Existing Lined Water Quality Basin
- Denotes Flow Direction
- ||||| Roadside Biofiltration Swales

Figure 3.2
 Site Drainage Concept Plan

Client:	Crighton Properties Pty Ltd		
Project:	Preferred Project 2012 Riverside at Tea Gardens		
Drawing No:	0043707h_PP_2012_C006_R0.cdr	Date:	29/11/2012
		Drawing size:	A4
Drawn by:	JD	Reviewed by:	SO' C
Scale:	Refer to Scale Bar		
	<div style="display: flex; align-items: center;"> <div style="margin-right: 5px;"> ↑ N </div> <div style="margin-left: 20px;"> 0 100 200 300 400m </div> </div>		

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In addition to the key amendments outlined above, the PPR is supported by new / updated specialist reporting which includes:

- completely new 'Concept Integrated Water Cycle Management Strategy' incorporating the outcomes of surface water modelling, groundwater modelling and flood modelling;
- revised BioBanking Assessment Report to reflect the new development footprint, proposed offsetting measures, additional vegetation / biodiversity mapping, connectivity assessment, offset staging and agency correspondence;
- revised Bushfire Threat Assessment to address RFS comments; and
- revised Traffic Impact Assessment to address Roads and Maritime Services (RMS) comments.

Further amendments have been made to the following components to reflect the changes to the proposal detailed within the amended key documents, and to address format / content requirements detailed within submissions;

- revised Concept Plans;
- revised Concept Plan Engineering Documentation;
- revised Site Servicing Strategy;
- revised Landscape Design Report;
- revised CEMP; and
- revised Aboriginal Cultural Heritage Impact Assessment.

3.3 *PREFERRED PROJECT*

The following provides a more detailed summary of the changes made to the PPR in respect of the key concerns which were raised and describes how they respond to the PAC and agency submissions.

3.3.1 *Ecology*

Background

The Minister of the Department of Planning appointed a Planning and Assessment Commission (PAC) to undertake an expert review of the 2009 concept plan and project application for the Riverside project at Tea Gardens, NSW (the project). The terms of reference of the PAC included a focus on the ecological constraints of the site.

Two PAC reports were presented for consideration by DoPI in response to the Concept Plan (a minority report and majority report). Both PAC submissions suggested that new vegetation mapping and fauna habitat mapping be undertaken with any revised proposal so as to properly inform any impacts upon the site and required mitigation measures. Irrespective of this recommendation, the majority PAC report provided a suggested development footprint based upon the vegetation mapping provided at that time. The PAC minority report advised against this based on the fact that ecological data (in particularly the vegetation mapping) was inadequate to complete such a task, and instead did not suggest a development footprint.

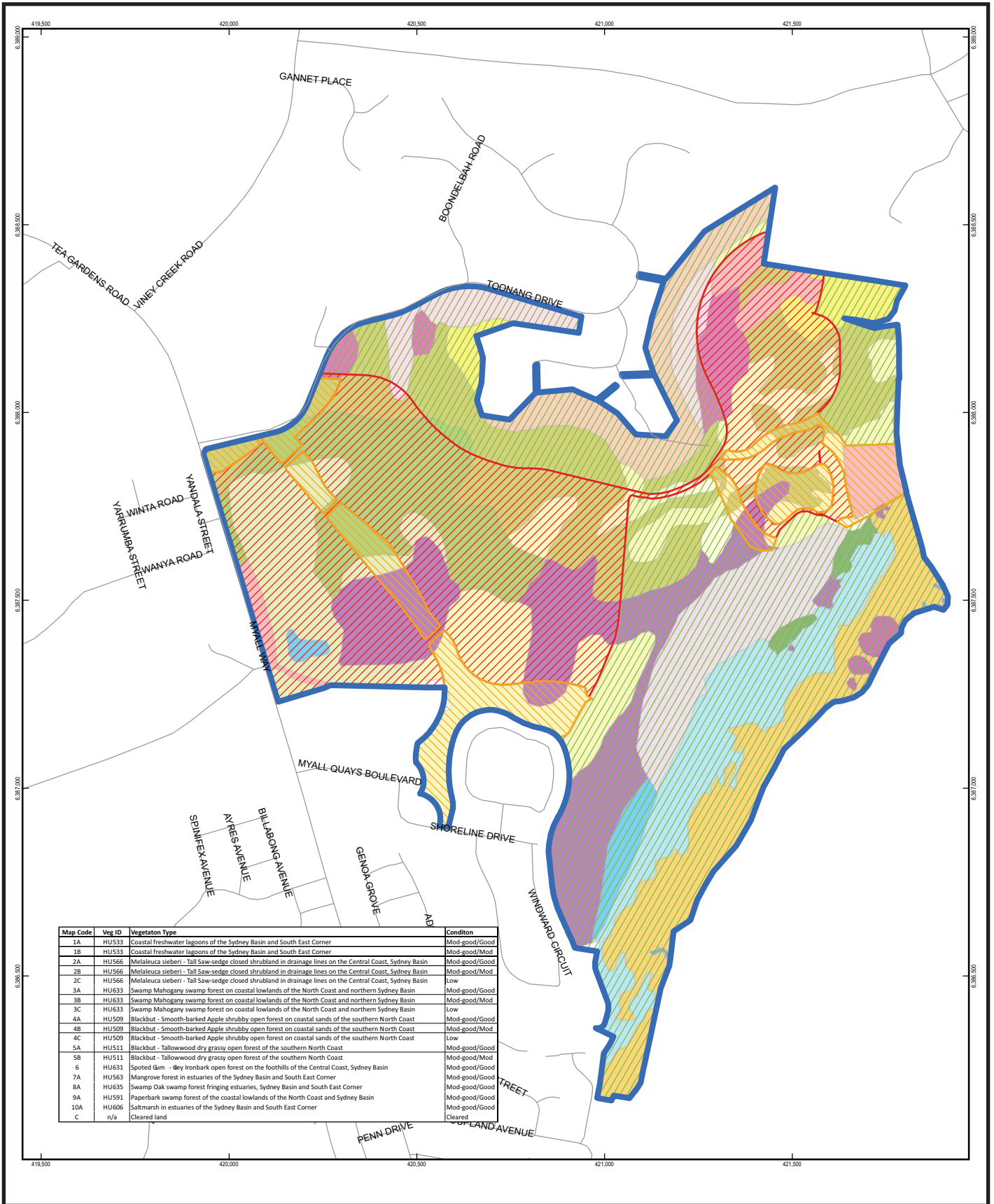
In response, entirely new ecology consultants were appointed to the project team and additional ecological and hydrological assessments have been undertaken across the site which has resulted in considerable modifications to the development footprint of the concept plan. The project has been amended significantly to reduce the biodiversity impacts on the site.

GHD were engaged to undertake a BioBanking assessment to facilitate the biodiversity assessment of the project. BioBanking was chosen (upon recommendation by OEH) as it is an independent, robust and scientific methodology for assessing a projects biodiversity values, impacts and determining suitable offsets. The BioBanking methodology uses specific ecological data and assigns vegetation types according to specific floristics and habitat features. The PAC noted that vegetation mapping presented in the 2009 application was inadequate and this was one of the reasons the use of BioBanking was supported by the applicant. This assessment was supported by consultation with OEH to provide an agreed vegetation distribution and condition map for the site (see *Figure 3.3*), quantify impacts and confirm applicable offsetting measures. The final vegetation distribution map has since been supported by OEH (February 2012) and has formed the basis of consultation with government agencies to determine the final development footprint.

This task was completed in order to help determine a balanced outcome between the level of development and biodiversity conservation at Riverside. The final development footprint has been modified through a staged approach comparing the BioBanking assessment results of multiple site layout options, including consideration of a development footprint recommended by the PAC (*shown blue on Figure 3.4*). The assessments and results which support the final, preferred development footprint for the project are presented in the GHD (November 2012) Riverside at Tea Gardens BioBanking Assessment.

The approach to the BioBanking assessment was developed in consultation with the OEH BioBanking unit and OEH Hunter Region Biodiversity Officer, Steve Lewer and has received in principal support from the OEH and the Commonwealth DSEWPaC. The results of BioBanking calculations for a final, preferred development footprint were presented to these agencies on 4 July 2012 during a meeting held at the OEH, Newcastle.

The final BioBanking assessment included revisions to vegetation community and threatened species habitat mapping for the site which were developed in consultation with the OEH and further modified in consultation with the DoPI and DSEWPaC.



Legend

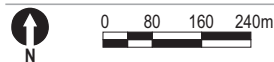
- Study Area
- Management Zones**
- Biobank Site
- Development (complete vegetation removal)
- Open Space (partial vegetation removal)
- Vegetation Zones**

- | | | | | |
|----|----|----|----|-----|
| 1A | 2C | 4A | 5B | 9A |
| 1B | 3A | 4B | 6 | 10A |
| 2A | 3B | 4C | 7A | C |
| 2B | 3C | 5A | 8A | |

Source:
Crighton Properties Pty Ltd/ GHD
Fig3a 22-15960 Rev A 24/09/2012

Figure 3.3
Vegetation Map of Site

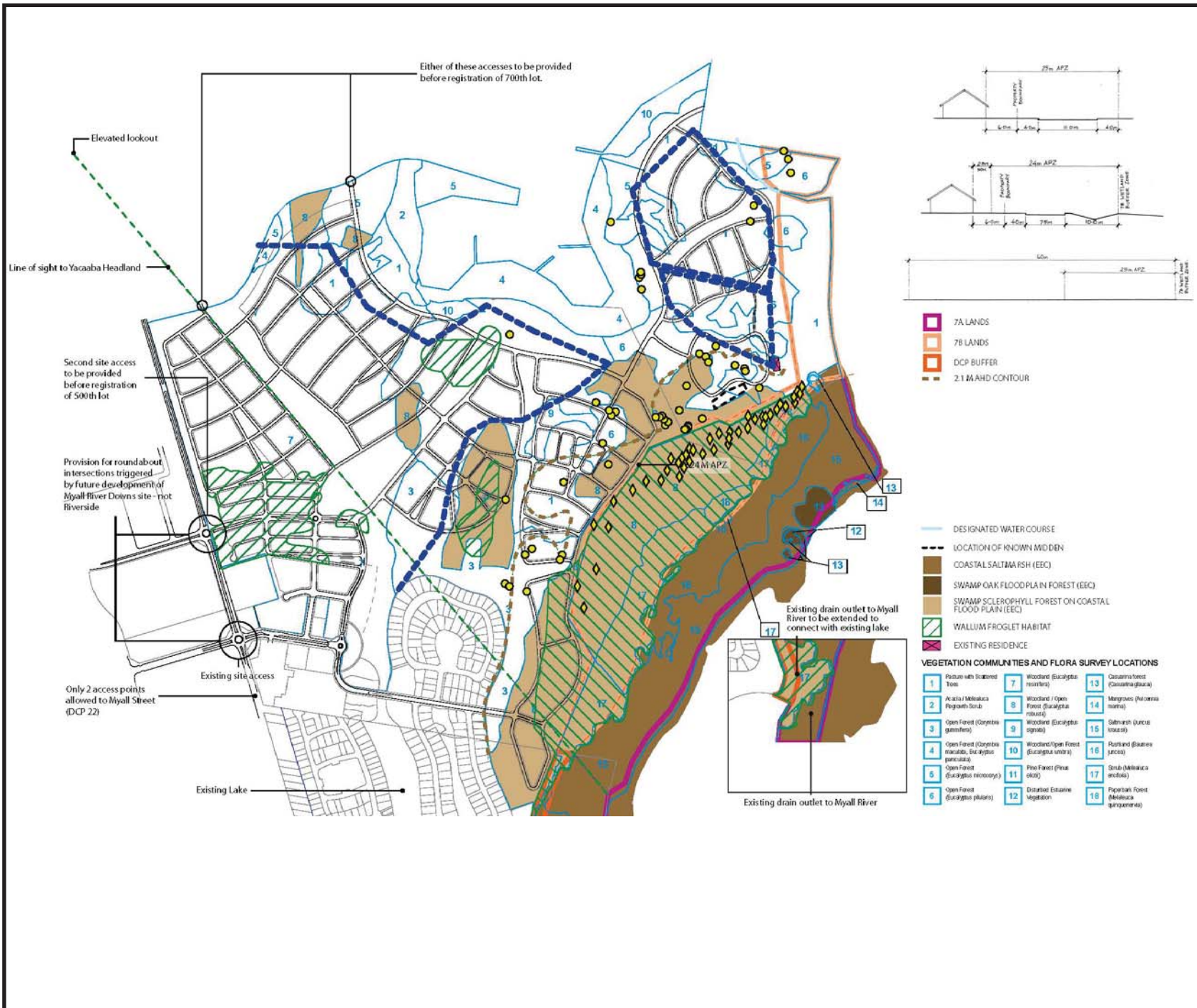
Client:	Crighton Properties Pty Ltd	
Project:	Preferred Project 2012 Riverside at Tea Gardens	
Drawing No:	0043707h_PP_2012_C009_R1.cdr	
Date:	18/01/2013	Drawing size: A4
Drawn by:	JD	Reviewed by: SO'C
Scale:	Refer to Scale Bar	



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Source:
Crighton Properties - Concept Plan R.C.- 50/ January 2009 Revision H

Figure 3.4
2009 Constraints and PAC Recommended Footprint

Client: Crighton Properties Pty Ltd
Project: Preferred Project 2012
Riverside at Tea Gardens

Drawing No: 0043707h_PP_2012_C010_R1.cdr
Date: 18/01/2013 Drawing size: A4
Drawn by: JD Reviewed by: SO'C
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The BioBanking assessment has sought to address PAC concerns in order to better inform the assessment of ecological impacts upon the site and the required mitigation measures as follows:

- revised mapping of vegetation type and condition, threatened fauna habitats and conservation significance;
- detailed assessment of habitat connectivity and requirements for maintaining vegetated corridors;
- assessment of the quantum of biodiversity offsets required for impacts of the project and an offset strategy for delivering these conservation outcomes;
- a staged approach to delivering an appropriate balance between development and conservation outcomes based on a robust methodology; and
- ongoing consultation with the DoPI, Council, OEI and the DSEWPaC to develop a project and an offset strategy that meets all agency requirements.

BioBanking Assessment Results

Three potential development site layout options have been considered as part of the GHD (2012) BioBanking assessment:

- the original development footprint based on the November 2009 concept plan for the site;
- the proposed PAC boundary development footprint; and
- the final development footprint, based on a May 2012 concept design, which was developed with reference to the ongoing BioBanking assessment, supplementary GHD site survey data, detailed mapping and consultation with agencies to minimise impacts on native biodiversity.

BioBanking has been used to estimate the impact of development on biodiversity and the quantum of offsets that would be required to compensate for such impacts arising from the project (see *Table 3.1*).

Table 3.1 *Comparison between the Development Footprint Options: Credits Required and BioBank Credits Contribution*

Name	Final development footprint	PAC development footprint	Original development footprint
Development area (ha)	101.77	73.66	114.64
Ecosystem credits required	2882	2151	3281
BioBank area (ha)	107.35	119.18	66.86

Name	Final development footprint	PAC development footprint	Original development footprint
Ecosystem credits generated -	847	949	611
Ecosystem Credit Balance	-2035	-1202	-2670
Estimated off site BioBank requirement (ha) ¹	258	152	338
Estimated Size Range off site BioBank requirement (ha)	192-260	114-154	252-342
Koala population species credits	-269	145	-734
Wallum Froglet species credits	-405	-224	-572

Note: (1) It is difficult to estimate the size of an off-site BioBank(s) required as it depends on the ecological condition and other landscape factors. GHD has provided the above figures using a constant (though conservative) multiplier for comparison purposes only. The estimate quoted is expected to be an 'upper limit'. An off-site BioBank(s) for species credits would need to be considered separately, but it is likely that the BioBank(s) identified to provide ecosystem credits would also contribute appropriate species credits.

(2) The final development footprint is 38% larger than the PAC footprint but results in a 34% increase in credits required indicating development is focused in areas of poorer condition.

The final development site layout was identified based on consideration of the biodiversity credit requirements for development impacts and the biodiversity credits generated by conservation of on-site BioBanks. The preferred development layout presents a considerable reduction in biodiversity impacts from the original site layout. The PAC development layout would reduce biodiversity impacts further, but would reduce lot yield to the extent that the viability of the project would potentially be compromised.

Figure 3.3 presents a comparison between the final and PAC site layouts, including areas of development outside the PAC boundary of the recommended development footprint and areas that would be conserved within the PAC recommended development footprint.

The key areas of variation between the final and PAC recommended development footprints highlighted on *Figure 3.5* are:

- **Area 1-** development outside the PAC boundary development footprint, comprising residential development in the east of the southern development parcel. The suggested development footprint contained within the majority PAC report, suggested that this area remain undeveloped. It is clear that this recommendation was based upon 3 key constraints (as portrayed in Fig 3.4):

- *The presence of vegetation in this area (Eucalyptus Robusta) which was originally mapped (2009) as the “Swamp Sclerophyll on Coastal Floodplain” EEC. Subsequent mapping (by Cumberland Ecology and Whitehead and Associates) has questioned EEC mapping on the site. It should be noted that its definition of EEC or otherwise makes no difference in consideration of impacts utilising the BioBanking methodology. Of greater importance is the fact that the vegetation in this area is degraded, with the mid storey removed and the lower storey impacted by introduced pasture, due to continual impacts from grazing and slashing. GHD’s revised mapping has determined that the vegetation in this area is in ‘low’ or ‘moderate’ condition, and has no greater biodiversity values than many other areas on the site proposed for development;*
- *The presence of hollow bearing trees (15 in total) scattered throughout this area – particularly in the East. Proposed development in this area has been reduced by over 70% compared to the original 2009 proposal. In doing so, through careful design, all but one of the identified fifteen hollow bearing trees is able to be maintained within the proposed conservation area. The one tree to be impacted is an isolated tree some distance from the existing conservation areas, and will be offset with hollows augmentation within the offsetting package;*
- *Part of this area was identified as Wallum Froglet Habitat. This area of habitat was small in size and fragmented from the much larger areas of Froglet Habitat in the east (which are proposed to be conserved). In addition, the proposed new Water Management Strategy which relies upon large areas of new forested infiltration zones has the potential to provide new froglet habitat opportunities through time, with far greater connectivity to existing higher quality habitat to the east;*

In consideration of these constraints and proposed development response, development in this area would maintain a suitable environmental corridor along the eastern portion of the site and associated biodiversity values as agreed with government agencies. It should be noted that the corridor is at its southern extent at this location. Historical records and the relative sparseness of the feed tree Swamp Mahogany (*Eucalyptus robusta*) suggest that the value of this area for Koalas (*Phascolarctos cinereus*) would be limited. It is argued that within the current proposed concept plan (which represents a 70% reduction of development in this area, It would be appropriate to develop this area as proposed and include an alternative biodiversity offset off site in better condition and location as part of the offset package;

- **Area 2** – Tourist development (partial vegetation removal and development) outside the PAC boundary development footprint, comprising the tourism development location. The suggested development footprint contained within the majority PAC report, suggested that this

area remain undeveloped and form part of the East West Corridor across the site. Similarly to Area 1, this area contains some hollow bearing trees (21 in total), and parts of it were previously mapped as EEC. Additionally, this area was suggested as being the appropriate location for the East West corridor.

Revised Mapping of this area revealed vegetation in this area has a largely degraded/absent lower and mid storey, one of the important biodiversity values result from the presence of hollow bearing trees in the area. Additionally, whilst the area could be used as an east west corridor, it generally links to an area in the east upon the Myall river foreshore which is completely cleared of vegetation, rather than linking more directly with the higher quality conservation areas to the South. Accordingly, the design response in this area includes two distinct initiatives.

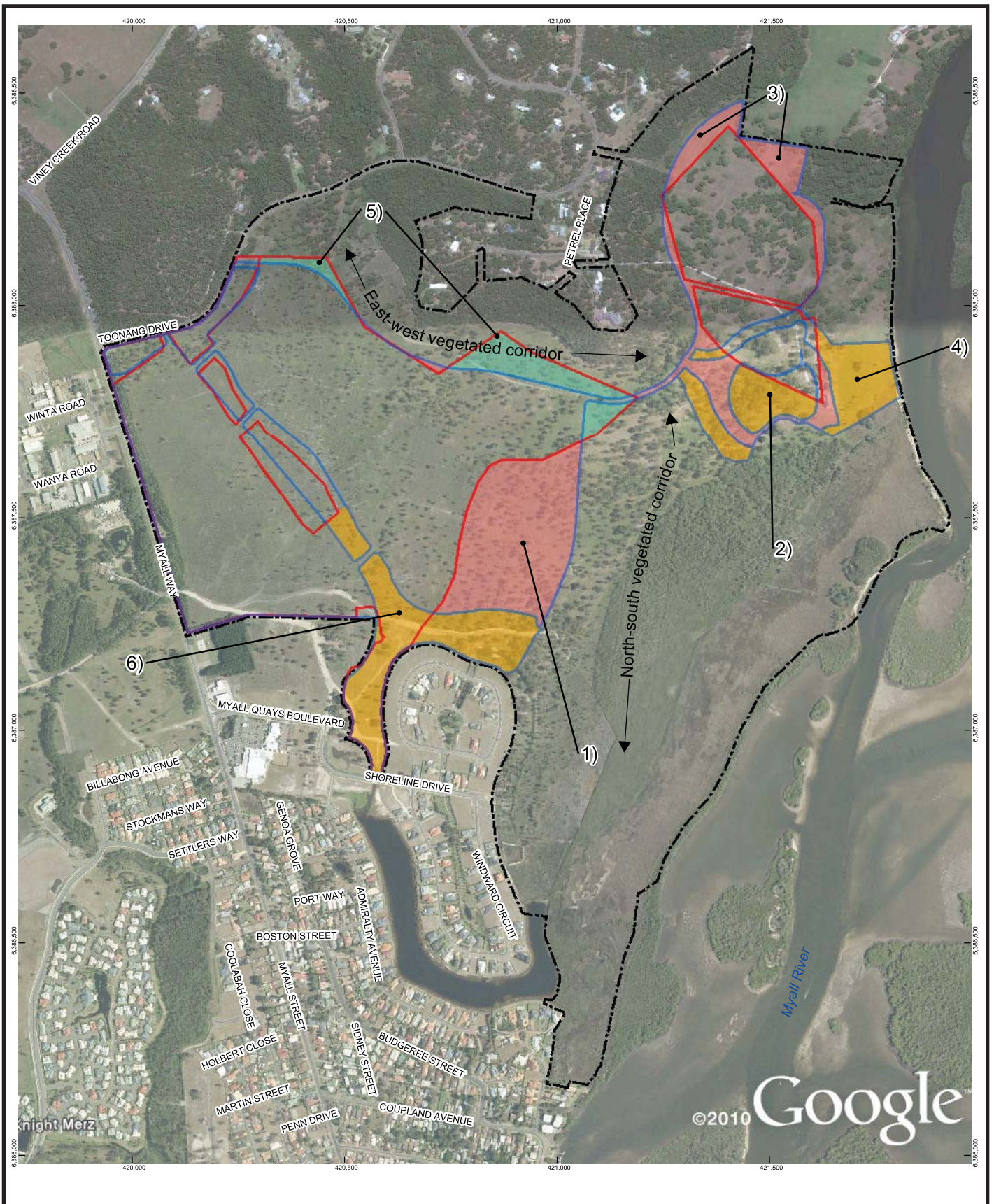
1. It is proposed that the East West corridor across the site (of at least equivalent dimensions) be located approximately 200m further to the South. This would be made possible by removing development in other areas to the north west (suggested by the PAC for development) and turning these over to conservation in order to properly link up with this corridor (*see area 5 on Fig 3.5*). This has the effect of directing the corridor more specifically toward the areas of highest conservation significance (in the centre of the site) rather than the more marginal (and much narrower) foreshore areas to the north of the site. This initiative allows for 14 of the 21 hollow bearing trees to be protected within dedicated conservation areas (the remaining 7 trees will also be protected as discussed below).
2. The proposed tourism development to the north of the corridor would be sympathetic to the existing canopy trees and tree retention will be a priority, this precinct will therefore, further enhance corridor functionality and buffering upon the site. Such a development will maintain the east-west vegetated corridor by maintaining canopy species where possible. All hollow bearing trees in this area (7 of them) have been identified, and are proposed to be retained. Alternate to removing development from this area, the habitat corridor has been widened in a westerly direction to provide a greater net benefit. It should be noted that the following commitments have been made by the proponent for any development proposed within this area:
 - all hollow bearing trees to be retained within the development (these are actually identified on the plan) ;
 - development to be no greater than 6.5 DW/Ha (half the density of the standard residential development);
 - development footprint, including access roads, driveways and buildings to be no more than 30% site coverage;

- all structures (buildings and roads) to be encompassed with a line of bollards 1.0m out from the edge of the structure;
 - all land outside of the bollard area to be maintained under common title, by contractor in accordance with a management plan (to be prepared);
 - all landscaping upon the site to be carried out and maintained under contract, in accordance with a planting plan (planting plan may encourage Koala or other feed trees);
 - no fences allowed (except for service compounds etc linked with the amenity building or garbage collection points);
 - all pavements to be permeable;
 - no domestic pets allowed;
 - all roads to be private roads restricted to 15 km/h and traffic controlled via speed humps, etc. Primary ring road to be one way (reduced width, etc);
 - all houses to be selected from standard designs or built in accordance with strict architectural guidelines (which consider materials, textures, lighting, etc); and
 - all outdoor lighting to be bollard lighting.
- **Area 3** - development outside the PAC boundary development footprint, comprising residential development in the northern portion of the study area. Vegetation in this area has a largely degraded/absent lower and mid storey. The development layout in this area has considered the rezoning plans to the immediate north and has maintained vegetated corridors that are at least as wide as those outside the site to the north. Restricting development in this area would not provide the biodiversity outcomes previously anticipated due to the residential development proposed to the immediate north. In addition, perimeter roads in these locations have been designed to connect with / service development to the North (this is a requirement of DCP 22);
 - **Area 4** - open space with partial vegetation removal outside the PAC boundary development footprint. This area would contain facilities to support the tourism development and boating facilities. This area is largely devoid of native vegetation. The development will seek to retain remnant canopy trees in this area with additional plantings proposed. Development in this area has been discussed with council and we understand the proposal has the support of Council in this area;

- **Area 5** – conservation as an on-site BioBank within the area proposed for development by the PAC. The final development footprint includes this area for conservation as a biodiversity offset as it has higher biodiversity values than land in location 1, particularly in relation to native species richness in the lower storey. Conservation of this area would also maintain a wider east-west vegetated corridor than that proposed by the PAC to assist fauna movement it is also instrumental in redirecting the corridor toward the areas of greatest biodiversity value as explained in area 1 above. Increasing the width of this corridor was considered important by relevant government agencies; and
- **Area 6** – open space with partial vegetation removal for drainage infrastructure, including areas of partial vegetation removal within the area proposed for development by the PAC. This area will now include a constructed drainage channel (constructed to the quality of a natural setting) that will be rehabilitated with endemic species to form a minimum 20 m vegetated riparian zone around the channel. Tree retention will be a priority in the drainage corridors outside the area being directly affected by earthworks. These areas are likely to have habitat value once constructed and would provide additional biodiversity values to the site through time, particularly acting as potential habitat for Wallum Froglets as explained in respect of area 1. These areas were previously proposed for complete vegetation removal and establishment of open water bodies.

This BioBanking assessment has been able to realise a more efficient development footprint while achieving economies in the number of biodiversity credits required by concentrating development in poorer condition vegetation; the preferred development footprint is 33% larger than the PAC development footprint but would result in a 22% increase in the number of ecosystem credits required.

For all development footprint options considered, there is a biodiversity credit deficit i.e. an additional off-site BioBank site(s) would be required to compensate for biodiversity impacts of the project.



Legend

- Final Development Footprint
- PAC Boundary Development Footprint
- Development Outside PAC Boundary Development
- Area of Conservation Inside PAC Boundary Development
- Open Space (partial vegetation removal)
- Study Area

1) - 6) Key Areas of Variation

Source:
 Crighton Properties Pty Ltd/ GHD Fig1
 22-15960 Revv B 23/11/2012

Client:	Crighton Properties Pty Ltd	
Project:	Preferred Project 2012 Riverside at Tea Gardens	
Drawing No:	0043707h_PP_2012_C007_R1.cdr	
Date:	18/01/2013	Drawing size: A4
Drawn by:	JD	Reviewed by: SO'C
Scale:	Refer to Scale Bar	



Maps and figures contained within this document may be based on third party data, may not be to scale and is intended for use as a guide only. ERM does not warrant the accuracy of any such maps or figures.

Figure 3.5

Comparison - Final/PAC Footprint

Environmental Resources Management ANZ
 Auckland, Brisbane, Canberra, Christchurch,
 Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney



Justification of Final Development Layout

The final site layout is considered the most appropriate balance between development and conservation outcomes for the study area based on the following:

- a reduction in the credit impact of 635 ecosystem credits when compared to the original development footprint due to additional avoidance measures adopted by the project since this time, including:
 - removing development proposed in areas of higher value vegetation in the east of the site and adding these lands to the proposed on-site BioBank; and
 - reducing the development scale in the north of the site and providing additional lands for conservation, which would maintain the east-west vegetated corridor at a minimum width of 200 m throughout, and directing the corridor to secure the preferred biodiversity outcomes.
- achieving economies in the number of biodiversity credits required by concentrating development in poorer condition vegetation as shown by:
 - an overall ratio of 28.3 credits per hectare for the proposed development footprint, versus; and
 - an overall ratio of 29.2 credits per hectare for the PAC development footprint.
- The development footprint considers the distribution of over-cleared vegetation types on the site. Some areas proposed for development within the PAC boundary impacted on over-cleared landscapes while conserving areas of vegetation of a lesser conservation status (this is understandable given the shortcomings of the original vegetation mapping carried out for the site – as identified by the PAC). The final development footprint would:
 - concentrate development in locations where existing vegetation is in poorer condition while including those areas of biodiversity values within the proposed environmental corridor network and an on-site BioBank; and
 - reduce the development area along the east-west corridor (referred to as Location 5 on *Figure 1*) to maintain a wider corridor than that proposed by the PAC.
- the proposed BioBank includes all vegetation types being impacted within the development footprint. This ensures that all ecological resources removed by the development would be conserved on site in some capacity;

- the proposed BioBank would generate a credit surplus for five of the vegetation types in the study area, including a credit surplus for three of the four over cleared vegetation types present in the study area;
- the largest offset deficit is with respect to *Melaleuca sieberi* - Tall Saw-sedge closed shrubland. The majority of the affected vegetation is in moderate or low condition and has been degraded by tree removal and grazing;
- the proposed final development/conservation footprint provides:
 - an 'east-west corridor' of a minimum 200 m wide ensuring suitable connection of the conservation lands in the east of the development to areas of high conservation value to the north and west. This is one of the key differences between the PAC and final development footprint and the provision of this corridor has been supported by OEH, DSEWPaC and GLC;
 - a minimum 410 m wide corridor along the Myall River in the east of the site through until the cleared area of the north-eastern corner; and
 - the PAC minority report referenced wildlife corridors as a key consideration in establishing a development footprint. This has been recognised and the proposed footprint adjusted accordingly by the proponent.

The development will provide resources to invest in the rehabilitation and management of the on-site BioBank, improving its condition and biodiversity values. These lands will also be conserved in perpetuity by a BbioBanking agreement or equivalent conservation mechanism as agreed with OEH and DPI.

Conclusions

The BioBanking assessment has followed a complete re-mapping of biodiversity values upon the site since initial consideration by the PAC. A number of avoidance and mitigation strategies have been implemented (as outline above) prior to the reconsideration of appropriate offsets. The BioBanking assessment has addressed the PAC requirements for the assessment of ecological impacts upon the site through revised mapping of vegetation, threatened fauna habitats and conservation significance and a more detailed assessment of habitat connectivity.

The BioBanking assessment approach has delivered a development layout that achieves an appropriate balance between development and conservation outcomes based on a robust methodology. The final development site layout is an efficient and accurate response to a greater understanding of biodiversity values upon the site than either of the previous two layout options (original and PAC suggested development footprint) allowing for both ecological

conservation and a reasonable development outcome from the site. It delivers an increase in the development lot yield while achieving economies in the number of biodiversity credits required by concentrating development in poorer condition vegetation. The final development footprint is 38% larger than the PAC development footprint but would result in a 34% increase in the number of ecosystem credits required (GHD, 2012). The final BioBank would conserve the most valuable habitat in the study area both in terms of the condition of vegetation and habitat connectivity. The final BioBank maximises the width of an east-west fauna movement corridor and estuarine and floodplain habitats adjoining the Karuah River.

The BioBanking assessment also delivers an estimate of the quantum of biodiversity offsets required for impacts of the project and an offset strategy for delivering these conservation outcomes. Whilst it would be technically possible to reduce the development footprint further to match the quantified area contained within the footprint recommended by the PAC, the result of this would only be to conserve lower quality habitat on site, at the expense of greater quality (and potentially, more strategically located) habitat which could be preserved within an offsite BioBank area. Hence the proposed footprint (and commitment to offsets) represents the best approach to enhancing biodiversity outcomes, as a result of development upon the site.

Further, the offset strategy would ensure appropriate management of the on-site BioBank and security of title for conservation in perpetuity.

3.3.2 *Integrated Water Cycle Management*

History

In 2009 a concept plan and project application for site development was lodged under Part 3A of the EP&A Act. DoP raised a number of concerns regarding the proposal including that the proponent had not adequately established that the surface and groundwater flows to the adjoining SEPP 14 Wetland would remain unaltered. The application was subsequently withdrawn to allow additional information and studies to be undertaken. This resulted in the preparation of the *Integrated Water Management Main Report* (Cardno, December 2011).

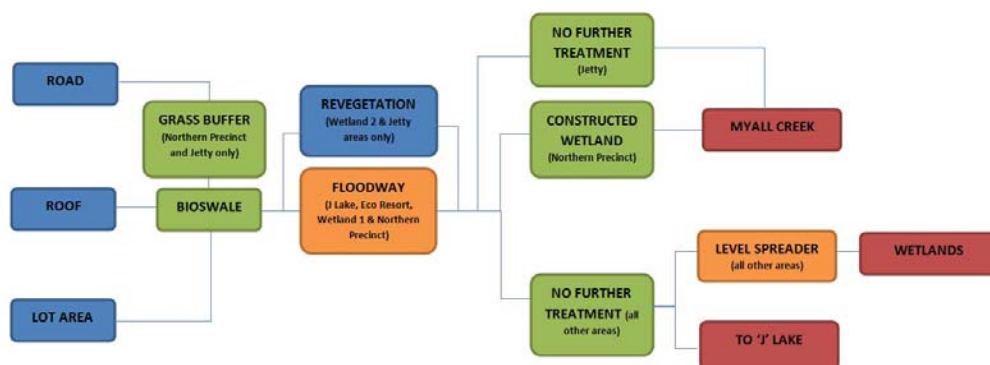
Council, DoP and NOW comments on the Cardno report resulted in a revised strategy being formulated. A Concept Integrated Water Management Strategy has been subsequently prepared by Martens and Associates (2012) to address concerns from all local and state government agencies.

New Concept Integrated Water Management Scheme

Overview

The revised water management scheme covers areas of groundwater and surface water management.

It integrates principles of Water Sensitive Urban Design (WSUD) to ensure suitable treatment and recharge is provided 'at source' to prevent impacts on receiving environments. The figure below provides a conceptual layout of the water management scheme.



Conceptual model – water management scheme

Objectives

Surface Water

With regards to surface water quality, the revised water management scheme shall achieve:

- neutral or Beneficial Effect (NorBE) on post development nutrient (suspended solids, total nitrogen, total phosphorus) loads; and
- 90% reduction of gross pollutants relative to pollution generation from development without treatment.

Groundwater

With regards to groundwater, the revised water management scheme shall achieve:

- NorBE on groundwater quality; and
- preserve groundwater levels, flow patterns and water balances in groundwater dependent ecosystems (GDE).

Components

The water management scheme shall consist of the following components:

- Grass Buffers –shall be utilised within parts of the site to treat runoff prior to collection and treatment in bioretention swales;
- Bioretention Swales – roadside bioretention swales will be used to provide at source treatment of runoff from roof, road and lot areas as well as groundwater recharge across the development footprint;
- Constructed Wetland – a lined wetland is proposed in the northern precinct area to provide additional treatment via biological uptake of nutrients, evapotranspiration and detention;
- Floodways – shall provide storage and low flow discharge to ensure environmental flows to the receiving environments are maintained; and
- Level Spreader – shall ensure the development will not result in an increased flow velocity during rare events and provide even dispersal of flow to the SEPP14 wetland area to maintain existing hydrology.

Water Quality Model

Overview

MUSIC modelling has been undertaken in accordance with Sydney Metro CMA 'Draft NSW MUSIC Modelling Guidelines' (2010) to evaluate pre and post development pollutant loads from the site. For the purposes of assessing water quality impacts at discrete locations, the site was split into 3 downstream receiving environments:

- Myall Creek;
- SEPP14 wetlands; and
- Existing 'J' Lake.

Given the existing site has a number of drainage outlets into the wetlands, this environment was further split into 3 separate receiving 'nodes' to ensure water quality compliance along its entire length.

Iterative modelling was used to determine the treatment train requirements in order for the developed site to comply with site objectives. We note that the post-development water quality model was run in two modes:

- Run 1: With the infiltration component 'turned off' – this model run was used to assess whether water quality objectives would be met prior to infiltration to groundwater; and

- Run 2: With the infiltration component 'turned on' – this model run was used to determine the distribution of groundwater recharge rates and site water balances.

Outcomes

As shown below in *Table 3.2* and *Table 3.3*, the proposed treatment train achieves site water quality objectives and will have a beneficial impact on stormwater quality discharging to receiving environments. Given no infiltration was assumed from treatment devices, scheme also protects the integrity of the groundwater quality, which downstream SEPP14 wetland environments rely on.

Table 3.2 *MUSIC results – NorBE assessment (model run 1)*

Receiving Environment	Parameter	Pre Development (kg/y)	Post Development (kg/y)	Achieved Reduction (%)	Complies (Y/N)
Myall Creek	TSS	4570.0	2240.00	51	Y
	TP	17.1	16.70	2	Y
	TN	181.0	155.00	14	Y
Wetland 1	TSS	3650.0	1310.00	64	Y
	TP	12.9	9.74	24	Y
	TN	123.0	75.9	38	Y
Wetland 2	TSS	54000.0	25600.0	53	Y
	TP	207.0	106.0	49	Y
	TN	1360.0	826.0	39	Y
Wetland 3	TSS	8860.0	3800.00	57	Y
	TP	36.7	29.50	20	Y
	TN	242.0	209.00	14	Y
J Lake	TSS	3750.0	811.00	78	Y
	TP	15.9	9.88	38	Y
	TN	104.0	70.40	32	Y
Total	TSS	66600.0	33700.00	49	Y
	TP	260.0	172.00	34	Y
	TN	1710.0	1340.00	22	Y

Table 3.3 *MUSIC results – treatment train effectiveness – gross pollutants (model run 1)*

Receiving Environment	Untreated (kg/yr)	Treated (kg/yr)	Achieved Reduction (%)	Complies (Y/N)
Myall Creek	2190	31	99	Y
Wetland 1	1000	0	100	Y
Wetland 2	6350	140	98	Y
Wetland 3	3040	53.3	98	Y
J Lake	1000	0	100	Y
Total	13 580	224.3	98	Y

Groundwater Model

Overview

An updated groundwater model and groundwater management strategy has been formulated by Martens & Associates. The revised model utilises additional groundwater data, including increased data coverage, and address concerns raised by various assessment agencies.

The groundwater management strategy integrates closely with the stormwater management strategy utilising 'at source' recharge mechanisms to ensure NorBE impacts on groundwater patterns and conditions particularly in relation to impact on critical receiving ecosystems.

Outcomes

The groundwater assessment concludes the proposed development will result in:

- no discernible impact on from the proposed development on SEPP14 wetland groundwater levels and water budgets;
- no discernible impact on water quality and levels in existing brackish lake (J Lake);
- NorBE on groundwater resources for the site and surrounding areas; and
- largely unchanged groundwater regime from existing conditions. This is due to the distributed WSUD approach to water quality management and recharge where possible in the catchment.

Drainage and Flood Management

Overview

Tattersall Lander P/L (2012) have completed a Flood Study and detailed flood modelling to investigate the impacts of flooding on the proposed development, adjacent properties and downstream receiving environments. The objectives of this study were to:

- determine appropriate floodway designs, and the required fill levels within the proposed development;
- design a drainage system to mitigate post development impacts on receiving downstream environments; and
- assess the impact of the proposed development on adjacent development and environmental lands.

Outcomes

The Flood Study demonstrates that the proposed development will not have an adverse impact on flood behaviour on or around the site. Specifically it concludes:

- provision of storage and low flow discharge structures ensure environmental flows into the wetland buffer are maintained;
- the level spreader designed for high flow discharge ensures the development will not result in an increase in flow velocities during rare events that would otherwise cause damage to downstream environments;
- existing flood levels remain unaffected by the proposed development;
- proposed filling works plus floodway capacities ensure all lots remain flood free to the design 100yr event; and
- the proposed development design caters for the safety of future residents in the peak PMF event.

Conclusion

Response to Water Management Issues

Table 3.4 provides a summary of how the revised water management scheme addresses the key concerns raised by local and state government authorities.

Table 3.4 *Summary: response to water management issues*

Issue	Response
Use of brackish lake/window lakes for water quality treatment	Window lakes and the use of the brackish lake have been removed from the water management scheme. There is no reliance on the 'J' Lake as an end of line treatment structure
Impacts of window lake on groundwater	Removal of the window lake means the groundwater system is largely unchanged. There is now little opportunity to have any drawdown.
Impacts on GDE's	The key system design principles for groundwater management are based on: preserving water quality, flow patterns, groundwater levels and the water balance. Modelling demonstrates that the inclusion of roadside bioswales achieves these design principles.
Provision of at source treatment – no reliance on end of line structures	The proposed treatment train incorporates the principles of WSUD and comprises a range of measures to progressively treat runoff prior to discharge into receiving environments.
Consistency of MUSIC model with current guidelines	Revised water quality modelling has been undertaken using the latest version of MUSIC and in accordance with Sydney Metro CMA 'Draft NSW MUSIC Modelling Guidelines' (2010) and WBM BMT.

Summary

The revised Concept Integrated Water Management Strategy by Martens and Associates (2012) has been prepared to address local and state government concerns relating to surface and groundwater management at the site.

Modelling undertaken has determined that, with the provision of recommended treatment measures, the development shall have a neutral or beneficial effect on the site's existing water quality, flooding, groundwater and hydrological regime.

3.3.3 *Community Title*

The Community Title structure for the Concept Plan areas of Riverside is proposed to be divided into 5 precincts as shown in (Figure 3.6).

The Community Management Statement (Crighton Properties, 2010) is already in operation for the Riverside development over Lot 40 (proposed precincts 1, 2 and 3) and identifies the terms binding the Community Association, the Executive Committee and any future landowners with respect to the Community Scheme. The Community Management Statement has been provided within the EA.

Lot 10 (proposed precincts 4 and 5) is to be the subject of a future community scheme, similar to that in operation for Lot 40. A commitment has been added to the SOC requiring the formation of a Community Scheme over Lot 10, which includes the same principles and By-laws (as they relate to land management and access requirements) as those that relate to the existing Myall Quays Community Scheme.

All footpaths, cycleways, open space areas, parks and water treatment facilities outside of road reserves will be owned by the Community Association, as detailed within Drawing R.C.-08. Public access to these areas (excluding the clubhouses) will be provided and encouraged. Roads will be dedicated to Great Lakes Council.

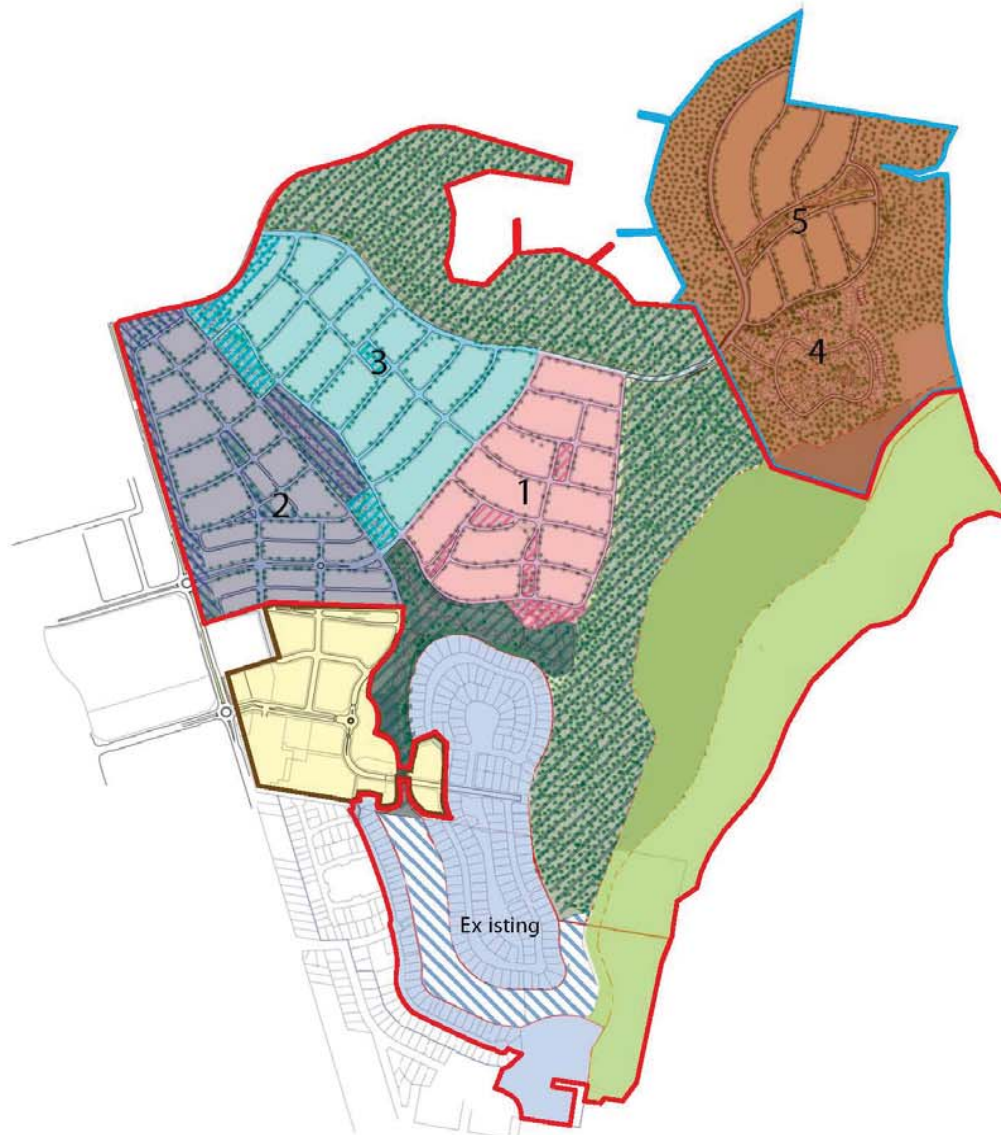
The by-laws detailed within the Community Management Statement relate to the control and preservation of the essence or theme of the Community Scheme and therefore can only be revoked or amended by a unanimous resolution of the Community Association. The Management Statement includes the following requirements for development within the Riverside site:

- the architectural and landscape standards which outline the standards/ requirements for the design of residential development and community property;
- approvals process for the construction and/or modification of buildings or landscaping;
- outlines the responsibilities of the Community Association and Executive Committee in the control, management and maintenance of community property;
- provides regulation of fence heights, collection of garbage, car parking, the keeping of animals, TV Aerials, etc; and

- identifies the need for the Community Association to ensure that the appropriate insurances are obtained and managed for all community property.

The Community Management Statement for Myall Quays does and will continue to apply to the community land within Riverside at Tea Gardens.

The OEH have on previous occasions, voiced its concerns with regard to the management of Conservation Lands and delivery of Bio Banking credits by the Community Association with respect to the Riverside site. The correspondence contained in *Annex H* identifies a number of options available to ensure that biodiversity offsets are provided in perpetuity by the Community Association. The management option to be adopted will be identified during the formulation of the “Offsetting Package” with OEH. A statement has been made within the SOC committing to the inclusion of the required structure within the Offsetting Package.



Legend	
	Extent of Myall Quays Community Title Scheme
	Extent of land under existing precinct & neighbourhood schemes
	Existing community assets
	Community land to be protected under Myall Quays community scheme
	Extent of Myall Quays community overall assets
	Existing Medium Density/Commercial Precinct. Separate Community Title
	Proposed future Precinct 1
	Proposed Precinct 1 community assets
	Proposed future Precinct 2
	Proposed Precinct 2 community assets
	Proposed future Precinct 3
	Proposed Precinct 3 community assets
	Proposed future common title scheme incorporating precincts 4 & 5

Source:
Crighton Properties - Concept Plan R.C. - 08/ November 2012 Revision O

Figure 3.6
Community Title Structure

Client: Crighton Properties Pty Ltd
Project: Preferred Project 2012
Riverside at Tea Gardens

Drawing No: 0043707h_PP_2012_C008_R0.cdr
Date: 05/12/2012 Drawing size: A4
Drawn by: JD Reviewed by: SO'C
Scale: Refer to Scale Bar



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Environmental Resources Management ANZ

Auckland, Brisbane, Canberra, Christchurch,
Hunter Valley, Melbourne, Perth, Port Macquarie, Sydney



4 STATEMENT OF COMMITMENTS

4.1 INTRODUCTION

A revised Statement of Commitments is provided in *Table 4.1*. The revised Statement of Commitments has been compiled based on the environmental assessment undertaken in the preparation of the Concept Application and following review and consideration of issues raised in agency and community submissions. *Table 4.1* indicates the responsibilities and timing to implement measures to prevent potential adverse environmental impacts that have been identified throughout the assessment process, to ensure that the project is environmentally, socially and economically sustainable.

4.2 STATEMENT OF COMMITMENTS

Table 4.1 Statement of Commitments

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
1	Scope of Development	<p>Any Development Application for subdivision will be consistent with the documentation and subdivision plans listed below, except where amended by other items of this Statement of Commitments.</p> <ul style="list-style-type: none"> • Preferred Project Report prepared by ERM dated August 2012. • Concept Plan drawings prepared by Crighton Properties (<i>Annex A</i>). • Concept Plan Engineering Documentation prepared by Tattersall Surveyors (<i>Annex B</i>). 	To ensure subsequent development upon the site is consistent with the Concept Plan Approval.	Land owner	Ongoing
2	Tourist Precinct	<p>Any Development application approved within the Tourist Precinct (as identified on the Concept Plan) must be consistent with the following requirements;</p> <ol style="list-style-type: none"> 1. All hollow bearing trees to be retained within the development (these are actually identified on the plan) 2. Development to be no greater than 6.5 DW/Ha (half the density of the standard residential development) 3. Development footprint, including access roads, driveways and buildings to be no more than 30% site coverage 4. All structures (buildings and roads) to be encompassed with a line of bollards 1.0m out from the edge of the structure. 5. All land outside of the bollard area to be maintained 	To ensure that the Biodiversity of this area is protected in accordance with impact Assessments.	Land owner	Approval of any Development Application within the Tourist Precinct.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
		<p>under common title, by contractor in accordance with a management plan (to be prepared)</p> <p>6. All landscaping upon the site to be carried out and maintained under contract, in accordance with a planting plan (planting plan may encourage Koala or other feed trees)</p> <p>7. No fences allowed (except for service compounds etc linked with the amenity building or garbage collection points)</p> <p>8. All pavements to be permeable</p> <p>9. No domestic pets allowed.</p> <p>10. All roads to be private roads restricted to 15 km/h and traffic controlled via speed humps etc. Primary ring road to be one way (reduced width etc).</p> <p>11. All houses to be selected from standard designs or built in accordance with strict architectural guidelines (which consider materials, textures, lighting etc.</p> <p>12. All outdoor lighting to be bollard lighting.</p>			
3	Statutory Requirements	<p>The following licences, permits and approvals will be obtained and maintained for the subdivision and construction of infrastructure:</p> <ul style="list-style-type: none"> • Development consent under Part 4 of the Environmental Planning & Assessment Act; • Construction Certificates for engineering works (including earthworks, soil and water management, clearing, road works, drainage, landscape, water supply, and sewerage) for each stage of the subdivision; 	To ensure all relevant approvals, permits and licences are obtained at the relevant time.	Land owner	For the duration of subdivision

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
		<ul style="list-style-type: none"> • Compliance and Subdivision Certificates for each stage; • Road Opening Permit; • Section 138 Consent for road works (Roads Act 1993); • Essential Energy Design Certification; • Essential Energy Notification of Arrangement; • Telstra Compliance Certificate; • Department of Land and Property Information registration of the subdivision; • Section 73 Compliance Certificate from MidCoast Water. • Approval to intercept the water table under the Water Act 1912 			
4	Zoning	The proponent will investigate the potential rezoning of conservation corridors, tourist residential precinct and onsite conservation areas in the comprehensive Great Lakes LEP to an appropriate zone in consultation with Great Lakes Council.	To ensure ecologically constrained areas are afforded additional levels of protection consistent with their ecological value.	Land owner	At the appropriate time during the preparation of Great Lakes Council comprehensive LEP, following approval of the Concept Plan.
5	Conveyancing	A Precinct Management Statement and Plan will be prepared and registered with each relevant Precinct within the Community Association.	To ensure Precinct assets are managed in accordance with the relevant Management Plans committed to for the site.	Land owner	Prior to the release of the Subdivisions Certificate for that precinct.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
6		The Community Management Statement and Plans will be updated to reflect commitments made to management plans upon the site (Conservation Land management, bushfire management, water quality control management etc), consistent with this approval.	To ensure Community assets are managed in accordance with the relevant Management Plans committed to for the site.	Land owner	Prior to the release of the Subdivisions Certificate for the first stage of development.
7	Acid Sulphate Soils	Any Earth Works proposed for the site within any Development Application will be accompanied by an Acid Sulphate Soil Management Plan which is consistent with the CEMP for the site	To ensure any earthworks upon the site are carried out in a manner which is in accordance with the approved management Plan.	Land owner and contractors	For the duration of the construction of the subdivision.
8	Ecology	A final Biodiversity BioBanking assessment and offsetting package will be prepared in consultation with OEH and DP&I to determine the exact type and quantum of BioBanking Offsets required to compensate for the impacts of the proposed development. The package will include management plans for on site conservation areas and details of delivery of any off site offsets.	To ensure that biodiversity offsets are delivered on site, are properly quantified and are provided ahead of biodiversity impacts.	Land owner	Prior to Development Consent being provided for the 1 st Stage of Development.
9		On site Conservation lands will be secured and management processes established to offset impacts of stages 1 - 8 in accordance with the Offsetting Package.	To ensure biodiversity offsets are provided ahead of any impact.	Land owner	On site offsets will be secured prior to the release of construction certificates for the first stage of development.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
10		Offsite offsets will be secured to offset the remaining development Stages 9 onwards, in accordance with the Offsetting Package.	To ensure biodiversity offsets are provided ahead of any impact.	Land owner	Off site offsets will be secured prior to the release of construction certificate for stage 9.
11	Bushfire Management	A Bushfire Management Plan is to be prepared and lodged with any development application which is consistent with the Bushfire Threat Assessment approved with the Concept Plan (<i>Annex E</i>).	To ensure bushfire protection measures are implemented consistent with the approved BTA.	Land owner	To accompany any future development application for subdivision upon the site.
12	Aboriginal Heritage	The midden site 'NPWS 38-5-148' identified as significant located within the SEPP 14 wetland and the midden site 'Riverside_01' located within the tourist precinct will be protected from all development activities.	To ensure the ongoing protection of the identified midden site from development impacts.	Land owner	Prior to commencement of development upon the site.
13		During ground surface disturbance works in the event that cultural heritage material is exposed within the development area, all development works will immediately cease and a representative of the OEH and Karuah LALC will be contacted regarding further assessment of any cultural materials. Management measures as outlined in the Management Plan would be implemented for the proposed works.	To ensure the ongoing protection of the identified midden site from development impacts.	Land owner	For the duration of the construction of the subdivision.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
14	Water Cycle Management	Any development application lodged with Great Lakes Council for approval will be accompanied by Water Cycle Management documentation which is consistent with the <i>Concept Integrated Water Cycle Management Strategy</i> approved with the Concept Plan (Annex C). This includes the preparation of monitoring and management plans.	To ensure water quality and quantity discharge targets are met within the development. To ensure that the site is not subject to flooding.	Land owner	Prior to the release of the subdivision certificate for each stage.
15	Water Quality	Undertake ongoing water quality monitoring and reporting in accordance with the proposed methods included in the approved <i>Concept Integrated Water Management Strategy</i> dated (Annex C).	To ensure the ongoing performance of water quality management systems upon the site.	Land owner in consultation with relevant authorities.	Ongoing, in accordance with management and monitoring requirements.
16	Flooding	Any development application lodged with Great Lakes Council for approval will be accompanied by a flood impact assessment which includes an assessment of any revised tail water conditions which may have been adopted by the Council from time to time, and be consistent with the provisions of the <i>Concept Integrated Water Cycle Management Strategy</i> approved with the Concept Plan (Annex C).	To ensure flood modelling is updated to reflect any new River modelling scenarios and tail water conditions which may be in effect at the time of making a Development Application.	Land owner	At the time of lodgement of any Development Application (if new tail water conditions have been adopted by the Council).
17		Flood Hazard mapping (for emergency services planning) is to be updated upon completion of Myall River Flood Study. Results are to be provided to emergency services.	To ensure emergency services are kept up to date to assist in disaster planning.	Land owner	Upon completion of Myall River Flood study by Council.
18		All house floor levels upon the site are to comply with the FPL's contained within the Concept Integrated Water Cycle Management Strategy and Great Lakes Council Freeboard requirements.	To ensure dwelling upon the site remain flood free.	Great Lakes Council / Land owner	Ongoing throughout the development

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
19	Social	The Principals of both Tea Gardens Public School and Bulahdelah Central School will be informed of the growth of the school age population in Riverside.	To assist in the forward planning of educational services within the region.	Land owner	Ongoing throughout the development of the project.
20	Health	The approved Concept Plan will be forwarded to the Population Health Unit of the Hunter New England Health Service, to assist them in the planning for preventative health.	To assist in the forward planning of health services within the region.	Land owner	Following Concept Plan approval
21	Reticulated Services	Each residential lot will be provided with reticulated water supply, sewerage and underground electricity In addition to a recycled water supply in accordance with the IWCMS.	To ensure that each lot is properly serviced and that demands upon sewer infrastructure upgrades are minimised.	Land owner	Prior to the release of the Subdivision Certificate for each stage.
22		The reticulated recycled effluent system will be registered for BASIX compliance.	To ensure demand for recycled effluent is not reduced by the mandatory provision of water tanks house sites (Water tanks will not be required to achieve BASIX compliance).	MidCoast Water	Following Concept Plan approval.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
23		<p>Infrastructure services will be provided generally in accordance with the drawings prepared by Tattersall Lander (Annex B), namely Drawing Numbers:</p> <ul style="list-style-type: none"> • 20600198, Water Servicing Strategy; • 20600220; 20600222, Vacuum Sewer Servicing Strategy (sheets 1 and 2); • 20700087, Electrical Servicing Strategy; • 20700088, Communications Servicing Strategy. 	To ensure the orderly and planned rollout of infrastructure and required upgrades.	Land owner	Prior to the release of the Subdivision Certificate for the affected stage.
24	Traffic	Temporary turning heads will be provided during construction as required to facilitate a bus U-turn. A permanent turning head would be provided at a location to be nominated in consultation with Busways - if required.	To ensure at all stages throughout the development that public bus transport and turn around can be provided within the site.	Land owner	At all stages of development.
25		An updated traffic impact assessment would be undertaken to accompany each development application. Updates to traffic numbers on an ongoing basis will be provided.	To ensure the proper timing of intersections and road upgrades are adhered to.	Land owner	To accompany each Development Application for subdivision.
		Signalised controls are to be provided at the intersections of Myall Street and both Myall Quays Boulevard and the new (unnamed) access road to Myall Street.	To ensure the continuing safe operation of the road network	Land owner	Before 547 Lots are registered.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
27		The Intersection of Toonang Drive will be upgraded to a seagull type intersection in consultation with Council / RMS prior to the development of the 850 th Lot or when a connection is made to Toonang Drive (whichever is the earlier).	To ensure road safety and proper and timing provision of road infrastructure.	Land owner	Prior to release of the 850 th Lot or when a connection is made to Toonang Drive (whichever is the earlier).
28		Pedestrian crossing facilities and refuges shall be provided on Myall Street as part of intersection design.	To ensure adequate facilities are available for pedestrians to cross Myall Street.	Land owner	During detail design and to accompany a Development Application for intersection works.
29		Bus stop and shelter facilities are to be provided along both sides of Myall Street adjacent to safe pedestrian crossing facilities.	To ensure adequate facilities are available for pedestrians to cross Myall Street.	Land owner	During detail design and to accompany a Development Application for intersection works.
30	Developer Contributions	A Voluntary Planning Agreement (VPA), consistent with the draft contributions schedule (Annex I), will be entered into between the land owner and Great Lakes Council detailing the contributions to be made relating to: <ul style="list-style-type: none"> open space, arterial roads, Marine Drive embellishments and other miscellaneous items; and material public benefits in the form of land dedication of open space, works, upgrading of Myall Road, and entry statements at the highway and Myall Street / Toonang Drive intersections. 	To ensure the provision of public benefit items as agreed to with Great Lakes Council.	Land owner with the Great Lakes Council	At each development application stage as applicable (in accordance with the commitments contained within the schedule with respect to timing). Specific timing for the provision of contributions will be detailed in the VPA.

Item Number	Item	Commitment	Reason for Commitment	Responsibility	Timing
31	Subdivision Layout	Each development application lodged with Council must demonstrate compliance with the following requirements; <ol style="list-style-type: none"> 1. Achieve a minimum net density of 13 Dw/Ha 2. 10% of lots (home equivalents) must be < 450 sqm in area (these can be represented as duplexes on lots < 900 sqm). 	To ensure compliance with the Hawks Nest / Tea Gardens Housing Strategy.	Land owner	With each Development Application.
32	Community Title	Any Development on Lot 10 must be carried out under a Community scheme with similar provisions for maintenance and management of Conservation areas as the Myall Quays Community Scheme.	To ensure Biodiversity measures are properly protected in perpetuity.	Land owner	Consistent with the registration of development upon Lot 10.

CONCLUSION

Since the exhibition of the Environmental Assessment, in February 2012 extensive consultation with government departments has occurred. This has led to a number of significant amendments to the proposed Concept Plan, as well as the preparation of further supporting materials. These amendments and reports have been widely discussed with government departments (and in some cases, these reports have been peer reviewed) prior to finalisation within the revised Concept Plan.

An entirely new stormwater management system is now proposed for the site – based upon “at source” treatment controls, rather than “end of line” controls. It demonstrates a beneficial effect on water quality leaving the site, both as groundwater and surface water. The proposal has been developed in close consultation with NSW Office of Water (NoW), the Department of Planning and Infrastructure (DoPI), the Office of Environment and Heritage (OEH) and peer review consultant BMT WBM.

The proposal has addressed the key concerns of the PAC with regard to Water Issues, and has been performance modelled in accordance with the PAC’s and other agencies requirements. The system as proposed is more sustainable, and has met higher water quality performance targets. In addition, the proposed measures utilize proven technology, regular maintenance regimes and due to fragmentation, protect against large scale failure.

The revised water management system has greatly reduced the potential for environmental impacts (such as groundwater drawdowns etc.) extending outside the development footprint. The need for development setbacks to conservation areas is therefore substantially reduced, and changes a key constraint considered by the PAC in the formulation of a suggested development footprint.

Significant effort has been put into base line environmental mapping of the Riverside site, which has led to a greater understanding of biodiversity values on and around the site. This has led to a reconsideration of avoidance and mitigation measures on site, and modifications to the Concept Plan accordingly. Significant reductions in the development footprint have been undertaken since the original 2009 application, and since the public exhibition of the Concept Plan in 2012.

At the same time a comprehensive offsetting package, designed to protect and enhance biodiversity both on the site and within the region has been developed, and has been enhanced substantially since the Environmental Assessment (EA) was exhibited earlier this year.

Whilst it would be technically possible to further reduce the development footprint to match the area contained within the footprint recommended by the PAC, the result of this would only be to conserve lower quality habitat on site, at the expense of a larger area of greater quality habitat which could be

preserved within an off-site BioBank area. Hence the proposed footprint (and commitment to offsets) represents the preferred approach to enhancing biodiversity outcomes, as a result of development upon the site.

This revised Concept Plan has been continually modified over a 3 year period in response to revised baseline mapping, feedback from the PAC, continuing feedback from state Government Agencies. It has been discussed extensively with all relevant government authorities (often with facilitation by DoPI), and has had the benefit of being informed by two alternative PAC reviews of an earlier, but very different Concept Plan and Project Application upon the site. It has been updated significantly in response to the most recent comments received within submissions

The Concept Plan represents an efficient and effective response to site constraints, and has been demonstrated to achieve a maintenance or improvement of environmental values, post development. The proposal consists not only of the proposed development, but extensive commitments to biodiversity offsets beyond the boundaries of the site.

The current Concept Plan seeks to develop only 37% of the Riverside site for urban / tourist uses, in addition to a further 11% of the site which will be utilised for water management and open space recreation. 52% of the site (116 Ha) will be set aside in perpetuity for conservation and managed under a conservation agreement. More than half of this conservation area is land that is already zoned for urban uses, being returned to conservation. In addition to the this, a further 258 Ha (approximately) of better quality, more strategically located habitat will be set aside 'off-site' and conserved and managed within a further conservation agreement, to offset any residual site impacts.

The water management system for the site is based on sound proven principles, and is scalable in proportion to development. It has been demonstrated to protect downstream environments.

The Riverside site has long been a key component of the growth strategy for Tea Gardens, and the Great Lakes area. This proposed compact and efficient development footprint will help to realise this growth whilst protecting and enhancing key Ecological assets both on and around the site, and within the region.

Annex A

Revised Concept Plans

Annex B

Revised Concept Plan
Engineering Documentation

Annex C

Revised Integrated Water Cycle Management Plan

Annex D

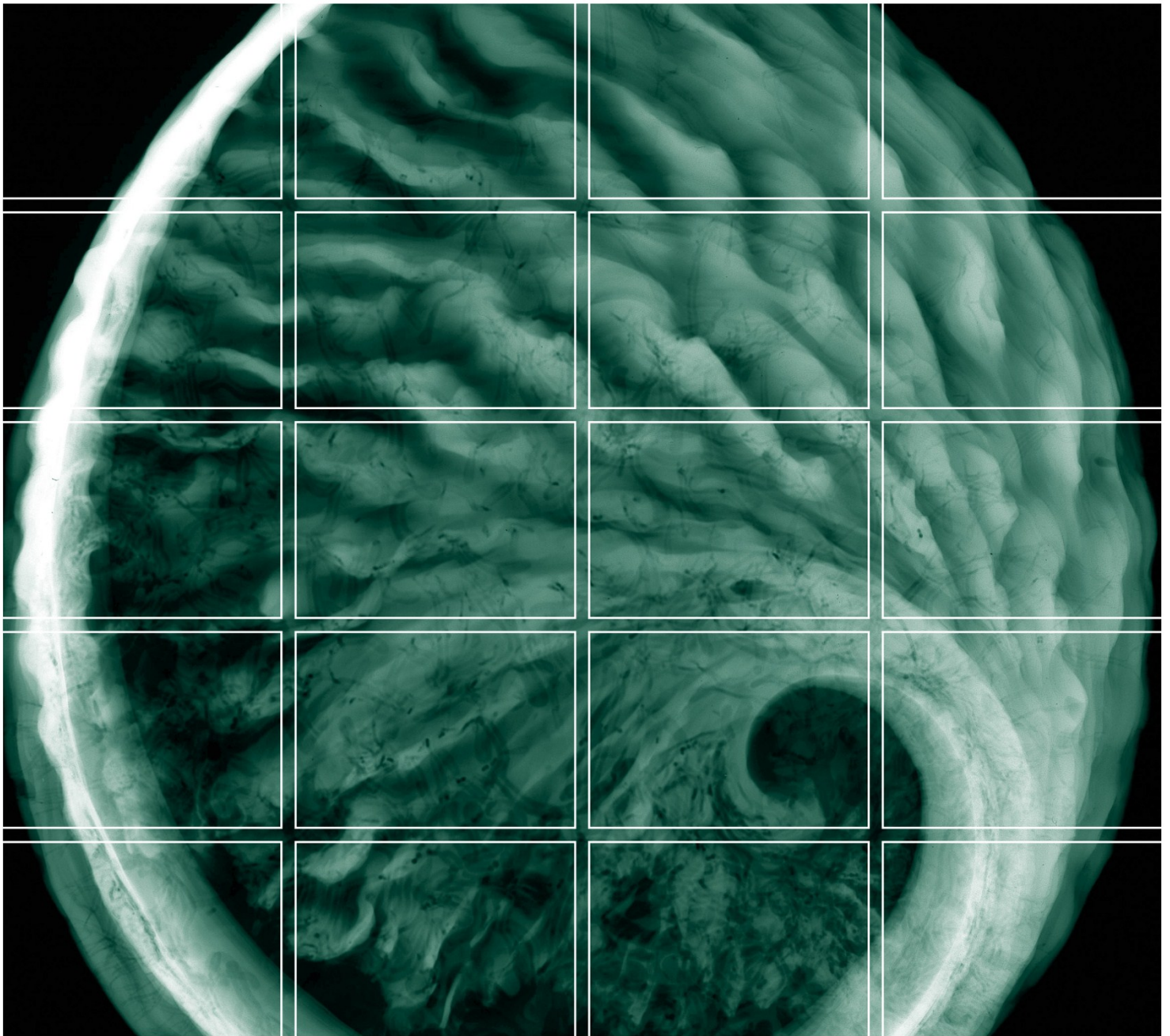
Revised Bio Banking Assessment Report

Annex E

Revised Bushfire Threat Assessment

Annex F

Revised Landscape Design Report



Riverside at Tea Gardens

Preferred Project Report Volume II– Annexes G to O

Crighton Properties

January 2013

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Annex G

Revised C.E.M.P

Annex H

Supplementary Community Title Information

Annex I

Supplementary Flora & Fauna Information

Annex J

Revised Site Servicing Strategy

Annex K

Draft Contributions Schedule

Annex L

Revised Traffic Impact Assessment

Annex M

Aboriginal Cultural Heritage Impact Assessment

Annex N

Submission Response Table

Annex O

Agency Correspondence

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