



TaylorThomsonWhitting

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# 120-128 Herring Road, Macquarie Park - Flood Assessment

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for Lipman Properties Pty Ltd

06 May 2010

TTW Job No: 091679 P

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## 1.0 INTRODUCTION

Taylor Thomson Whitting Pty Ltd (TTW) have been engaged by Lipman Properties P/L to carry out a flood impact assessment of University Creek as it affects the proposed development of 128 Herring Road.

The creek runs north through the western side of the Morling College campus site, through Macquarie University site and connects to Lane Cove River.

## 2.0 EXISTING CONDITIONS

### 2.1 Previous Reports

Ryde City Council has informed us that a flood study commissioned by Council which includes the University site is being carried out by Bewsher Consulting, however the results and related report are not available at this stage.

### 2.2 Existing catchment

The existing catchment extends south of Epping Road and is a fully developed suburban catchment.



### 2.3 Existing watercourse

The existing watercourse has been modified during the development of Morling College, Macquarie University and the surrounding commercial and residential land;





2008 watercourse condition and alignment



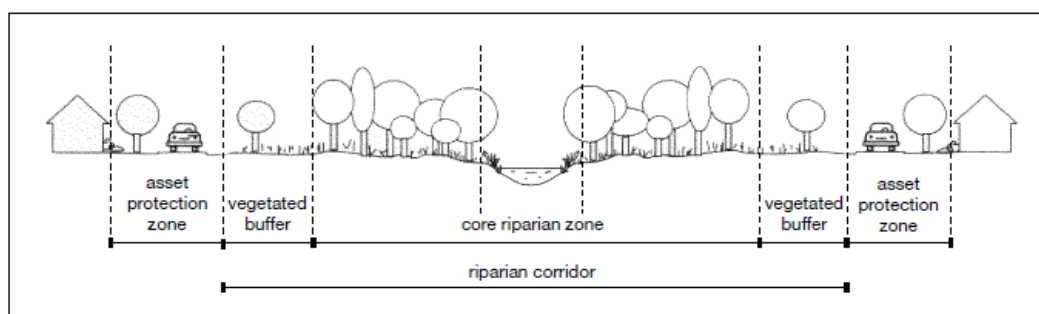
1943 watercourse condition and alignment

Existing Issues:

- Western portion of site adjacent University Creek is flood affected.
- Riparian setback to be defined in accordance with the guidelines for controlled activities within riparian corridors (2008) as a first order watercourse with intermittent stream flow.

## 2.4 Riparian Corridor

Figure 1. Riparian corridor zones.



The Department recommends that a vegetated CRZ width based on watercourse order<sup>1</sup> be considered in the design of any controlled activity (see Table 1). However, the final CRZ width will be determined after a merit assessment of the site and consideration of any impacts of the proposed activity. CRZ widths should be measured from the top of the highest bank and on both sides of the watercourse.

Table 1. Recommended CRZ widths.

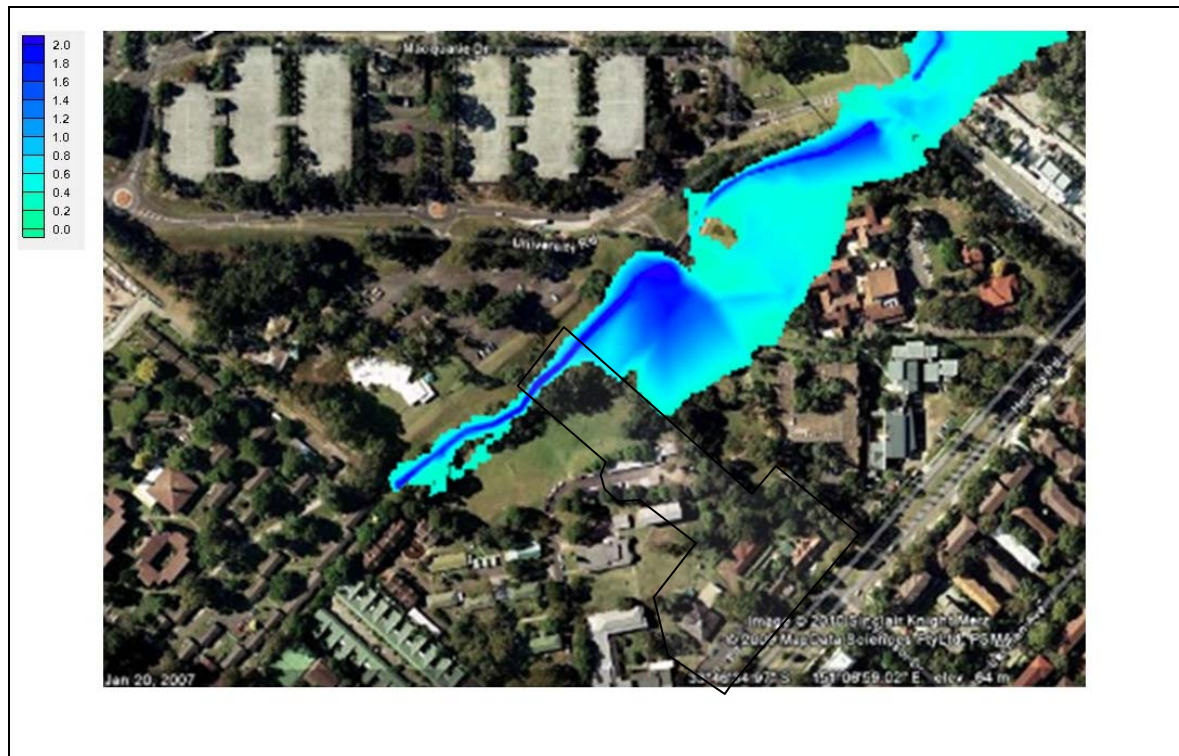
Types of watercourses	CRZ width
any first order <sup>1</sup> watercourse and where there is a defined channel where water flows intermittently	10 metres
<ul style="list-style-type: none"> <li>any permanently flowing first order watercourse, or</li> <li>any second order<sup>1</sup> watercourse</li> </ul> and where there is a defined channel where water flows intermittently or permanently	20 metres
any third order <sup>1</sup> or greater watercourse and where there is a defined channel where water flows intermittently or permanently. Includes estuaries, wetlands and any parts of rivers influenced by tidal waters.	20 – 40 metres <sup>2</sup>

<sup>1</sup> as classified under the Strahler System of ordering watercourses and based on current 1:25 000 topographic maps

<sup>2</sup> merit assessment based on riparian functionality of the river, lake or estuary, the site and long-term land use.

The above extract from the Guidelines for controlled activities indicates that for this intermittent first order stream the CRZ is to be 10m from the top of bank. The design allows for a riparian corridor which is 20m from the centreline of the creek incorporating the vegetated buffer and the CRZ.

## Existing Flood Flows, Flood Extents and Flood Levels



### Existing Flood Extents TufLOW Model

Table 2.1: Summary of calculated flowrates of the existing creek condition based on XP-Rafts Results

Location	Max Storage Used (m <sup>3</sup> )	Flowrate (m <sup>3</sup> /s)		
		1-yr ARI	5-yr ARI	100-yr ARI
Basin 5	7148	4.20	13.74	24.41



Table 2.2: Summary of calculated flood levels of the existing creek condition based on XP-Rafts Results

location	Max Storage Used (m <sup>3</sup> )	Flood Level (m)			Crest Level (m)
		1-yr ARI	5-yr ARI	100-yr ARI	
128 Herring southern boundary	-	-	-	58.89	-
Basin 5	7148	57.33	57.56	57.72	57.98

Table 2.3: Comparison of Pre-Development 100-yr ARI Flood Levels from Various Hydraulic Softwares

	Flood Level (m)		
	XP-Rafts	HEC-RAS	TUFLOW
128 Herring southern boundary	-	58.88	58.89
<b>Basin 5</b>	57.72	57.60	57.76

### **3.0 MACQUARIE UNIVERSITY FLOOD MITIGATION EFFECTS**

#### **3.1 Objectives of downstream works**

In order to control the flood risk to sites adjacent to University Creek within Macquarie University, the University is proposing on stream detention storage in two locations on University Creek.

The first location Basin 5 storage is proposed for the future extension of University Avenue 60m north of the Morling College campus boundary.

The second location, Basin 4 storage is south of the Waterloo Road crossing of University Creek. The intent of these works is to:

- Reduce flood extent on Station North development site
- Reduce Talavera Road flood risk
- Provide low environmental impact and cost impact flood storage measures
- Improve creek flow regime by minimising obstructions within flow performance criteria.
- Reduce erosion potential in the riparian zone.
- Limit the effect of the control measures on upstream properties.

#### **3.2 Effects of Macquarie University downstream works on 128 Herring Road Development**

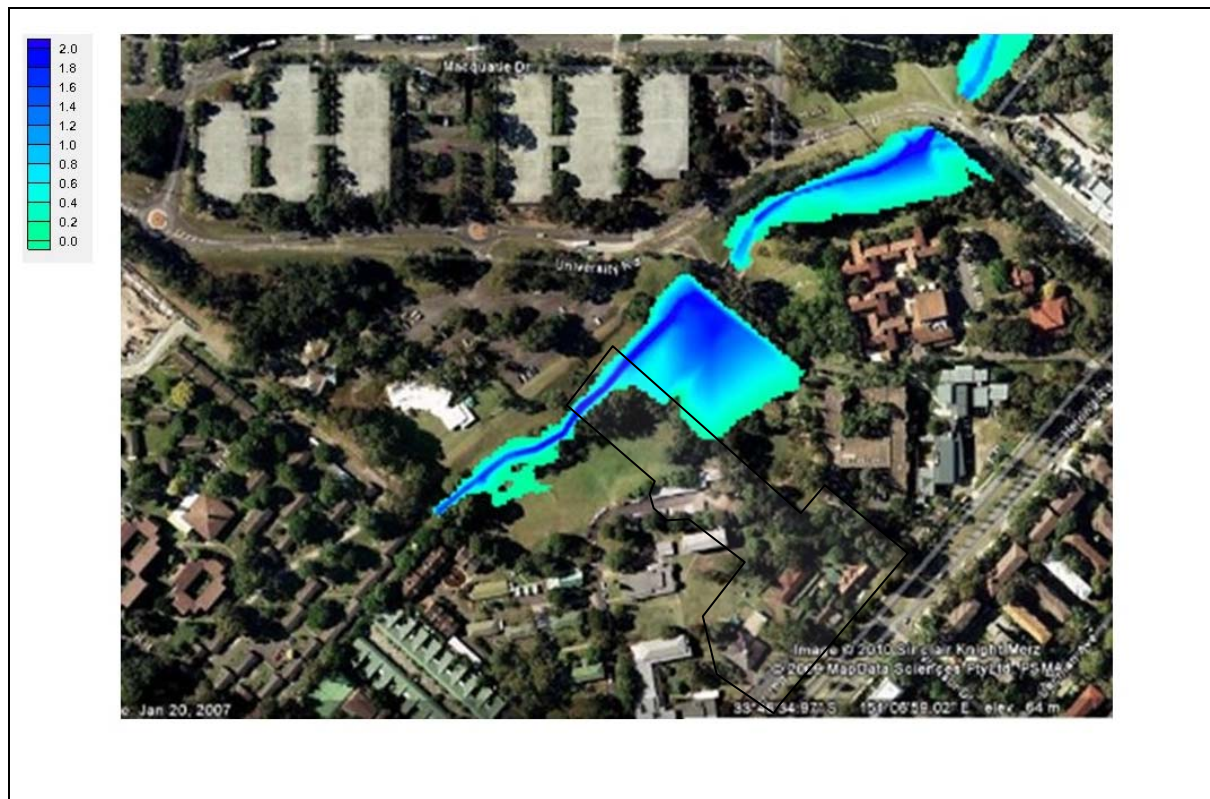
- The existing 100 year flood level prior to the proposed downstream works is 58.89 mRL.
- The proposed flood level after the downstream works are complete is 58.88 mRL.
- The proposed works will not significantly worsen the existing flow regime for the 128 Herring Road development proposal.

#### **3.3 Detailed Design requirements**

- Detailed design of the creek restoration will be required to ensure areas of erosion and scour are addressed
- No Creek channel modification will be required for flood mitigation



### 3.3 Calculated Flood Extents for Macquarie University Proposed Detention Solution



#### Proposed Flood Extents TufLOW model

Table 3.1: Summary of calculated Flowrates due to Macquarie University proposed works based on XP-Rafts Results

Location	Max Storage Used (m <sup>3</sup> )	Flowrate (m <sup>3</sup> /s)		
		1-yr ARI	5-yr ARI	100-yr ARI
Basin 5	9326	8.42	12.91	17.39

Table 3.2: Summary of Flood Levels due to Macquarie University proposed works

Location	Max Storage Used (m <sup>3</sup> )	Flood Level (m)			Crest Level (m)
		1-yr ARI	5-yr ARI	100-yr ARI	
128 Herring southern boundary	-	-	-	58.88	-
Basin 5	9326	56.31	56.90	58.18	58.40

Table 3.3: Comparison of Post-Development 100-yr ARI Flood Levels from Various Hydraulic Softwares

	FLOOD LEVELS		
	XP-Rafts	HEC-RAS	TUFLOW
128 Herring southern boundary	-	58.88	58.88
Basin 5	58.18	58.11	58.01

### 3.4 Comparison of Results between Pre-Development and Post-Development

Table 3.4: Comparison of Post & Pre-Development 100-yr ARI Flowrates & Flood Levels based on XP-Rafts Results

Location	Storage (m <sup>3</sup> )	Flowrate (m <sup>3</sup> /s)		Flood Level (m)		Crest Level (m)
		Pre-Dev	Post-Dev	Pre-Dev	Post-Dev	
128 Herring southern boundary	-	-	-	58.89	58.88	-
Basin 5	9326	24.41	17.39	57.72	58.18	58.40

#### **4.0 WATER QUALITY**

Each development stage is required to provide suitable water treatment to stormwater prior to discharge to University Creek.

#### **5.0 CONCLUSION**

The development incorporates detention in accordance with Councils DCP. It does not contribute to any additional flood effects for downstream property. The proposed development has a habitable floor level set 800mm above the design flood level. This additional freeboard allows for potential blockage of the existing culvert system downstream, and the proposed culvert system downstream in the university site.

By:

**TAYLOR THOMSON WHITTING (NSW) PTY LTD**



**STEPHEN BRAIN**  
**Technical Director - Civil**

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## Office of Water

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10 February 2010

Our ref: ER20938  
Your ref: MP09\_0195  
File:

**Attention: Andrew Beattie**

Dear Mr Woodland

**Major Project (MP09\_0195) – Mixed use/Residential/Retail development – 120-128 Herring Road Macquarie Park – Director General Requirements – Ryde City Council**

Thank you for your letter of 23 December 2009 requesting key issues and assessment requirements from the NSW Office of Water (NOW) for the project proposal. I apologise for the delay in responding.

The NOW's key issues and assessment requirements are outlined in Attachment A and include:

- the protection and rehabilitation of the University Creek riparian zone
- water licensing requirements under the Water Act 1912
- groundwater and groundwater dependent ecosystems

I trust the attached comments are of assistance to the Department of Planning.

**Contact Details**

Should you have any queries in relation to this matter please contact me on telephone (02) 4729 8262.

Yours sincerely

Janne Grose  
Planning and Assessment Coordinator  
Major Projects and Assessments  
NSW Office of Water  
Penrith

Department of  
**Environment, Climate Change and Water NSW**





**ATTACHMENT A**

**Specific Comments from the DECCW (Office of Water)**

**Mixed use/Residential/Retail development – 120-128 Herring Road  
Macquarie Park**

**Director-General's Environmental Assessment Requirements**

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**Relevant Legislation**

The NSW Office of Water (NOW) is responsible for administering the Water Act 1912 and the Water Management Act 2000 (WMA) which manage and regulate the use of surface water and groundwater resources. The Environmental Assessment (EA) is required to take into account the objectives and regulatory requirements of these Acts, as applicable.

**Relevant Policies**

The EA is required to take into account the following NSW Government policies, as applicable:

- NSW Groundwater Policy Framework Document - General
- NSW Groundwater Quantity Management Policy
- NSW Groundwater Quality Protection Policy
- NSW Groundwater Dependent Ecosystem Policy
- NSW State Rivers and Estuaries Policy
- NSW Wetlands Management Policy
- NSW Farm Dams Policy

**Protection of the waterways and riparian land**

The NOW recommends the project protects and enhances the values and functions of the riparian land at the site and improves the condition of the riverine ecosystem.

The NOW's recommendations for protecting and enhancing riparian land are reflected in natural resource policy and other documents including:

Department of  
**Environment, Climate Change and Water NSW**





- The New South Wales State Rivers and Estuaries Policy. The objective of the policy are to manage the rivers and estuaries of NSW in ways which:
  - *Slow, halt or reverse the overall rate of degradation in their systems*
  - *Ensure the long term sustainability of their essential biophysical functions, and*
  - *Maintain the beneficial use of these resources*
- The New South Wales Wetlands Management Policy
- The State Plan 2009 and the priorities and targets, particularly:
  - *protect our native vegetation, biodiversity, land, rivers and coastal waterways*
  - *Meet our State-wide targets for natural resource management to improve biodiversity and native vegetation sensitive riverine and coastal ecosystems, soil condition and socio-economic wellbeing*
  - *over the next 2 years we will increase the extent and improve the condition of native vegetation and habitats*
- State wide manual: Managing Urban Stormwater: Soils and Construction (NSW Government, Chapter 5 4<sup>th</sup> edition 2004) (the Blue Book).
- the Metropolitan Strategy which includes an objective to Improve Health of Waterways, Coasts and Estuaries (E2.1).

### **Stream Classification Methodology**

The draft DGRs refer to riparian corridors in accordance with the Guidelines for Controlled activities in riparian corridors. There are two levels to the assessment of riparian values namely the Riparian Corridor Management Study (RCMS) approach and the DWE (February 2008) Guideline for Controlled Activities Riparian Corridors approach.

The RCMS approach establishes a merit based approach to the strategic value of waterways based on a catchment or sub-catchment basis. It identifies strategic riparian objectives for all waterways and uses three categories which reflect the environmental significance of watercourses. The minimum widths to achieve the riparian categories are as follows:

#### **Category 1 – Environmental Corridor (Red)**

- Purpose: to protect and enhance ecological connectivity between key remnant native vegetation within and between catchments.
- Minimum width : a CRZ width of **40 metres** (measured from the top of bank) along both sides of the watercourse + **a 10 metre** vegetated buffer (VB)

#### **Category 2 – Terrestrial and Aquatic Habitat (Green)**

- Purpose: to provide for a viable and robust node or reach of riparian habitat (both aquatic and terrestrial)
- This habitat does not necessarily provide connectivity to other key remnant native vegetation due to constraints from existing development.
- Minimum width: a CRZ width of **20 metres** (measured from the top of bank) along both sides of the watercourse + **a 10 metre** VB.

### Category 3 – Bank Stability and Water Quality (Blue)

- Category 3 recognises the critical role of riparian vegetation for stabilising the bed and banks of watercourses and filtering catchment run-off and the contribution this makes to overall catchment health and retention of land (eg protection of property and assets).
- Minimum width: a CRZ width of **10 metres** (measured from the top of bank) along both sides of the watercourse (generally no vegetated buffer is required)

As noted above, the riparian widths are minimum widths and opportunities for achieving greater corridor widths are encouraged. Additional width may be required for geomorphological and environmental considerations (eg to protect and enhance remnant native vegetation adjacent to the riparian corridor and biodiversity).

The RCMS is the appropriate strategic riparian assessment methodology to be utilised for this proposal.

The purpose of the DWE (February 2008) Guideline is a systematic approach (eg stream order) rather than merit based to establish the application of a specific approval role (ie Controlled Activity Approval) under the Water Management Act. It is non-strategic and does not integrate other issues or achieve better NRM outcomes and is not the integrated planning tool to which the RCMS is designed.

### Stream Classification at the site

The NOW has undertaken desk top RCMS assessment of the waterways in the vicinity of the site to identify minimum riparian corridor widths along waterways. University Creek is classified as a Category 3 watercourse at the site. The NOW notes the proposed development involves the conservation of the remnant bushland on the site and the development boundary is located outside the 20 metres riparian zone setback from the creek (Section 4.2.3 of the PEA). The NOW supports the proposed 20 m wide riparian setback from the creek to protect the remnant riparian vegetation.

The NOW recommends the EA provides on a scaled plan the location of:

- a. University Creek and top of bank ,
- b. the riparian zone
- c. any Asset Protection Zone requirements,
- d. the footprint of the proposed development and any other areas of disturbance,
- e. any proposed revegetation of the riparian land
- f. land uses proposed to be located adjacent to the riparian zones (eg roads, basins and any other works adjacent to the riparian corridor).

The EA needs to identify any riparian land which may potentially be adversely impacted by the project and any mitigative measures to protect and enhance the riparian zone

The NOW recommends the proposal incorporates the following outcomes:

- The riparian zone is to remain, or become vegetated, with fully structured local native vegetation (trees, shrubs and groundcover species) at a density that would occur naturally
- Any Asset Protection Zone (APZ) requirement is to be located outside the riparian zone.
- All uses are to be located outside the riparian zone (with the exception of environmental protection works, drainage and crossings (e.g. roads, service utilities, paths)

## **Surface Water and Groundwater**

The EA needs to provide adequate details to assess the impact of the proposal on surface water and groundwater resources. Sufficient detail needs to be provided in the EA for the NOW to assess any water licensing requirements under the Water Act 1912. The EA needs to provide details on:

- any existing surface water and groundwater licences under the Water Act 1912 on the subject land
- the purpose of the existing licences.
- the source(s) of a sustainable water supply for the proposal
- any proposed surface water extraction for the proposal, including purpose, location of any existing and proposed pumps, dams,
- any proposed groundwater extraction related to the project,
- volumes of water to be used
- the function and location of all existing and proposed storages/ponds on the subject land
- the design, layout, pumping and storage capacities, all associated earthworks and infrastructure works must be clearly shown and explained.

## **Water Management Structures/Dams**

If the proposal includes water management structures/dams, the EA needs to provide details on the following:

- any existing structure/s (date of construction, location, purpose, size and capacity, the legal status/approval for existing structure/s).
- any proposal to change the purpose of existing structure/s.
- if any remedial work is required to maintain the integrity of the existing structure/s.
- the purpose, location and design specifications for any proposed structure/s.
- size and storage capacity of the structure/s.
- calculation of the Maximum Harvestable Right Dam Capacity (MHRDC).
- if the structure/s is affected by flood flows.
- any proposal for shared use, rights and entitlement of the structure/s.
- if the proposed development has the potential to bisect the structure/s.

The NOW's Farm Dams Assessment Guide provides details on Harvestable Rights and the calculation of the Maximum Harvestable Right Dam capacity (MHRDC). Dams capturing up to the harvestable right capacity are not required to be licensed. Harvestable Right dams can be located on hillsides, gullies and minor watercourses that do not have permanently flowing waters and which are first and second order watercourses in accordance with the Strahler system of stream ordering. The Strahler system of stream ordering of watercourses is based on 1:25 000 scale topographic maps. Please refer to:

[http://www.naturalresources.nsw.gov.au/water/farm\\_dams/index.shtml](http://www.naturalresources.nsw.gov.au/water/farm_dams/index.shtml).

The Harvestable Right gives landholders the right to capture and use for any purpose 10 % of the average annual runoff from their property. The Harvestable Right has been defined in terms of an equivalent dam capacity called the Maximum Harvestable Right Dam Capacity (MHRDC). The MHRDC is determined by the area of the property (in hectares) and a site-specific run-off factor.

The MHRDC includes the capacity of all existing dams on the property that do not have a current surface water licence. The location and estimated capacity of every dam must be shown. Any capacity of the total of all the dams on the property greater than the MHRDC may require a licence.

There are exemptions for dams related to the Harvestable Right. These include:

- Dams to control or prevent soil erosion;
- Dams to contain effluent and sediment;
- Flood detention basins;
- Dams built for environmental reasons (eg aesthetics, nutrient control, wildlife etc); and
- Dams which don't harvest runoff (eg. turkeys nest dams, ring tanks).

These exemptions are only applicable to the end use of the dam, even if the initial use is one of the above.

### **Groundwater**

The NOW is responsible for the management of the groundwater resources. The proposal needs to protect groundwater resources in accordance with NSW State groundwater policy, enhance groundwater quality and protect groundwater dependent ecosystems (GDEs).

The EA should identify groundwater issues and potential degradation to the groundwater source and provide the following details:

- the predicted highest groundwater table at the site.
- any works likely to intercept, connect with or infiltrate the groundwater sources.
- any proposed groundwater extraction, including purpose, location and construction details of all proposed bores and expected annual extraction volumes.
- a description of the flow directions and rates and physical and chemical characteristics of the groundwater source.
- the predicted impacts of any final landform on the groundwater regime.
- the existing groundwater users within the area (including the environment), any potential impacts on these users and safeguard measures to mitigate impacts.
- an assessment of the quality of the groundwater for the local groundwater catchment
- an assessment of groundwater contamination (considering both the impacts of the proposal on groundwater contamination and the impacts of contamination on the proposal).

- how the proposed development will not potentially diminish the current quality of groundwater, both in the short and long term.
- measures for preventing groundwater pollution so that remediation is not required.
- protective measures for any groundwater dependent ecosystems (GDEs).
- proposed methods of the disposal of waste water and approval from the relevant authority.
- the results of any models or predictive tools used.

Where potential impact/s are identified the assessment will need to identify limits to the level of impact and contingency measures that would remediate, reduce or manage potential impacts to the existing groundwater resource and any dependent groundwater environment or water users, including information on:

- any proposed monitoring programs, including water levels and quality data
- reporting procedures for any monitoring program including mechanism for transfer of information.
- an assessment of any groundwater source/aquifer that may be sterilised from future use as a water supply as a consequence of the proposal.
- identification of any nominal thresholds as to the level of impact beyond which remedial measures or contingency plans would be initiated (this may entail water level triggers or a beneficial use category).
- description of the remedial measures or contingency plans proposed.
- any funding assurances covering the anticipated post development maintenance cost, for example on-going groundwater monitoring for the nominated period.

### Licensing

Section 4.2.2 of the PEA indicates that basement car parking is required as part of the development proposal. The EA needs to outline whether groundwater may be encountered during excavation and the potential need to dewater during construction if the development includes the construction of a basement level below the existing groundwater table.

If the proposal is likely to intercept or use groundwater, the need for a water license under Part 5 of the Water Act 1912 should be addressed in the EA.

If during basement construction groundwater is likely to be intercepted then a licence for temporary construction dewatering together with specific construction methods may be required.

All proposed groundwater works, including bores for the purpose of investigation, extraction, dewatering, testing or monitoring must be identified in the proposal and an approval obtained from NOW prior to their installation.

### Groundwater Dependent Ecosystems

The EA should provide details on the presence and distribution Groundwater Dependent Ecosystems (GDEs) in the vicinity of the site and identify any potential impacts on GDEs as a result of the proposal.



GDEs are ecosystems which have their species composition and natural ecological processes wholly or partially determined by groundwater. GDEs represent a vital component of the natural environment and can vary in how they depend on groundwater, from having occasional or no apparent dependence through to being entirely dependent. GDEs occur across both the surface and subsurface landscapes ranging in area from a few metres to many kilometres. Surface and groundwaters are often interlinked and aquatic ecosystems may have a dependence on both.

Ecosystems that can depend on groundwater and that may support threatened or endangered species, communities and populations, include:

- Terrestrial vegetation that show seasonal or episodic reliance on groundwater.
- River base flow systems which are aquatic and riparian ecosystems in or adjacent to streams/rivers dependent on the input of groundwater to base flows.
- Aquifer and cave ecosystems.
- Wetlands
- Estuarine and near-shore marine discharge ecosystems.
- Fauna which directly depend on groundwater as a source of drinking water or live within water which provide a source.



February 2008



## Water Management Act 2000

# Guidelines for controlled activities

## Riparian corridors

Controlled activities carried out in, on or under waterfront land are now regulated by the *Water Management Act 2000* (WMA). The Department of Water and Energy is required to assess the impact of a controlled activity to ensure that minimal harm will be done to any waterfront land, ie. the bed and a distance inland of 40 metres from a river, lake or estuary.

This means that a controlled activity approval must be obtained from the Department prior to carrying out a controlled activity.

Riparian corridors form a transition zone between terrestrial and aquatic environments and perform a range of important environmental functions. Riparian corridors:

- provide bed and bank stability and reduce bank and channel erosion
- protect water quality by trapping sediment, nutrients and other contaminants
- provide a diversity of habitat for terrestrial, riparian and aquatic flora and fauna species
- provide connectivity between wildlife habitats
- allow for conveyance of flood flows and control the direction of flood flows
- provide an interface between developments and waterways.

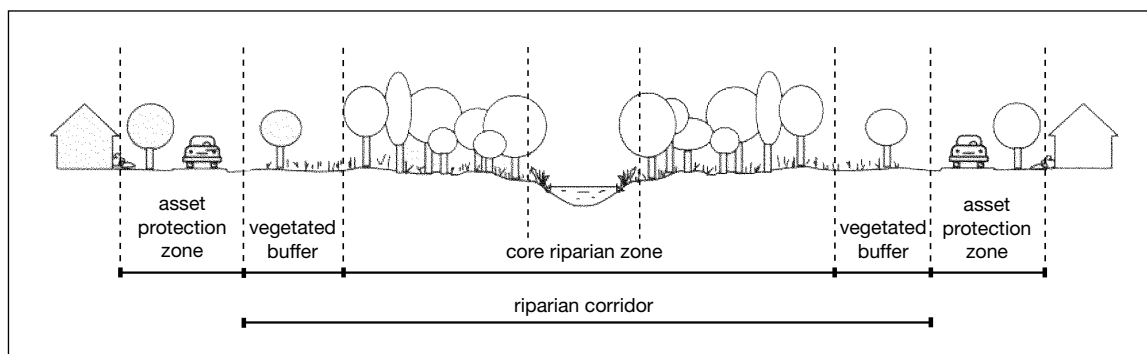
The protection or restoration of vegetated riparian areas is important to maintain or improve the geomorphic form and ecological functions of watercourses through a range of hydrologic conditions in normal seasons and also in extreme events.

When determining an appropriate width for a riparian corridor and how much riparian vegetation should be protected or re-established on a site, the following three riparian corridor zones (Figure 1) should be considered.

1. A **Core Riparian Zone** (CRZ) is the land contained within and adjacent to the channel. The Department will seek to ensure that the CRZ remains, or becomes vegetated, with fully structured native vegetation (including groundcovers, shrubs and trees). The width of the CRZ from the banks of the stream is determined by assessing the importance and riparian functionality of the watercourse (Table 1), merits of the site and long-term use of the land. There should be no infrastructure such as roads, drainage, stormwater structures, services, etc. within the CRZ.
2. A **Vegetated Buffer** (VB) protects the environmental integrity of the CRZ from weed invasion, micro-climate changes, litter, trampling and pollution. There should be no infrastructure such as roads, drainage, stormwater structures, services, etc. within the VB. The recommended width of the VB is 10 metres but this depends on merit issues.
3. An **Asset Protection Zone** (APZ) is a requirement of the NSW Rural Fire Service and is designed to protect assets (houses, buildings, etc.) from potential bushfire damage. The APZ is measured from the asset to the outer edge of the vegetated buffer (VB). The APZ should contain cleared land which means that it can not be part of the CRZ or VB. The APZ must not result in clearing of the CRZ or VB. Infrastructure such as roads, drainage, stormwater structures, services, etc. can be located within APZs.



Figure 1. Riparian corridor zones.



The Department recommends that a vegetated CRZ width based on watercourse order<sup>1</sup> be considered in the design of any controlled activity (see Table 1). However, the final CRZ width will be determined after a merit assessment of the site and consideration of any impacts of the proposed activity. CRZ widths should be measured from the top of the highest bank and on both sides of the watercourse.

Table 1. Recommended CRZ widths.

Types of watercourses	CRZ width
any first order <sup>1</sup> watercourse and where there is a defined channel where water flows intermittently	10 metres
<ul style="list-style-type: none"> <li>any permanently flowing first order watercourse, or</li> <li>any second order<sup>1</sup> watercourse</li> </ul> and where there is a defined channel where water flows intermittently or permanently	20 metres
any third order <sup>1</sup> or greater watercourse and where there is a defined channel where water flows intermittently or permanently. Includes estuaries, wetlands and any parts of rivers influenced by tidal waters.	20 – 40 metres <sup>2</sup>

<sup>1</sup> as classified under the Strahler System of ordering watercourses and based on current 1:25 000 topographic maps

<sup>2</sup> merit assessment based on riparian functionality of the river, lake or estuary, the site and long-term land use.

## Further information

If you require more information about controlled activity approvals please contact your local DWE office or visit our website [www.dwe.nsw.gov.au](http://www.dwe.nsw.gov.au)

## Important notes

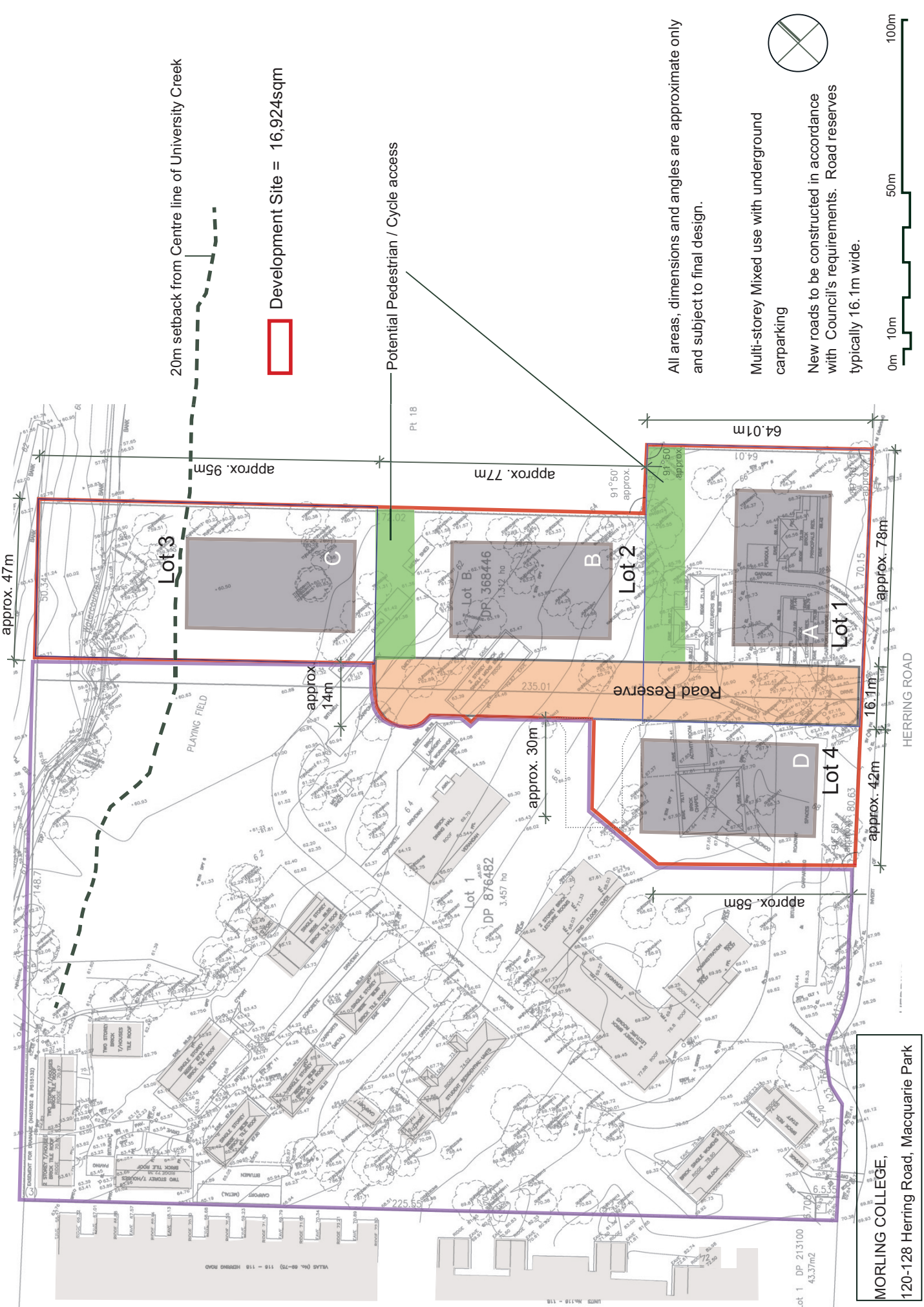
DWE has prepared these guidelines in good faith. In the case of any inconsistency between the guidelines and the controlled activity approval or legislation, the controlled activity approval or legislation will prevail to the extent of that inconsistency.

Nothing in these guidelines is taken to authorise a controlled activity. These guidelines are designed to provide information to assist in the design of any development or work that constitutes a controlled activity and the preparation of an application for a controlled activity approval. Users are advised to seek professional advice and to refer to the legislation and any relevant approvals, as necessary, before taking action in relation to any matters covered by the guidelines.

## Disclaimer

While every reasonable effort has been made to ensure that this document is correct at the time of publication, the State of New South Wales, its agencies and employees, disclaim any and all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

PRELIMINARY DEVELOPMENT LAYOUT PLAN



All areas, dimensions and angles are approximate only and subject to final design.

Multi-storey Mixed use with underground carparking

New roads to be constructed in accordance with Council's requirements. Road reserves typically 16.1m wide.

MORLING COLLEGE,  
120-128 Herring Road, Macquarie Park