Outcomes Committee



AGENDA

DATE OF MEETING: 12 September 2017

LOCATION: Staff Lunch Room

TIME: 7.00pm

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AGENDA

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ITE	M	St	JBJECT		PAGE
-	APOLOGIES AND L	EAVE OF ABSEI	NCE		
-	CONFIRMATION OF	MINUTES			
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103:	Heritage Grants Pro File Number: 16/19				5
104:	Stormwater Manage File Number: 15/21				14
		_	CTION B		
'N	Matters submitted to	the Committee	for decision su	ıbject to the right o	f referral'
105:	SUBJECT:	Planning Propos Grove Road and		abramatta Road We	est, 2 Orange
	Premises:			and 6 Links Avenue	Cabramatta
	Applicant/Owner:				
	Zoning:	-		additional permitted	d use of 'multi
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				ion made in the e d a division needs	
106:	Fairfield City Aborio	inal Heritage Stud	dy and Draft Dev	velopment Control P	lan
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107:	Western Sydney Vis File Number: 14/20			onsorship Offer	397
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110:	Major Projects Upda File Number: 13/16	ate - August 2017 381			411
111:	Fairfield Youth Advi				417

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112:	Information Report - Newleaf Renewal Project - Submission to South West Plann	<u> ing</u>
	<u>Panel</u>	
	File Number: 10/0217842	23
	******* CONFIDENTIAL *******	
'It is	recommended that the Press and Public be excluded from the meeting in regard to the following item.'	ne
113:	Fairfield Showground Master Plan 2017	
113.	Fairlieid Showground Master Flair 2017	
	CONFIDENTIAL - It is recommended that the Council resolve into Closed Session	with
	the press and public excluded to allow consideration of this item, as provided for ur	nder
	Section 10A(2)(c)(d(i))(d(ii)) of the Local Government Act, 1993, on the grounds that	t:
	(i) information that would, if disclosed, confer a commercial advantage on a per with whom the council is conducting (or proposes to conduct) business; and	son
	(ii) commercial information of a confidential nature that would, if disclosed prejud	dice
	the commercial position of the person who supplied it; and	
	(iii) commercial information of a confidential nature that would, if disclosed confidential	er a
	commercial advantage on a competitor of the council.	
	and dealing with the matter in Open Session would be, on balance, contrary to	the
	public interest.	
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SECTION A

'Matters referred to Council for its decision'

Meeting Date 12 September 2017

Item Number, 103

SUBJECT: Heritage Grants Program 2017 - 2018

FILE NUMBER: 16/19907

REPORT BY: Estelle Grech, Strategic Planner

RECOMMENDATION:

That:

- 1. Council endorse the carry forward of previous years unspent Heritage Grant Funds to the value of seven thousand, five hundred dollars (\$7,500.00) to the 2017-18 Heritage Grants Program.
- 2. Council endorse the allocation of Heritage Grants for the 2017 18 Budget totalling twenty three thousand, four hundred and sixty four dollars (\$23,464.00) for the maintenance of local heritage items as follows:
 - 2.1. Grant of four thousand, seven hundred and twenty-one dollars and fifty cents (\$4,721.50) for 1900-1904 The Horsley Drive Horsley Park (Horsley Homestead) to repair fretting brickwork, plastering and replacement of veranda beam on a dollar for dollar basis.
 - 2.2. Grant of two thousand, six hundred and forty dollars (\$2,640.00) for 161 Polding Street Smithfield to repair numerous large cracks with metal staple system and render on a dollar for dollar basis.
 - 2.3. Grant of three thousand, three hundred and thirteen dollars and fifty cents (\$3,313.50) for 87 Thorney Road Fairfield West to repair crumbling lime mortar and relaying of missing brickwork on a dollar for dollar basis.
 - 2.4. Grant of four thousand, six hundred and twenty five dollars (\$4,625.00) for 43 Stimson Street Smithfield to replace rusted veranda rood and gutters and spray under house for termite prevention on a dollar for dollar basis.
 - 2.5. Grant of eight hundred and twenty five dollars (\$825.00) for 30 Frederick Street Fairfield for termite prevention treatment on a dollar for dollar basis.
 - 2.6. Grant of five thousand dollars (\$5,000.00) for 9 Hawkesbury Street Fairfield West to repaint outside walls, doors and veranda roofing, window frame, repair window frame and replace window glass on a dollar for dollar basis up to the maximum grant amount of five thousand dollars (\$5,000.00).

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- 2.7. Grant of two thousand, three hundred and thirty nine dollars (\$2,339.00) for 2 Second Avenue Canley Vale to replace and repaint fascia board on a dollar for dollar basis up to the assigned value of the grant.
- 3. Should any of the above projects not proceed and funding become available, it is recommended that 2 Second Avenue is granted the maximum grant amount of five thousand dollars (\$5,000.00).

SUPPORTING DOCUMENTS:

AT-A Heritage Grant Applications 2017 -18

2 Pages

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

Each year, Council provides owners of heritage properties listed in the heritage schedule of Council's Local Environmental Plans the opportunity to apply for grant funding under Council's Heritage Grants Policy.

The Policy allows for the allocation of up to \$5,000.00 per project for essential maintenance and repair work. The funding is provided to help owners maintain their property in acknowledgment of the contribution their properties make to the heritage value of the City.

This report recommends Council endorsement of heritage grant applications received for 2017 - 18 that have been assessed and prioritised according to need.

Attachment A shows each application, the grant funding amount they applied for, the priority and ranking and recommended allocation under this report. A confidential memorandum will be circulated to Councillors detailing Applicant names and addresses for all Heritage Grant Applications prior to the Outcomes Meeting.

REPORT

Council's Heritage Grants Program is one of Council's key strategies in supporting the maintenance needs of the 100 listed heritage items in the City, the largest group being residential properties.

Each year Council invites owners of heritage properties listed within Fairfield Local Environmental Plans to seek financial assistance for essential maintenance and repair work up to \$5,000.00 per project, on a dollar for dollar basis for minor building alterations.

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Council requires applicants to submit their proposed project, with an attached quote and images of the proposed works. The quote and supporting information assist the Heritage Advisor to undertake the initial assessment of applications received.

Under special circumstances, where the integrity of a heritage item is under threat due to serious damage resulting from a lack of timely intervention, Council's policy allows consideration to be given to an arrangement where Council will allocate 2 dollars for every 1 dollar spent by the owner, subject to availability of funds and identified need. No application in the 2017 – 18 round of funding is seeking a 2 dollar for every 1 dollar arrangement.

To ensure that the administration of the Heritage Grants Program is conducted in a fair and transparent manner, an assessment by Council's Heritage Advisor of all applications is undertaken according to set criteria shown below to ensure funds are spent where needed most:

Priority of work				Priority of allocation		
Essential	High		Low	1 st	owner occupiers of residential properties	
work for structural integrity	High	1 Essential	2. Desirable	2 nd	residential properties that are leased	
	Low	2. Desirable	3 Optional	3 rd	community groups and commercial properties	
Impact of work on heritage item and its value to community				4 th	Council properties if there are any unallocated funds	

Council has \$15,964.00 allocated to Heritage Grants on the Heritage Program Budget. Due to the number of essential maintenance and repair projects, it is proposed that an additional \$7,500.00 from previous years unspent heritage funds is allocated to the 2017-18 Heritage Grants Program. In total, \$23,464.00 is available for allocation.

Assessment of Heritage Grants Applications Received for 2017 - 2018

In July 2017, letters were sent to all eligible heritage item owners inviting to submit applications for a heritage grant to assist in the funding of maintenance work.

As detailed in Attachment A, 8 applications were received and ranked by Council's Heritage Advisor in accordance with the Heritage Grant Policy Criteria. The priority of the item and the proposed works were taken into consideration.

Once Council advises applicants that their applications have been successful, works are required to be completed as approved by the required deadline. Prior to preapproved grant funds being paid to applicants, works are inspected by Council's Heritage Advisor and paid invoices are required to be submitted.

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A confidential memorandum will be circulated to Councillors detailing Applicant names and addresses for all Heritage Grant Applications prior to the Meeting.

Overview of Heritage Application Supported

The priority for grant allocation is recommended by Council's Heritage Advisor. Based on the assessment, cost of works and available budget, Council is able to offer grant funding to the following applications:

1. <u>1900-1904 The Horsley Drive Horsley Park (Horsley Homestead)</u>

Work: Repair fretting brickwork to main house; plaster repaired brickwork and repair plaster works to main house. Replace 3m length of veranda beam to rear veranda.

Assessment: The application is essential and supported with high priority as it involves structural repairs to a State Heritage Item.

Recommendation: Based on the above independent advice, Council's Heritage Advisor recommends that Council support the grant application on a dollar for dollar basis. The State significant item consists of a group of buildings with extensive ongoing maintenance and works required to ensure the item's structural integrity.

Please note: This Application has been submitted by a current Council employee however has been assessed by Council's independent Heritage Advisor, and in accordance with the Heritage Grants policy, residential State significant items are given first priority for grant funding.

2. 161 Polding Street Fairfield Heights (Two storey Victorian period residence).

Work: Repair numerous large cracks in the render and brick work of internal walls with metal staple system and render.

Assessment: The proposed works are essential as they include structural and load-bearing elements which are essential for the preservation of the heritage item.

Recommendation: That Council support the grant application on a dollar for every dollar basis up to the maximum grant amount of \$5,000.00.

4. 87 Thorney Road, Fairfield West (Early federation period residence)

Work: Repair crumbling/decaying lime mortar, relaying of missing brick work.

Recommendation: Repairs to structural and load-bearing elements are essential from both a safety and heritage perspective.

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4. <u>43 Stimson Street, Smithfield</u> (Victorian Georgian style house)

Work: Replace rusted veranda roof and gutters with shale grey colourbond (in keeping with the roof previously repaired under the heritage grants program). Spray under house with termite prevention.

Assessment: The proposed repairs and pest measures are desirable as they will augment rainwater and termite prevention. This application follows other applications that have consistently sought to secure the structural integrity of what was a run-down building in danger of being lost prior to purchase by the current owner.

Recommendation: Council's Heritage Advisor recommends that Council support the grant application on a dollar for dollar basis.

5. 30 Frederick Street, Fairfield

Work: Termite prevention treatment

Assessment: The proposed works are desirable as termite prevention will help to maintain the integrity of the item for preservation into the future.

Recommendation: Council's Heritage Advisor recommends that Council support the grant application on a dollar for dollar basis.

6. 9 Hawkesbury Street Fairfield West

Work: Repair and maintenance works including repainting outside walls, doors and veranda roofing, replace broken window glass, repair window frame, repaint window

Assessment: The proposed works are desirable as maintenance works which improve presentation of the item and conservation of important elements such as the windows and chimney.

Recommendation: That Council support the grant application on a dollar for every dollar basis up to the maximum grant amount of \$5,000.00.

7. 2 Second Avenue, Canley Vale

Work: Replace the fascia board and paint to restore it to its original state

Assessment: The proposed works are desirable as it will increase the amenity of the item, supporting the cultural richness of the City.

Recommendation: As the project is ranked seventh in priority under the Heritage Grants Policy criteria, it is proposed that the remaining \$2,339.00 available of funding is granted.

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Should any of the above projects not proceed and funding become available, it is recommended that 2 Second Avenue is granted the maximum grant amount of \$5,000.00.

Overview of Applications Not Supported

One other application was made for the 2016 - 17 grants program, however was not supported as it was not considered to be an essential work and of lowest priority.

The application was for 136 John St, Cabramatta to remove existing soil, replace with new topsoil and lay new turf.

The works were considered not essential, or directly related to the maintenance of the item by Council's Heritage Adviser and subsequently will receive no funding in the 2017 – 18 Heritage Grants Program.

CONCLUSION

Council's Heritage Grants Program is one of Council's key strategies in supporting the maintenance needs of the 100 listed heritage items in the City, with grants for residential properties being particularly vital in the ongoing preservation of heritage in the city.

Following the assessment of Heritage Grant Applications for 2016-2017, it is recommended that the following projects be approved for the funding amounts nominated below:

- 1. Grant of \$4,721.50 for 1900-1904 The Horsley Drive, Horsley Park (Horsley Homestead) to repair fretting brickwork, plastering and replacement of veranda beam on a dollar for dollar basis.
- 2. Grant of \$2,640.00 for 161 Polding Street, Smithfield to repair numerous large cracks with metal staple system and render on a dollar for dollar basis.
- 3. Grant of \$3,313.50 for 87 Thorney Road, Fairfield West to repair crumbling lime mortar and relaying of missing brickwork on a dollar for dollar basis.
- 4. Grant of \$4,625.00 for 43 Stimson Street, Smithfield to replace rusted veranda rood and gutters and spray under house for termite prevention on a dollar for dollar basis.
- 5. Grant of \$825.00 for 30 Frederick Street, Fairfield for termite prevention treatment on a dollar for dollar basis.
- 6. Grant of \$5,000.00 for 9 Hawkesbury Street, Fairfield West to repaint outside walls, doors and veranda roofing, window frame, repair window frame and replace window glass on a dollar for dollar basis up to the maximum grant amount of \$5,000.00.
- 7. Grant of \$2,339.00 for 2 Second Avenue, Canley Vale to replace and repaint fascia board on a dollar for dollar basis up to the assigned value of the grant.

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Should any of the above projects not proceed and funding become available, it is recommended that 2 Second Avenue is granted the maximum grant amount of \$5,000.00.

Estelle Grech
Strategic Planner

Authorisation:

Executive Strategic Planner

Outcomes Committee - 12 September 2017

File Name: OUT120917_5.DOC

***** END OF ITEM 103 *****

Attachment A

Fairfield City Council Heritage Grant Program Applications 2017 – 18

ltem	Work proposed and Assessed by Council's Heritage Advisor	Description of Item	Cost of works \$	Grant Funding Applied for \$	Allocation Priority	Ranking	Recommended allocation
1900 – 1904 The Horsley Drive, Horsley Park	Repair fretting brickwork to main house; apply sacrificial plaster to the repaired brickwork. Plaster repaired brickwork once sacrificial plaster removed. Repair plaster works to main house. Replace 3m length of veranda beam to rear veranda. Heritage Comment – This application is supported with high priority, as it affects structural repairs to a State Heritage Item.	A State significant heritage item, with historical, aesthetic and social significance regarding Australia's European history. The property is representative of the style of Indian colonial architecture.	\$9,443.50	\$4,721.50	1	1	\$4,721.50 Dollar for dollar
161 Polding Street, Smithfield	Repair numerous large cracks in the render and brick work of internal walls with metal staple system and render. Heritage Comment – repairs include structural and loadbearing elements which are essential for the preservation of the heritage item.	Distinctive, individually designed, turn-of the 20 th century house, significant for its association with Walter Stimson, an influential property holder and alderman.	\$5,280.00	\$2,640.00	1	2	\$2,640.00 Dollar for dollar
87 Thorney Road, Fairfield West	Repair of crumbling/decaying lime mortar, relaying missing brick work Heritage Comment – repairs to structural and load-bearing elements are important from both a safety and heritage perspective.	Early Federation period residence. One of the first built. Good example of a traditional Georgian design, with wrap windows of special note	\$6,627.00	\$3,313.50	1	3	\$3,313.50 Dollar for dollar
43 Stimson Street, Smithfield	Replace rusted veranda roof and gutters with shale grey colourbond Spray under house with termite prevention Heritage Comment – repairs and pest measures are desirable as they will augment rainwater and termite prevention	Typical example of a Victorian Georgian style house, with large veranda supported on original posts. Of social and historical significance as the home of a former Mayor.	\$9,250.00	\$4,625.00	2	4	\$4,625.00 Dollar for dollar

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Attachment A

30 Frederick Street, Fairfield	Termite prevention treatment Heritage Comment – termite prevention will help to maintain the integrity of the item for preservation into the future	One of three small federation cottages. Rare local example of a surviving row of matching designs. Important streetscape contribution as a group.	\$1,650.00	\$825.00	2	5	\$825.00 Dollar for dollar
9 Hawkesbury Street, Fairfield West	Repair and maintenance works including repainting outside walls, doors and veranda roofing, replace broken window glass, repair window frame, repaint window Heritage Comment - Maintenance works which improve presentation of the item and conservation of important elements (e.g. window, chimney).	Distinctive, individually designed, turn-of-the-century house. Significant for its association with Walter Stimson, an influential property holder and alderman.	\$12,000.00	\$5,000.00	2	6	\$5000.00 Dollar for dollar up to the maximum grant amount of \$5000.00
2 Second Avenue, Canley Vale	Replace the fascia board and paint to restore it to their original state. Heritage Comment – While not a structurally essential form of repair, it will increase the amenity of the item.	A striking building in late 20th century Immigrants' Nostalgic style, reflecting traditional Chinese Buddhist temples, and a focus of community sentiment for Chinese people in Fairfield.	\$10,000.00	\$5,000.00	3	7	\$2,339.00 Dollar for dollar up to available budget Eligible for \$5000.00 dollar for dollar funding in any second round of funding
136 John St, Cabramatta	Remove some existing soil, replace with new topsoil and lay new turf Heritage Comment – may have an impact on the amenity of the Russian Orthodox Church, however not essential or directly related to the heritage item	An example of late 20th century Immigrant Nostalgic architecture. Of major social significance as a meeting place for the City and the region's Russian Orthodox community.	\$9,680.00	\$4,840.00	3	8	Not supported \$0

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Item Number, 104

SUBJECT: Stormwater Management Policy

FILE NUMBER: 15/21306

PREVIOUS ITEMS: 40 - Public Exhibition of the Updated Stormwater Management Policy -

Outcomes Committee - 11 April 2017

REPORT BY: Nona Ruddell, Team Leader - Catchment

RECOMMENDATION:

That the Stormwater Management Policy be adopted.

SUPPORTING DOCUMENTS:

AT-A Stormwater Management PolicyAT-B Stormwater Management Policy - Fact Sheet

134 Pages

2 Pages

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

Council officers have undertaken a review of Council's policies related to stormwater management. The draft Stormwater Management Policy has been created, and was placed on public exhibition to allow the various users of the document to provide their feedback.

There were relatively few comments regarding the draft policy, with only 2 minor recommendations for changes, and several people commented they are pleased that the draft policy is coming into line with State Government Policy and closer to the standards of our surrounding councils.

The draft policy has been updated with the feedback provided during the public exhibition period and is now ready for Council adoption (Attachment A).

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Background

Development within Fairfield City LGA is in the process of change. We are starting to see an increased rate of infill development in our older suburbs, at a higher density than previously seen. Whilst Council can direct development with our zoning and strategic land use planning process, we are also facing other external factors for which we have limited control, such as State Government policies.

As more of our favourable sites are developed, we are seeing development shift towards those sites which are less favourable. These sites often have the simple issue of poor topography – they drain away from the street. We are finding that more time is being spent on designing drainage systems in line with our policies, or worse, our policies are being ignored.

With these pressures, and the fact that our policies were over 15 years old, it was recognised by council that we needed to improve our stormwater policy and procedures.

The main aims of the policy update were to:

- Ensure the policy is easy to use;
- Condense Council's 4 stormwater policies into 1 central document;
- Compare our standards with those of other surrounding councils to ensure we are inline; and
- Ensure we are using current best practice engineering.

Policy comparison with surrounding councils

The policy review process was started with a comparison of Fairfield City Council's stance on major policy items with those of our surrounding councils, with a focus on the following 6 major issues:

- Policy flexibility;
- Charged lines;
- Pump out systems;
- Absorption trenches;
- On-Site Detention (OSD) for single dwellings and dual occupancy; and
- Water quantity (conservation) and quality improvements for commercial and industrial development.

It was found that Council's existing stormwater policies are neither consistently more nor less onerous then those of our surrounding councils. The main distinctions between the councils is of those experiencing predominantly infill development like Fairfield (i.e. Bankstown, Holroyd, and Parramatta), and those that have heavy clay soils as per Fairfield (i.e. Holroyd, Blacktown and Penrith). The comparison was used to inform the direction Council should take regarding these major policy issues.

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Policy Update

The 4 main aims of the policy update were addressed by creating the draft Stormwater Management Policy. With a focus on the 6 major issues listed above, the draft policy was created after consultation with Council's Engineering Assessment, Development Planning and Asset Management branches. Other smaller changes were also made to improve the development drainage design and construction process.

Public Exhibition and Consultation

The draft Stormwater Management Policy was placed on public exhibition from 25 May 2017 to 30 June 2017. The following activities took place as part of the exhibition and consultation process;

- Dedicated webpage on Council's website with a link to the document and the ability to 'Have your say' and provide your comments;
- Public notice within the Fairfield Champion to inform the community that there are changes and that the draft policy can be viewed online;
- Emails with information regarding the draft policy and upcoming forum were sent to all known involved/interested people;
- Flyers informing of the draft policy and upcoming forum were handed out when development applications were lodged and when enquiries were made regarding development; and
- Forum held on 21 June 2017 with engineers, architects and private certifiers to discuss the draft policy.

The forum was held on 21 June 2017 at Council's Administration Centre with 10 engineers and private certifiers attending. The attendees were taken through the proposed changes, and discussions were held regarding how the draft policy fits with current State Government Policy and building standards. Overall the policy changes were viewed favourably, with participants pleased that Council was coming into line with State Government Policy and closer to the standards of our surrounding councils.

Only 2 submissions were received via email regarding the draft policy, with minor recommendations for changes to the draft policy.

Engineering Best Practice and Further Investigation

Further investigation was undertaken to respond to enquiries from both Council and external engineers that arose just before and during the public exhibition period. The outcomes are detailed below.

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Use of rainwater tanks for on-site detention systems

On-site detention is a critical aspect of drainage for larger developments within the Local Government Area. Traditionally on-site detention tanks fill with stormwater from the site and then release it slowly into the drainage system. This ensures that the increased impervious area in the development site does not increase flows into our drainage system and in turn increase flooding locally or downstream (such as Prospect Creek around Fairfield and Carramar).

On-site detention tanks are separate to the rainwater tanks that collect roof water for reuse as per BASIX requirements. This is because rainwater tanks are designed to hold water for reuse for as long as possible – the less you need to top up from the mains water supply the better. But on-site detention tanks are designed to be empty as often as possible – they do not hold onto water, rather release it slowly back into the drainage system to not increase flooding.

Therefore, on-site detention tanks operate exactly opposite to rainwater tanks, and are not able to be used as the same device. If a developer wishes to use a traditional rainwater tank for on-site detention, this is permissible in some circumstances, but only the area above the outlet can be classified as on-site detention as shown in Figure 1.

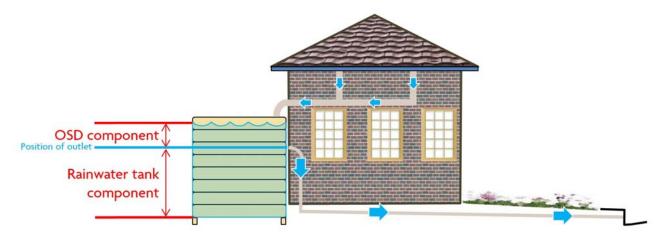


Figure 1 – Use of rainwater for water reuse and OSD

Charged line - deemed to comply solution

Initially it was proposed that the deemed to comply solution for the charged line only required that the line provided 900mm of charge. After further investigation and commentary during the public exhibition process, it was determined that there are circumstances where providing 900mm of charge would not be enough. Those circumstances include when the drainage line to the street is very long, or where the roof area that is being drained is very large. Therefore the deemed to comply solution has been changed as per Figure 2.

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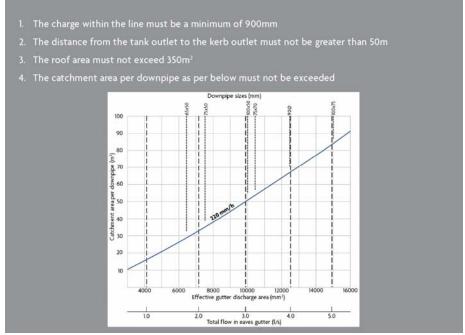


Figure 2 - Charged line deemed to comply solution

It is not anticipated that the additional constraints (pipe length and roof size) will impact many houses using charged lines. There are many design techniques around these limitations including using several charged lines to reduce the roof size and pipe length for each system. Additionally, if the developer cannot meet the deemed to comply solution, they are always able to provide hydraulic calculations to prove the charged line design can be achieved.

Basement car parking - sump size

During the workshop with engineers and private certifiers, it was brought to our attention that the minimum sump size within the Plumbing and Drainage AS/NZS 3500.3, no matter the area draining to it, is 3m². The deemed to comply solution for basement car parking has been updated to satisfy this minimum requirement.

Policy adoption

Sunset period

Once the draft Stormwater Management Policy is adopted, it is proposed that Council impose a 3 month sunset period on the 4 policies it is replacing (Stormwater Drainage Policy 2002, Urban Area On Site Detention Handbook 1997, Rural Area On-Site Detention Guidelines 1995 and Pump Out Drainage Systems 1998).

This sunset period will finish on 31 December 2017, meaning that until then, development applications can use either the new or old policies for guiding the design of their development. All development applications received from 1 January 2018 onwards will need to implement the draft Stormwater Management Policy 2017 in their stormwater designs.

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Policy education

Once the draft policy has been adopted, an education campaign will be implemented to ensure developers and designers are aware of the policy contents. It will be focused within the first three months during the sunset period, with a reduced campaign after this to help those new to the process. The following will be undertaken as part of the campaign:

- Information flyers letting people know the policy is in place will be provided to all people submitting a development application or making development enquiries, in addition to any other appropriate contacts.
- Dedicated webpage with update information and a link to the policy.
- Fact sheet #1 regarding drainage for properties that slope away from the street (Attachment B).
- Education events and additional fact sheets as required dependant on frequently asked questions from our residents and developers.

Future Actions

There were several factors that contributed to the four existing Fairfield City Council stormwater management policies becoming out-dated. It is anticipated that the following process improvements be undertaken to ensure the draft Stormwater Management Policy remains relevant;

- Update of Fairfield Citywide Development Control Plan (DCP) the principles of the draft Stormwater Management Policy shall be incorporated into the DCP to ensure consistency. It is expected that these changes will be presented to the October 2017 Outcomes Committee.
- Introduce a yearly review process this may not have any outcome some years, however the process should be undertaken regularly to ensure it is not left to stagnate for another 15 years.
- Australian Rainfall and Runoff 2016 a new hydrology and hydraulics standard has recently been released. Once processes for its use are in place, Council will reflect these in the policy.
- On-Site Detention for the future OSD scenarios must be modelled to understand the impact of increased imperviousness due to development within the Fairfield Local Government Area (LGA). Council's current OSD standards were created in the late 1990's, using assumptions regarding how much impervious area there would be in the LGA in the future. That assumption did not accurately predict the impervious area, and the calculations need to be revisited to ensure Council continues to protect our rural creeks and the flood affected properties of Lower Prospect Creek.

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CONCLUSION

The Fairfield City Council draft Stormwater Management Policy has been updated to meet the 4 main aims of having 1 policy that is easy to use, is in-line with surrounding councils and follows engineering best practice.

Consultation has shown that the policy changes are viewed favourably, with most pleased that Council was coming into line with State Government Policy and closer to the standards of our surrounding councils.

The adoption of this draft policy will see development continue throughout the LGA with less hindrance from stormwater management issues while still meeting the required standards.

Nona Ruddell

Team Leader - Catchment

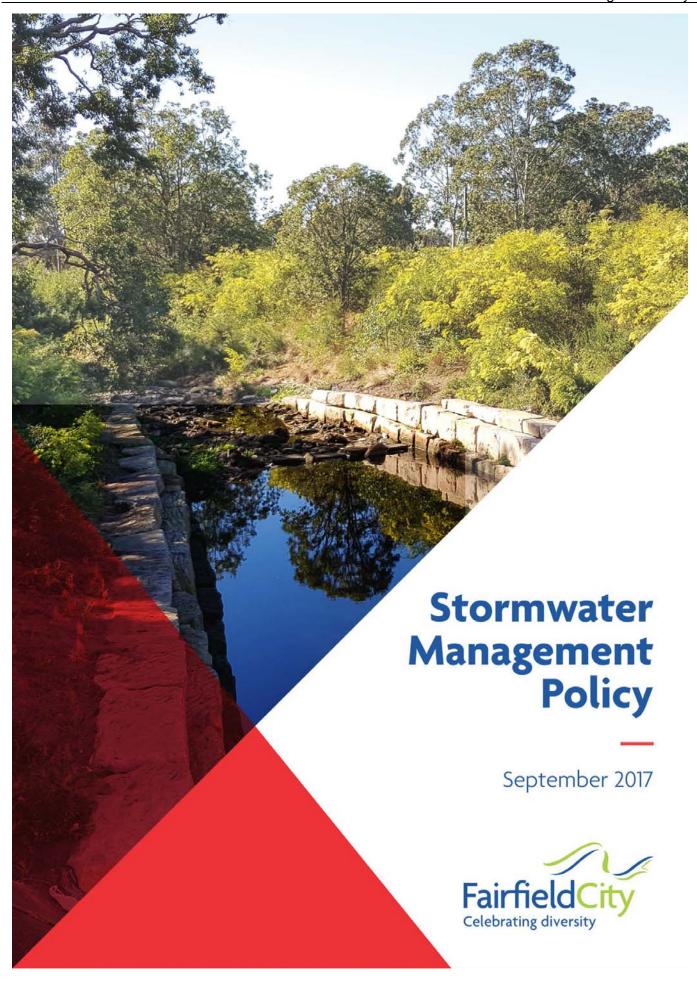
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Manager Catchment Planning
Acting Group Manager City Strategic Planning

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** END OF ITEM 104 *****





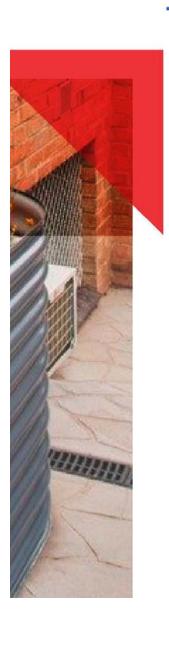
Front Cover Photos

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Fairfield City Council Stormwater Management Policy April 2017. Released for comment and review only. Not to be used to guide development within the Fairfield Local Government Area.



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6 Appendices

AVERAGE RECURRENCE INTERVAL (ARI) - the average time interval (expressed in years or fraction of years) between recurrences of a rainfall event of a given intensity and duration.

DETENTION – refers to the holding of stormwater for short time periods aimed at reducing peak flows. The detained stormwater is released to the stormwater system following the peak flow event.

FREEBOARD – A margin of safety applied to calculations that estimate the water surface during a storm event. The freeboard accounts for the inaccuracies in calculation methods. The height between water level and the underside of a structure or top of an embankment/channel wall is referred to as freeboard.

GROUNDWATER - water contained within the voids and spaces in rocks or soils

IMPERVIOUS – a surface that does not allow water to infiltrate into the ground, including roofs, roads, pavements, hard surfaced sports courts, any "sealed" areas and permanent water bodies such as swimming pools.

INFILTRATION – the downward movement of water from the surface to the subsoil.

INTERALLOTMENT DRAINAGE – common stormwater drainage system that serves one or more private properties.

LAND APPLICATION SYSTEM - an ecologically sustainable method of applying treated or untreated wastewater to land which also does not cause an additional public health risk nor detracts from the local amenity of the area.

NON-POTABLE WATER – water that is to be used for non-drinking purposes such as toilet flushing, laundry use, garden watering, car washing, etc.

OVERLAND FLOW PATH —the path that stormwater may take if the piped or channelled stormwater system becomes blocked or its capacity exceeded. Overland flow paths provide a fail-safe system to ensure that stormwater is not likely to cause flood damage.

PEAK FLOWS – the maximum instantaneous outflow from a catchment during a storm event.

PERMISSIBLE SITE DISCHARGE – the maximum discharge from the site during a 1 in 5 year ARI storm event under pre-development (existing) site conditions.

Gloassary

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PERVIOUS - a surface that permits water to infiltrate into the ground.

POTABLE WATER - water that may be consumed.

PUMP-OUT SYSTEMS – a system comprising pumps and pipes to convey stormwater from a stormwater sump or storage to a gravity draining stormwater system.

ROOFWATER - rain (water) that falls on the roof of a building.

RETENTION – the storing of a form of water for beneficial use. Can apply to all forms of water including rainwater, stormwater and recycled water. May occur by storing water in a tank or by infiltration.

RUNOFF - interchangeable with stormwater (see Stormwater).

SEWAGE – any form of wastewater (refer to Wastewater) connected to the sewerage system.

SOIL & WATER MANAGEMENT PLAN (SWMP) - strategies and controls for a development or site to prevent pollution of the environment from all pollutants during the construction stage.

STORMWATER – rainfall that is concentrated after it runs off all urban surfaces such as roofs, pavements, carparks, roads, gardens and vegetated open space and includes water in stormwater pipes and channels.

SUMP – a cavity or depression where water drains to and which may then be pumped out.

WATER SENSITIVE URBAN DESIGN – a design approach promoting sustainable management of the total water cycle through the ecologically sensitive design of homes, streets (and their drainage systems) and whole suburbs.



8 Gloassary

ACRONYMS

Australian Rainfall and Runoff	PSD	Permissible Site Discharge
Average Recurrence Interval	RC	Reinforced Concrete (Pipe)
Australian Height Datum	RHS	Rectangular Hollow Section (Pipe)
The Building Sustainability Index,	ROL	Road Occupancy Licence
developed State Environmental Planning Policy	ROLA	Road Occupancy Licence Application
Complying Development Certificate	SEPP	State Environmental Planning Policy
Fibre Reinforced Concrete (Pipe)	SDP	Stormwater Design Plan
High Early Discharge	PSD	Permissible Site Discharge
Land Information Systems	SSR	Site Storage Requirements
Local Government AreA	TCP	Traffic Control Plan
Model for Urban Stormwater	WHS	Work Health and Safety
Improvement Conceptualisation	TMC	Transport Management Centre
Online Planned Incident System	TWL	Top Water Level
On-site detention.	WSUD	Water Sensitive Urban Design
	Average Recurrence Interval Australian Height Datum The Building Sustainability Index, developed State Environmental Planning Policy Complying Development Certificate Fibre Reinforced Concrete (Pipe) High Early Discharge Land Information Systems Local Government AreA Model for Urban Stormwater Improvement Conceptualisation Online Planned Incident System	Average Recurrence Interval RC Australian Height Datum RHS The Building Sustainability Index, developed State Environmental Planning Policy SEPP Complying Development Certificate Fibre Reinforced Concrete (Pipe) High Early Discharge SSR Land Information Systems Local Government AreA WHS Model for Urban Stormwater Improvement Conceptualisation TMC Online Planned Incident System TWL



Acronyms

0



1. INTRODUCTION

Stormwater management is an integral part of the planning and development process that requires careful consideration at the initial stages of a development to ensure a successful, fast and cost effective outcome. It has moved from the outlook of 'dealing with a nuisance' to focusing on the management of stormwater as a resource and discharging stormwater in a sustainable manner.

This policy aims to protect the Fairfield's existing and future residents, infrastructure and environment by providing guidance on stormwater controls to ensure that stormwater is managed effectively, consistently and sustainability. It focuses on providing a robust, safe and low maintenance stormwater system that is directly related to the impact of development being undertaken.

The policy also introduces Water Sensitive Urban Design (WSUD) elements to the stormwater outcomes of development in the Fairfield LGA for the first time. Whilst these targets are currently only required for specific industrial developments, Council encourages all developers to incorporate the elements of WSUD in their design process to improve aesthetics, reduce operational costs and enhance marketability of their developments to potential clients.

1.1. OUTLINE

As a consent authority, Council requires all developers to demonstrate that any development / building work proposed will comply with all relevant codes, standards and policies.

This policy is intended to provide a clear statement of objectives, requirements and methods relating to stormwater drainage for residential, commercial, industrial and all other types of development and applies to all land within the Fairfield Local Government Area. It is written in the order of consideration of the planning, design & construction phases of development

Adherence to the policy and provision of necessary will expedite Council approvals. This policy is not a comprehensive design manual, rather it is intended to be read in conjunction with and as a supplement to:

- State and Regional Environmental Planning Policies and Acts;
- Local Environmental Plans and Development Control Plans;
- · Fairfield City Council's Specification for Roadworks

and Drainage associated with subdivision or other development;

- · NSW Floodplain Development Manual;
- · Australian Rainfall & Runoff;
- · Australian Runoff Quality;
- · Building Code of Australia;
- · AS/NZS 3500.3-2015 Plumbing and Drainage; and
- NSW Housing's Managing Urban Stormwater
 – Soils and Construction.

Nothing in this policy is to be construed as limiting, in any way, Council's rights to impose differing conditions when approving development proposals, nor limiting the discretion of Council to vary any necessary engineering requirements in respect of a particular development, having regard to industry best practice.

In addition to the above, Council has introduced Performance Criteria throughout this document which exemplify the requirements of the chapter. If the prescriptive controls listed within the chapter are unable to met, the developer may work towards other methods that meet the performance criteria.

Introduction

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1.2. DOCUMENT STRUCTURE

This document has six sections which cover the components of managing stormwater drainage when undertaking development in Fairfield City Council. An outline of these sections is as follows:

SECTION 1: INTRODUCTION TO THE POLICY

An introduction to the intent of the Policy, its structure and application to development proposals.

SECTION 2: APPROVAL & CONSTRUCTION PROCESS

The approval and construction process including submission guidelines

SECTION 3: DISPOSAL OF STORMWATER AND CONNECTION TO COUNCIL'S STORMWATER SYSTEM

Objectives, controls and design considerations for stormwater drainage, in terms of collecting and controlling stormwater runoff to an approved point of discharge.

SECTION 4: ON-SITE DETENTION SYSTEMS

Objectives, controls and design considerations for On-Site Detention design in the Fairfield LGA

SECTION 5: WATER CONSERVATION REQUIREMENTS

Objectives, controls and design considerations for water conservation in the Fairfield LGA

SECTION 6: WATER QUALITY IMPROVEMENT SYSTEMS

Objectives, controls and design considerations for Water Quality Improvement design in the Fairfield LGA

1.3. WHERE POLICY APPLIES

Table 1 – Stormwater Management Policy Requirements for development type

Landuse	Development Type	Stormwater Disposal	On-Site Detention	Water Conservation	Water Quality Improvement
la la	Alterations, additions and new dwelling houses and dual occupancy with imperviousness less than 70% for overall site	V	×	×	×
Residential	Alterations, additions and new dwelling houses and dual occupancy with imperviousness greater than 70% for overall site	V	V	×	×
	New town houses, villas & residential flat buildings	V	~	×	×
	Change in use	×	×	x	×
Commercial & Industrial	New premises, alterations & additions outside the Wetherill Park Industrial Area	V	V	×	~
	New premises, alterations & additions within the Wetherill Park Industrial Area	~	×	~	V

Information Required	Stormwater Design Plan	Deemed to comply	Deemed to comply or WSUD Strategy
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Stormwater Management Policy 2017



1.4. SELECTING CONSULTANTS

The choice of qualified and experienced consultants with an understanding of Council's requirements and relevant guidelines and standards can expedite the approval of developments submitted to Council. Experienced consultants are also more likely to provide a more amenable and cost effective design.

The design and certification of site drainage set out and OSD systems in this document will only be accepted from persons having suitable professional accreditation. The designer shall be a professional engineer registered, or eligible for registration, with the National Engineering Register in Civil or Environmental Engineering, specialising in stormwater design.

The designer shall identify their professional accreditation in the design submission with the Development Application, Construction Certificate and Works-as-Executed submission.

1.5. AVAILABLE INFORMATION

There is a wide range of information available from Council and other Authorities that can assist with planning your development. Please see the sections below for further details.

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1.5.1. MAINSTREAM AND OVERLAND FLOODING

Generic flood information can be found on Councils Flood Planning Maps, available in the Planning and Building section of Council's website. Site specific flooding information is provided via the Section 149 Certificate. To purchase the Flood Information Sheet, purchase the Section 149 (2) & (5) Planning Certificate for each lot. If the property is food affected, the Flood Information Sheet will provide the flood risk precincts as well flood levels (in mAHD) for a range of events.

1.5.2. PIPED STORMWATER DRAINAGE NETWORK

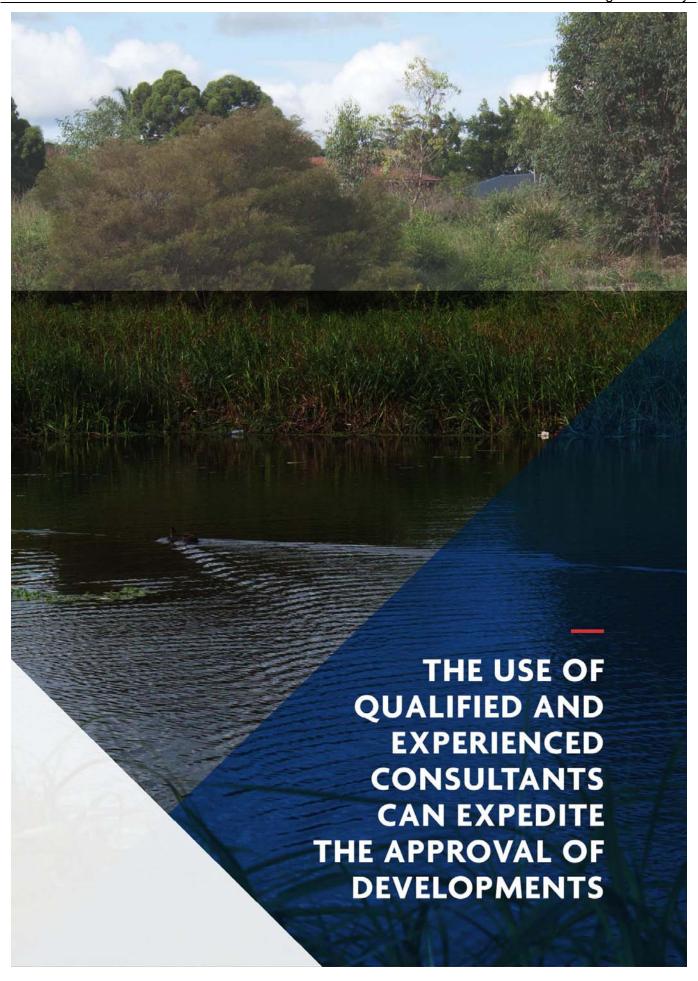
Maps are available for viewing at the Council's Customer Service desk. Maps are indicative only and the pipe network should be investigated on site. Copies of such maps cannot be purchased from Council.

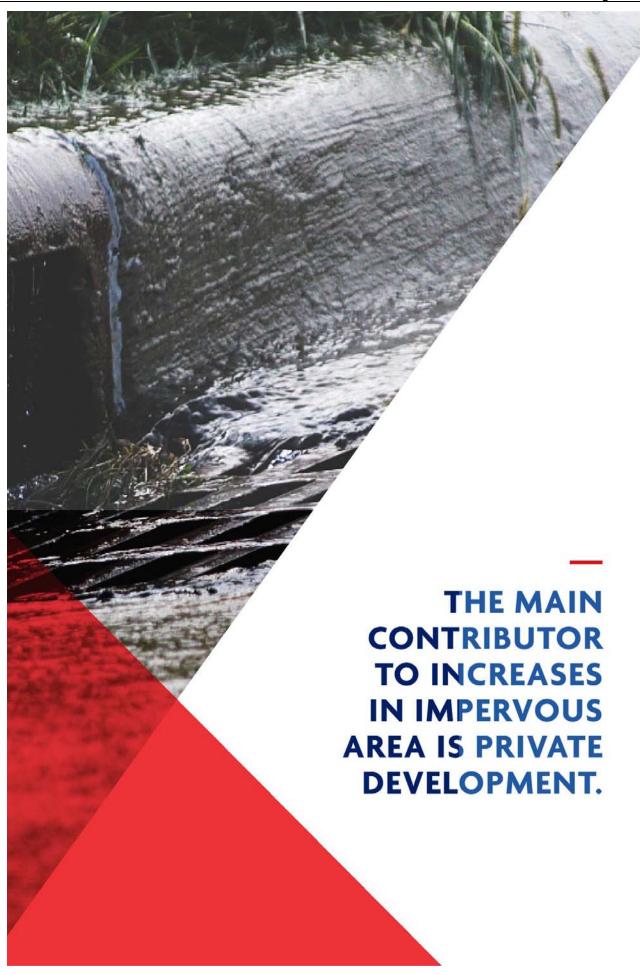
1.5.3. CONTOUR MAPS

Council can provide contour maps at 0.5m intervals for purchase to assist with determining the sites catchment size. Please contact Council's Land Information Systems (LIS) team on (02) 97250222.

1.5.4. UNDERGROUND UTILITIES

Dial Before You Dig is a referral service for information on locating underground utilities. The majority of underground utility owners in NSW are members and this free service can be contacted directly at www.1100.com.au.





2. APPROVAL AND CONSTRUCTION PROCESS

2.1. EXEMPT DEVELOPMENT

Exempt development is minor development which does not need any approval from Council. State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (Codes SEPP) details the type of development that is exempt development and outlines the general standards and specific requirements that must be met

.Even though no approval is required from Council, there may be other legislative or approval requirements such as licences and/or permits. Please check the most current version of the Codes SEPP contained on the NSW Government Legislation web site for more details:

http://www.legislation.nsw.gov.au/maintop/search/inforce

Seek advice from Council staff as to whether nominated exempt development types are applicable to your site and circumstances.

2.2. COMPLYING DEVELOPMENT

Complying development is a category of development which does not require development consent.If the development meets predetermined criteria a Complying Development Certificate (CDC) may be issued by Council or an accredited private certifier for that development. Development Consent is not required for development the subject of a CDC.

State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 (Codes SEPP) details the type of development that is complying development, and the standards that must be met.

The Codes SEPP contains the following development codes, which specify applicable development controls, as of 22 February 2014:

- · General Housing Code
- · Rural Housing Code
- · Housing Alterations Code

- · General Development Code
- · Commercial and Industrial Alterations Code
- Commercial and Industrial (New Buildings and Additions) Code
- Subdivisions Code
- · Demolition Code
- Fire Safety Code

To determine whether these codes apply to your property you should check your Planning Certificate (Section 149).

2.3. DEVELOPMENT APPLICATION

If your development proposal is not exempt or complying development under the provisions of the Codes SEPP, then you may need to lodge a Development Application with Council. Some examples of proposals which require the submission of a Development Application are:

- Dwelling houses and ancillary development that do not comply with the development standards nominated within the Codes SEPP.
- New residential flat buildings, multi dwelling housing development or dual occupancies.
- Heritage items Demolition or alteration of a building or place that is a heritage item.
- All new industrial buildings greater than 20,000m² in area.
- · All new commercial premises.
- Certain additions or alterations to existing commercial and industrial buildings that are not deemed as complying development under the Codes SEPP.

Please contact Fairfield City Council's Customer Service Centre on 9725 0222 and ask to speak with the Duty Planner if in doubt as to whether your proposal requires Council approval.

Approval and Construction Process

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2.3.1. STORMWATER DESIGN PLAN

All Development Applications will require a Stormwater Design Plan (SDP) that contains full stormwater system engineering design details and calculations. Two (2) printed copies of the SDP and one hard and soft (USB) copy of the design calculations are to be submitted. Where the development is integrated, one (1) additional printed copy will be required for each integrated component of the development. The designer shall be a professional engineer registered, or eligible for registration, with the National Engineering Register in Civil or Environmental Engineering, specialising in stormwater drainage.

The SDP will be required to meet all conditions of consent and Council's standards. For this purpose, the plans and supporting information submitted shall:

- Provide full and independent verification of the design proposed;
- Be of sufficient quality to enable accurate construction of the drainage system by a tradesman;
- Be in accordance with the Checklist provided in Appendix A

All plans are required to clearly show within the title block the company preparing the plans, contact details, date prepared, drawing numbers and revision details. SDP's that do not have all required information cannot be assessed.

If an On-Site Detention System is required as part of the development, the detailed design and DRAINS runoff routing calculations will need to be submitted as part of the SDP (see Section 4 for further information). A checklist is provided in Appendix B listing the additional On-Site Detention requirements that are to be submitted with the SDP.

2.3.2. DEEMED TO COMPLY

There are several 'Deemed to Comply' solutions throughout this policy which are designed to simplify design requirements for various development types. If these solutions are being used, they must be clearly stated on the Stormwater Design Plan. Any applicant may choose not to apply the following Deemed to Comply solution and instead provide all design details and calculations

2.3.3. WSUD STRATEGY

A Water Sensitive Urban Design Strategy is a written report detailing the stormwater quality control measures to be implemented as part of a development, and include the following detail:

- Proposed development Describe the proposed development at the site, including site boundaries and proposed land uses.
- WSUD objectives Identify the WSUD objectives that apply to the proposed development.
- Stormwater quality demonstrate how the stormwater quality targets will be met. It should include stormwater quality modelling results and identify the location, size and configuration of stormwater treatment measures proposed for the development.
- Details of MUSIC Modelling (or equivalent) Modelling parameters to determine the size and configuration of WSUD elements must be undertaken in MUSIC (or equivalent
- Costs Prepare capital and operation and maintenance cost estimates of proposed water cycle management measures. Both typical annual maintenance costs and corrective maintenance or renewal/adaptation costs should be included.
- Draft Operation and Maintenance plan An indicative list of inclusions in the maintenance plan is included in Checklist provided in Section 6 of this document
- Checklist outlining the details of the WSUD Strategy and reference of the information source.

2.4. CONSTRUCTION CERTIFICATE

2.4.1. CONSTRUCTION PLANS

It is expected that there will be minimal change between the approved SDP and Construction plans, other than the addition of minor construction details. If any details are proposed to change, an application to modify consent must be lodged.

2.4.2. EROSION AND SEDIMENT CONTROL PLAN

All development sites require provision to be made for sediment control on the site. The detail of the erosion and sediment control plan will vary considerably depending on the size of the site and potential of works to promote sediment release etc.

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An Erosion and Sediment Control plan is required for all development sites with a disturbed site area and shall be in accordance with the requirements outlined in the recent edition of the Landcom's "Managing Urban Stormwater – Soils and Construction".

Contact Council's Environmental Management Branch for more information. Penalties exist for non-compliance with erosion and sediment control requirements.

2.5. ENGINEERING APPROVAL - CONSTRUCTION CERTIFICATE

A separate Engineering Approval - Construction
Certificate will be required where it has been included
as a condition of development consent. A separate
Engineering Approval - Construction Certificate
will generally be required for works outside the
development site such as, but not limited to, interallotment drainage, extension of Council's drainage
system, major connections to the Council system,
roadworks or other significant activities.

Unless otherwise directed, three (3) copies of plans for Engineering Approval - Construction Certificate are required to be submitted to Council. Where the development is integrated one (1) additional hard and soft (USB) copy will be required for each integrated component of the development.

2.6. OCCUPATION CERTIFICATE

Work as Executed Plans/details required as part of the development consent are in general required to indicate whether the constructed works have conformed to the development consent and approved design. This requires that where a design level occurs on the approved plan a corresponding Works as Executed level is required to be given at this location. Also, any variations or amendments shall be clearly highlighted. Where the approved drainage system has been varied, calculations may be required to indicate that the constructed system performs to the appropriate standard.

If an On-Site Detention System was required as part of the development, the allowable construction tolerances are listed in Section 4.6.1. Where works are outside these tolerances, the defective work shall be rectified to comply with the approved design prior to construction certification and issue of an Occupation Certificate.



2.7. BONDS

Where works are proposed to be carried out on Council or public land (i.e. roads, parks etc) by or on behalf of an applicant, a bond may be required to cover the cost of the construction and potential rectification works. The value of the bond will depend on the works proposed, and be determined by Council's Engineering Assessment Branch upon issue of the Engineering Approval - Construction Certificate.

The bond shall consist of a Deed of Agreement and approved plans detailing the extent of works covered by the bond, and a cash deposit or bank guarantee. Council's standard Deed of Agreement can be obtained by contacting Council's Engineering Assessment Branch.

Application may be made for release of a bond upon:

- · Completion of bonded works;
- · Submission of works-as-executed plans;
- · Satisfactory final inspection by Council; and,
- · Payment of a Maintenance Bond.

The value of the Maintenance Bond will generally be 10% of the original bond, and generally be held for a period of twelve (12) months. The value and period of the bond may vary depending on the works being bonded.

An inspection will be carried out at the end of the maintenance period and if the works have performed satisfactorily over the period, the maintenance bond may be released.

A bond administration fee is payable in accordance with Council's Fees & Charges.

2.8. INSPECTIONS

Where works are to be carried out on a public roadway, involve inter-allotment drainage, or involve Council owned/operated structures, then advanced notice and inspections will be required at specified stages during the works to ensure compliance with Council's Specification for Roadworks and Drainage Associated with Subdivision or Other Development. The developer shall be required to pay for inspections in accordance with Council's Fees and Charges.

A minimum of one (1) working days' notice shall be given to Council to obtain an inspection. Works shall not commence until the works or activity covered by the inspection is approved.

2.9. TRAFFIC CONTROL AND SAFETY

Any works within the road reserve shall have adequate provision to ensure safety, considering the impact of the works on public transport and passengers, cyclists, pedestrians, motorists and commercial operations. Before works commence within the road reserve adequate controls shall be in place.

2.9.1. TRAFFIC MANAGEMENT PLAN

A Traffic Management Plan (TMP) integrates an activity into the operation of the road network. The plan assesses an activity's impact on traffic flow. It describes the activities being proposed, their impact on the general area and how these impacts are being addressed. A Traffic Management Plan may be requested by Council depending on the type of risks, and to address these risks.

2.9.2. RISK MANAGEMENT

The developer has a responsibility to undertake a risk assessment of the activities described in the road occupancy application, per the Work Health and Safety Act 2011.

Some of the risks that should be considered are listed below. If any of these risks are applicable, a Traffic Management Plan shall be submitted to address these risks

- · Proximity of work site to live traffic
- · Speed and volume of traffic
- Type of traffic (clear lane width is applicable to traffic flow)
- Noise levels (Office of Environment & Heritage has certain restrictions/requirements)
- Heavy weather, and other delays to project programming

2.9.3. TRAFFIC CONTROL PLAN

A Traffic Control Plan (TCP) is a document that shows how traffic is to be safely separated from workers at the work site or work route. Traffic Control Plans are to be prepared by RMS accredited persons.

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Stormwater Management Policy 2017

2.9.4. TRAFFIC CONTROL AT WORK SITES

The application of the principles outlined in Traffic Control at Work Sites manual (Version 4.0 issue June 2010) will ensure that road users will be able to travel through, past or around road and bridge work sites in safety. Adherence to the manual will also ensure that the workers will be able to work safely in the vicinity of road users and their vehicles and work site plant.

2.9.5. ROAD OCCUPANCY LICENCE

A Road Occupancy Licence (ROL) will be required approval from the Transport Management Centre (TMC) where works are proposed:

- · On a State Road;
- · Some unclassified (council) roads, which are considered critical to the efficient operation of major RMS Road Networks (please check with Council);
- · Signals within 100m of site; and
- · Roundabouts within 100m of the site.

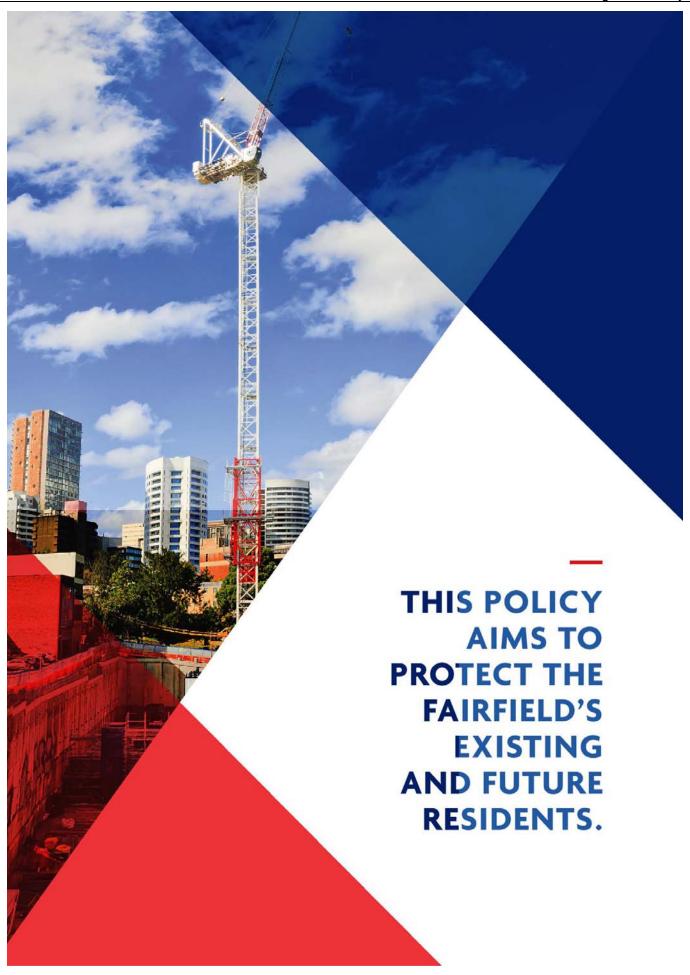
A ROL is required from local Council to undertake works on local roads. A traffic Control Plan must be submitted with all Road Occupancy Licences. The Traffic Control Plan must be endorsed with the name of the person preparing the plan along with their level of certified qualification and certificate number.

To submit a Road Occupancy Licence Application (ROLA) to Transport Management Centre the applicant is to use the Online Planned Incident System (OPLINC). To use the online system, the applicant must register at https://myrta.com/oplinc2.

2.9.6. UNLICENSED ROADWORKS

Obtaining an ROL for the specified activities is a legal requirement under Section 138 of the Roads Act. If a ROL is not obtained you will be forced to cease activities and will be required to remove all impacts on the traffic flow. A NSW Police Officer or the Authorised Road Officer may issue this direction.





3. DISPOSAL OF STORMWATER AND CONNECTION TO COUNCILS STORMWATER SYSTEM

3.1. OBJECTIVES

- To direct stormwater runoff to Council's drainage system without adversely impacting on adjoining or downstream properties.
- To ensure the efficient and effective planning, management and maintenance of Council's existing and future stormwater systems and reduce environmental and property damage.

 Stormwater drainage design shall be completed
 by a professional engineer registered, or eligible for registration, with the National Engineering Register in Civil or Environmental Engineering, specialising in stormwater design. All plans submitted for assessment shall be detailed design drawings to ensure Council

is satisfied thatall of the abovementioned

performance criteria have been met.

3.2. PERFORMANCE CRITERIA

- The following performance criteria apply to the collection and disposal of stormwater and connection to Councils stormwater system.
- To direct stormwater runoff from all impervious areas to Council's drainage system without adversely impacting on adjoining or downstream properties and to ensure the continued capacity of the stormwater network.
- The proposed development will follow the major/minor drainage system concept by providing the relevant infrastructure to discharge minor flows from the site and a well-defined overland flowpath to safely convey major flows.
- 4. All stormwater drainage must be via a gravity system where possible.
- All designs should not create any unnecessary maintenance burdens for existing or future owners of the site.
- The proposed development should not result in significant impacts on the amenity of the site and surrounding area.
- 7. The proposed development should not result in any increased risk to human life.
- The proposed development shall meet all Australian Standards, the Building Code of Australia and Australian Rainfall and Runoff design requirements.

3.3. DEVELOPMENT TO WHICH DISPOSAL OF STORMWATER AND CONNECTION TO COUNCILS STORMWATER SYSTEM APPLIES

This chapter applies to all development within the Fairfield LGA

3.4. CONTROLS

3.4.1. STANDARD GRAVITY CONNECTIONS

Stormwater runoff from all impervious areas in a site should be collected and directed to Council's kerb and gutter or underground drainage system by gravity. The following sections detail the requirements for standard gravity connections. Please see Appendix C for Council's design standards.

3.4.1.1. KERB AND GUTTER

Dwelling connections to street kerb and gutter shall be made by a standard kerb adaptor as shown in Figure 1, sewer grade pipe or 125 x 75 galvanised RHS. The outlet to the street should have a maximum 100 mm diameter section to allow re-instatement of kerb. The invert of the outlet pipe shall be placed 10 mm above the invert of the kerb. Multiple connections to the kerb will require the provision of a lintel over the outlet pipes.

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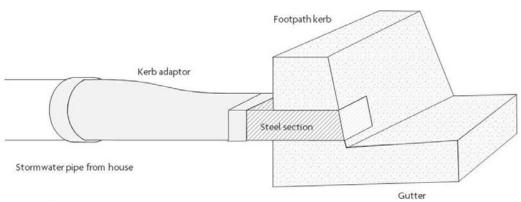


Figure 1 - Charged system configuration

When installing the street outlets, 300mm of kerb either side from the centre must be removed and replaced. If there is a joint within 600mm of the centre, concrete must be replaced up to the joint on that side.

Direct discharge to the kerb and gutter shall contained within three 125 x 75 galvanised RHS pipes. If site discharge is greater than this, a direct connection will be required to Council's underground pipe system. OSD can be provided where not required, or the provision of OSD can be increased, to limit discharge to the allowable requirements.

Where it can be demonstrated that gutter flow widths will not exceed 2 meters in front of and downstream of the development, and that pedestrian and vehicular safety is maintained, a higher discharge to the gutter may be permissible subject to the discretion of Council's Development Engineer.

3.4.1.2. COUNCIL'S PIPED DRAINAGE SYSTEM

Where stormwater disposal can be facilitated by direct connection to Council's piped trunk drainage system, connection to the system will be permissible by means of connection to an existing pit or construction of a new pit to Council's specification. Council will endeavour to keep the number of connections into its underground drainage system to a minimum.

Connecting to existing pits is the favoured method of connection and pipes connected to existing pits shall be cut flush with the internal wall of the pit and rendered. Depending on the pit condition, reconstruction may be required. The pipe should enter the pit perpendicular to the pit wall and all damage to the internal wall of the pit around the pipe connection shall be repaired to the satisfaction of Council's Subdivision Engineer. A bond will be taken for such works, prior to the issue of a Construction Certificate.

New pits are to be designed and constructed in accordance with the Design Process chapter of this policy and Council's Specification for Roadworks and Drainage Associated with Subdivision or Other Development. A separate Engineering Approval will be required for construction of a new street pit.

For property drainage systems up to 225 mm diameter, Council may consent connection to an existing Council drainage line via a slope junction providing Council's pipe diameter is three times greater than the proposed connection. Only one slope connection is permissible from the development to Council's system and should be made using an approved proprietary clamp or saddle. The connection shall be completed to the satisfaction of Council's Subdivision Inspector. A bond will be taken for such works, prior to the issue of a Construction Certificate.

3.4.1.3. TABLE DRAIN

In rural areas where no formal street gutter exists, discharge to an existing table drain will be permitted subject to the headwall and concrete dish pan at the outlet is not within 10m inside of the property boundary to prevent damage and erosion.

3.4.1.4.EXTENSION OF COUNCILS PIPED DRAINAGE SYSTEM

Consideration will be given to the extension of Council's system under the kerb and gutter or along a public road to facilitate disposal of stormwater from the property. A kerb inlet pit will need to be constructed at the junction of the internal drainage and extended street system. The extended system is to be a minimum 375 mm diameter rubber ring jointed reinforced concrete (RC) pipe or fibre reinforced concrete (FRC) pipe.

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A separate Engineering Approval for all works involving extension of Council's street drainage system will be required. Full hydraulic details are to be undertaken in accordance with Council's design standards as per the Design Process chapter in this document. Also refer to Council's specification for Road and Drainage Works Associated with Subdivision or Other Development for construction standards.

All design, construction and administration costs associated with extension of the drainage system within the public road shall be borne by the applicant and must allow for the relocation and restoration of all services, including any private works or infrastructure. A bond may be payable in accordance with section 2.7.

3.4.1.5. CONCRETE LINED CHANNELS

Council's concrete lined channels, especially within the Wetherill Park Industrial Area, have suitably sized stubs provided for the connection of the internal stormwater discharge for each lot backing onto the channel. Where a stub has been provided it is a requirement that the site drainage is designed to connect into this point. In all other cases the site drainage shall be made with a single connection to the channel.

A separate Engineering Construction Certificate will be required where a new connection to the channel is proposed. The following information is to be submitted with separate engineering plans for such a proposal:

- Connection detail including full construction notes;
- Longitudinal section for pipeline between the site boundary and channel; and
- Appropriate calculations including a hydraulic grade line analysis.

Any new pipe connections will be made at 45° to the channel. The pipe invert shall be in accordance with the diagram in appendix D and the developer must reinstate the lining of the channel at the connection point to Council's satisfaction.

A bond for such works will be determined from the approved details. The bond will be payable to Council prior to the release of the Engineering Approval. General detail has been provided in Appendix D for assistance in preparing a suitable connection design to the channel.

3.4.1.6. CREEKS AND NATURAL CHANNELS

Discharge to a suitable natural watercourse, creek or grassed channel may be allowed subject to approval by Council. The watercourse is to be protected against erosion at the point of discharge. In this regard an outfall apron or energy dissipation structure is to be provided in accordance with this Section. Stabilising a small length of the watercourse in the vicinity of the outlet is not appropriate as it can cause problems of erosion upstream and downstream of the stabilised section.

Only a single connection point to the watercourse from the development will be permissible.

The piping, covering or alteration of a natural watercourse will not be approved by Council. Instead, existing natural watercourses must be retained, along with any native vegetation within the riparian zone. In addition, the rehabilitation of degraded, piped or channelled watercourses to a more natural state will be encouraged and supported wherever possible.

If a stormwater connection is to be created, you must liaise with council to agree on a connection point. You must prepare a broad catchment plan to identify the most ideal locations to connect to the natural waterway. The plan must consider the:

- · land contours
- · location of infrastructure
- · intended land use

The proposed connection must be able to effectively service both the intended development and other future developments within the adjacent and/ or upstream area, and must not hinder overall future land management.

The discharge point must meet the following requirements to ensure the output flow does not adversely impact the waterway and the headwall is safe and stable:

- Outlet angle is to be no greater than 30 degrees in the direction of the channel flow.
- · The cover over the pipe must be a minimum of 300 mm
- · The pipe must finish flush with the headwall.
- The headwall shall be placed so as to avoid vertical drops of over 900 mm.
- For locations where the vertical drop is greater than 900 mm and where rock batters are steeper than 1H:IV, a safety fence must be installed to prevent falls.
- The headwall foundation must sit on a geotextile fabric of Bidim A44 or approved equivalent.
- Rock sizing and location should be in accordance with the 'Rock Sizing for Single Pipe Outlets" practice note produced by Catchments & Creeks P/L, available in Appendix E.

3.4.2. STORMWATER DRAINAGE TO REAR OF PROPERTY

If stormwater runoff from all impervious areas in a site cannot be collected and directed to Councils kerb and gutter or underground drainage system via gravity, stormwater may be disposed from the site through any of the options below where allowable circumstances exist. Please see Appendix C for Council's design standards.

Table 2 – Stormwater drainage to rear of property order of preference

Option (in order of preference)	Where it applies
1. Private drainage easement	Preferred option in all circumstances.
2. Through publicly owned land	When property drains to the rear towards a public reserve.
3. Charged system	Only allowed for dwelling houses, dwelling houses on narrow lots, secondary dwellings and attached dual occupancies where a private drainage easement cannot be acquired.
4. Elevated Line	Only allowed for basement car park areas as part of residential development (excluding secondary dwellings).
5. Pump out system	Only allowed for basement car park areas as part of residential development (excluding secondary dwellings).
6. Absorption trench	Only for minor paved areas of less than 50m ² where an elevated pipe or charged line system has been provided for the site, except for secondary dwellings.

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3.4.2.1.PRIVATE/INTER-ALLOTMENT DRAINAGE EASEMENT

Permitted for: All development.

Where the land falls away from the road or there is no provision for drainage to the street through public land, the applicant will be required to provide private drainage through an easement to carry the stormwater from the development to Council's drainage system. The following section highlights the development process, whilst Section provides design information.

DEVELOPMENT COMMENCEMENT

A Deferred Commencement may be issued for developments requiring inter-allotment drainage, although the consent will not become operative until the easement has been registered by the office of Land & Property Information NSW. Full design information for all inter-allotment drainage is to be provided with the plans submitted for approval.

The process for obtaining a private easement is:

- Request drainage easement through all required downstream properties (see Appendix F for sample letter)
- · Registered Surveyor to prepare plan of survey.
- Development application with easement and drainage plans to be submitted to Council for approval.
- If Development application acceptable deferred commencement provided
- Plan and application to be lodged with owners approval at NSW Land and Property Information and fees paid.
- · Council to be advised of lodgement details.
- NSW Land and Property Information advises applicant / owner and Council of registration.
- · Operational consent issued.
- Construction certificate issued

SEPARATE ENGINEERING APPROVAL

A separate Engineering Approval will be conditioned for approval of works relating to the private drainage line. Private drainage lines shall be constructed in accordance with Council's Specification for Roadwork and Drainage Associated with Subdivision or Other Development. Inspections shall be carried out during construction by Council's Subdivision Inspector or a private engineering certifier if applicable.

OCCUPATION/SUBDIVISION CERTIFICATE ISSUE

Prior to the issue of an Occupation Certificate or Subdivision Certificate, the developer will be required to submit work-as-executed plans and certification from a registered surveyor stating that all pipes, pits and associated structures for encroaching drainage lines are constructed wholly within their respective easements. Creation of the easement shall be as per the NSW Conveyancing Act 1919.

ENGINEERING PLAN DETAILS

Private drainage proposals shall be supported by the following details:

- Plan & Longitudinal section including appropriate invert and surface levels;
- · Connection detail to Council's system;
- Survey details of easement including all structures/features in the vicinity;
- Documentation confirming the easement is to be registered in favour of the land to be developed;
- Details of flow path for flows in excess of the pipe capacity; and
- Hydraulic Grade Line analysis of pipe and overland flowpath

Demonstration that an easement cannot be obtained

In order to use other drainage to rear options, it is necessary to demonstrate that an easement over all downhill neighbouring properties cannot be obtained.

To demonstrate that a drainage easement cannot be obtained, the following documentary evidence should be submitted to the consent or certifying authority:

- A copy of letter(s) sent to the owner(s) of neighbouring property(s) along all feasible easement routes. The letter is to include offer of financial compensation and is to indicate that the burdened property is not responsible for easement maintenance. Financial compensation will be determined by inquiry to a registered valuer.
- A signed copy of a letter(s) from the owner(s) of the neighbouring property(s) in which it is stated that an easement will not be granted. Should it not be possible to obtain such a letter(s) then a written account of any responses obtained from the owner(s) is required which may then be subject to independent verification by the certifying authority.

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3.4.2.2. THROUGH PUBLICLY OWNED LAND

Permitted for: All development.

Council will consider an application to lay pipes within public land such as reserves and parkland. Any proposal to drain stormwater through a reserve or park must first obtain approval from Council's City Assets team prior to submitting the DA to the Council for assessment. The decision as to whether such a proposal is allowable will depend upon the classification of the land, whether any Plan of Management that may apply permits the work, and the intended future use of the reserve. Issues such as potential environmental damage to the parkland and land devaluation will be considered and Council reserves the right to require an easement be created over the land, and to approve or reject the proposal on its merits based on criteria, including but not limited to environmental assessment and site conditions.

To prevent multiple pipelines from passing through the public land, the pipeline must be sized to allow for adjoining properties, in future, to connect to it. The minimum pipe size for the pipe must be 375mm diameter and constructed of RC or FRC pipe. The pipeline shall comply with this policy and Council's

Specification for Roadworks and Drainage Associated with Subdivision or Other Development.

All design, construction and administration costs associated with providing the pipework across a public park shall be borne by the applicant. A bond is payable in accordance with Clause 4.1. Council is likely to seek compensation for proposed pipelines/easements through public owned land.

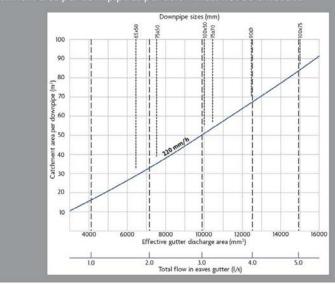
3.4.2.3. CHARGED SYSTEMS

Permitted for: Dwelling houses, dwelling houses on narrow lots, secondary dwellings and attached dual occupancies when a private drainage easement cannot be acquired.

Charged systems rely on the difference in level (head) between the overflow of the site discharge control and the street gutter to drive water "uphill". These systems are not ideal as they are unable to drain areas below the point of discharge, blockage of the system can result in complete failure with water travelling away from the discharge point, and the system has higher maintenance requirements.

DEEMED TO COMPLY

- The charge within the line must be a minimum of 900mm
- 2. The distance from the tank outlet to the kerb outlet must not be greater than 50m
- 3. The roof area must not exceed 350m
- 4. The catchment area per downpipe as per below must not be exceeded



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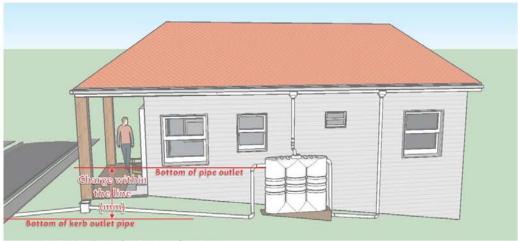


Figure 2 - Charged system configuration

If the deemed to comply conditions cannot be met, then a full hydraulic grade line analysis will need to be submitted to prove that the proposed system is suitable.

The following conditions also apply to ALL charged systems:

- Documentary evidence must submitted with the application demonstrating that an easement to enable a gravity drainage system cannot be acquired from downstream properties, based on a reasonable offer (see Section 3.4.2.1).
- Roof gutters, downpipes and pipelines shall be sized for the 100-year ARI design storm.
- All charged lines must be of pressure grade and joints are to be solvent welded
- The pipe system including downpipes must be constructed from suitably durable materials.
- The system must discharge to a boundary junction pit prior to discharge to the public drainage infrastructure
- Flushing points/cleaning eyes are to be provided at lowest points in the system and should be easy to access
- Gravity fall shall be provided across the footpath where this can be achieved with minor filling of the footpath approved through levels issued by Council's Inspections Officer.

3.4.2.4. ELEVATED LINES

Permitted for: Dwelling houses, dwelling houses on narrow lots and attached dual occupancies when a private drainage easement cannot be acquired.

Dwellings within 300mm of top of kerb level at the building line, elevated lines may be used to assist in achieving gravity fall to the street. Elevated pipes can be attached to the side of the dwelling and then go under the front courtyard to the street.

Elevated lines will be permitted for single dwellings and dual occupancy dwellings. They will only be permitted subject to the following conditions;

- Documentary evidence being submitted with the application demonstrating that an easement to enable a gravity drainage system cannot be acquired from downstream properties, based on a reasonable offer.
- · They achieve gravity fall (minimum grade = 0.5%);
- Where attached to the building the elevated pipe will not interfere with openings to the dwelling or impair its function;
- They are decorative and UV resistant and that consultation has been undertaken with Council's Assessing Officer in relation to their positioning;
- Pipes through the front can be contained within carefully designed garden beds within the front building setback in consultation with Council's Assessing Officer;

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- Any minor filling required in the front courtyard shall not obstruct or divert the natural flow of water from the adjoining upstream property and this will need to be demonstrated in the application;
- Gravity fall shall be provided across the footpath with any required minor filling of the footpath approved through levels issued by Council's Inspections Officer; and
- Architectural elevations are to show stormwater lines.

Please note that pipelines attached to boundary fencing will not be approved. Elevated lines may be considered in extreme circumstances for narrow lot development

3.4.3. STORMWATER DISPOSAL FOR MINOR AREAS

3.4.3.1. PUMP OUT SYSTEMS

Permitted for: Basement garages in all residential development except secondary dwellings.

DEEMED TO COMPLY

- Maximum driveway area draining to garage basement is to be 60m² for all dwelling houses and dual occupancies, and 100m² for all other residential developments
- The sump storage area is to be 1m³ per 10m² of driveway draining to the garage basement with a minimum of 3m3 between the high and low pump working levels
- 3. The garage floor area is to be a minimum of half the driveway area
- 4. The capacity of each pump shall be a minimum of 4 litres per minute per

If the deemed to comply conditions cannot be met, then a full hydraulic assessment will need to be undertaken meeting the conditions below:

- Maximum driveway area draining to garage basement is to be 60m² for all dwelling houses and dual occupancies, and 100m² for all other residential developments
- The sump storage minimum area is to contain the total volume of runoff generated by the 3 hour 1 in 100-year storm assuming pumps are not working.
- Flood water within the basement shall not rise to more than 300mm in depth of stormwater in the event of a power outage or pump failure.
 The designer must assume a 24 hour 100 year ARI rainfall event to determine the flood water depth.
- Each pump shall have a minimum capacity based on the flow rate generated from a 1% AEP 5-minute duration storm event of the area of the ramp that draining into the system.

The following conditions also apply to ALL garage basement pump out systems:

- Surface stormwater runoff from the remainder of site must be diverted away from the basement area and the drainage systems are to be isolated from each other hydraulically.
- The basement car parking area shall be graded to fall to the sump and pump system.
- The pump-out system shall be sized and constructed in accordance with section 8.4 of AS 3500.3 and comprise of two (2) alternating submersible pumps with level switches and activation of dual operation at top water level. The two pumps shall be designed to work on an alternating basis to ensure both pumps receive equal use and neither remains continuously idle.
- The pump-out system must be independent of any gravity drainage lines and pumped to a site boundary pit. The site boundary pit may be used as a junction pit to connect local gravity drainage lines, if they are hydraulically isolated from the pump out system. From the site boundary pit, stormwater will be gravity fed to the kerb to reduce flows to acceptable velocities.
- Backflow prevention devices/ measures shall be provided to the outlet of the pump-out system to minimise or eliminate the risk of backflows into the basement.
- Alarm systems must be provided to give a flood warning in case of pump failure, including:
 - o non-audible alarm positioned at the main entrance to the basement car park;

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- audible alarms positioned at the first-floor level of each common property stairwell within the building;
 - signage at all the aforementioned locations to inform residents of the cause of the alarm
- Storage areas and areas used for purposes other than car parking or access aisles are to be constructed a minimum of 300mm above the level of the surrounding area.
- Full details of the following must be submitted for approval by Council:
 - o catchment area
 - grade of ground level leading towards holding tank
 - o holding tank capacity and location
 - pump type, pump curves detailing pump rate vs head (System Curve against the Pump Curve), the discharge rate
 - o delivery line size
 - o switching system
- A Positive Covenant and a restriction of use of land will be required to be placed on the title of the property to inform owners of their responsibility for operation, protect from alteration and ensuring regularly maintenance of the system and to indemnify Council from any claims for damages arising from failure of the pump system.
 See Appendix G for sample wording.

3.4.3.2. ABSORPTION TRENCHES

Permitted for: Urban areas for driveways, paths and minor paved areas of less than 50m² where a charged system or elevated pipe has been provided for the site

DEEMED TO COMPLY

- To drain a maximum of 50m² of driveways paths and minor paved areas per site
- Sized at the rate of 2.5m³/50m²;
- 3. Designed to allow full infiltration into an aggregate layer beneath;
- A silt arrestor should be placed before the trench to prevent sediment from entering and compromising the absorption trench;
- Trenching shall be located parallel to site contours; and
- The absorption trench shall be located as far as possible from the downstream property boundary with a minimum distance of 5m from buildings and downstream property boundary and 4m from all other boundaries.

This is the only solution available to drain driveways, paths and minor paved areas of less than 50m² where a charged system or elevated pipe has been provided for the site.

Absorption trenches may be provided by suitable proprietary products or aggregate trenches where void ratios have been determined.





3.5. DESIGN CONSIDERATIONS

3.5.1. MAJOR/MINOR DRAINAGE

A stormwater drainage system shall be provided in accordance with the "major/minor" system concept set out in Chapter 14 of the AR&R (1998); that is, the "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while "minor" system shall be capable of carrying and controlling flows from frequent storm run-off events.

The minor drainage system is that part of a drainage system in a catchment that conveys flows from the minor design storm such as the 2 and 5-year Average Recurrence Interval (ARI) events and usually comprises kerb and gutter, gully inlet pits, underground pipes and outlets.

The major drainage system is that part of a drainage system in a catchment that is designed to safely convey rare design storms, and may comprise open space floodway channels, road reserves, pavement expanses, overland flow paths, natural or constructed waterways and detention basins.

Piping of major flows cannot be relied upon for managing major flows as it is unlikely that all flows could be captured by inlets and blockage of the minor system can occur. In all instances, a major flow path will still need to be provided.

3.5.2. IMPACT ON ADJOINING PROPERTIES

When designing a development, the engineer is to be aware of the impact the development could have on adjoining properties. In terms of stormwater, the following issues will need to be addressed:

- Changes in site levels shall not cause a restriction to flows from upstream properties;
- Diversion of flows from one drainage catchment to another will not be permitted in most circumstances;
- Any development shall not concentrate the overland flow of stormwater onto an adjoining property
- A person has a common-law obligation not to carry out any work on their property that will adversely affect adjoining properties.
- Developments that have an adverse impact on adjoining/surrounding properties in relation to the above issues will not be approved.

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- The height of floor level above the natural ground levels shall be limited to 600mm except where it is required to be raised to achieve a suitable freeboard above the flood level or the 100 year ARI water level of an on-site detention basin.
- Any development shall not impact the amenity of the surrounding areas as per the appropriate Fairfield LGA Development Control Plan (DCP).

3.5.3. MAINSTREAM, OVERLAND AND LOCAL FLOODING

Council's planning process distinguishes between two distinct kinds of flooding – mainstream flooding (overbank flow from rivers, creeks or dams) and overland flooding (inundation by local runoff). If a property is registered as affected by either mainstream or overland flooding within the Section 149 Planning Certificate (available from Council), the development process must adhere to the to the Flood Risk Management section of the Fairfield Citywide DCP (Chapter 11).

There is also 'local flooding' which generally consists of stormwater less than 150mm deep flowing to the local road and stormwater network through natural flowpaths. This local flooding can still have a substantial impact on proposed and existing development. Council may require properties without a mainstream or overland flooding registration to quantify the flow of stormwater passing through the property and ensure the local flooding flowpath is maintained.

Where a property is impacted by overland or local flooding from upstream properties the applicant needs to demonstrate how these flows are to be managed for the proposed development. The following key principles shall be considered:

- The development shall not have an adverse impact on surrounding properties through the diversion, concentration or ponding of flows;
- The development shall accommodate the passage of flow over the site and, where applicable, shall be designed to withstand damage due to scour, debris or buoyancy forces;
- The development must not be sited where flows may result in a hazardous situation for future occupants in terms of depth and velocity of flows through the property;
- Flows shall be directed through common areas and should not be directed through private courtyards or on-site detention systems;
- The flowpath must not be obstructed by landscaping, kerbing, retaining walls or fencing;
- Design elements such as concrete or paving shall be used to fix critical levels in flowpaths to minimise interference by future occupiers; and

 The development must provide adequate freeboard to finished floor levels in accordance with Table 9 in this policy.

Where considered necessary, Council may impose conditions of consent on a proposed development to protect flow paths. A Restriction on Use and Positive Covenant may also be required to protect overland flow paths. Refer to Appendix H for standard wording/terms.

Council's Development Engineer can be contacted for advice as to whether a particular property may be affected by local flooding. An assessment and site inspection by an experienced professional may also assist in confirming whether a particular site is affected by local flooding.

3.5.4. SITE ANALYSIS

A preliminary site analysis should be prepared before undertaking the design of the site drainage. This should be undertaken as part of the architectural and landscape preliminary design process.

The site analysis should consider all aspects of the development proposal and should integrate the drainage design into the design of building and landscape works. This is particularly important for identifying overland flow paths and storage areas that may impose level constraints.

The drainage site analysis shall include:

- · Site slope;
- External overland flow paths entering or adjacent to the site;
- · Existing and proposed ground levels;
- Existing structures and vegetation on the site as well as adjoining land;
- Proposed points of discharge;
- Proposed internal overland flow paths and on-site detention (OSD) storage areas;
- Existing and proposed means of access to the site: and
- The hydraulics of the piped network and pipe cover requirements.

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3.5.5. EASEMENTS TO DRAIN WATER

3.5.5.1. INTER-ALLOTMENT EASEMENTS

In most cases, easements for drainage purposes will be required where the proposed development site slopes away from the street. Where easements are required over downstream properties the written agreement from the registered proprietor granting an easement to drain water shall be submitted with the Development Application. Such agreement must acknowledge the size and location of the required easement. All easements to drain water over downstream properties are required to be registered with the Land and Property Information prior to the issue of an operational consent.

3.5.5.2. EASEMENTS IN FAVOUR OF COUNCIL

Stormwater assets are usually located along the alignment of original watercourses (such as creeks or rivers), which also contains the overland flowpath. Therefore, deviation of a pipeline and its easement to accommodate development is not likely to be approved, unless it can be proven that it is improving conveyance, there is no increase in flood affects or to the risk to people and property in the 100 year ARI.

In cases where existing Council drainage infrastructure is located within the development site and is not protected by an easement, or where such infrastructure is not within its easement, Council will require the creation of an easement in its favour over the drainage infrastructure. Where an easement is required for Council drainage, only Council shall be empowered to release, vary or modify any restriction or covenant. Documents giving effect to the creation of the restriction and covenant shall be submitted to Council for approval prior to construction.

3.5.5.3. BUILDING ADJACENT TO EASEMENTS

Building a structure over or adjacent to a stormwater asset can increase flooding and the costs to manage the asset. Council aims to keep these structures to a minimum to ensure the community's safety and avoid passing increased costs to our ratepayers.

In most circumstances, structures will not be permitted to encroach upon an easement to drain water. Eave overhangs are permitted subject to at least 4.5m clearance to ground level. The foundations of adjoining structures shall extend at least 200mm below the pipe invert or solid rock (Figure 2). Similarly, the location of proposed easements and associated drainage infrastructure shall be located to ensure that existing buildings and structures are not compromised. No filling or other works will be permitted in the drainage easement which will adversely impact on:

- · The conveyance of surface flows;
- The condition and loading on the drainage infrastructure; and
- The rights and costs of the beneficiaries to access, maintain and replace the drainage infrastructure as required.

Council prohibits the construction of most types of structures over drainage easements and stormwater pipelines. The following is a list of extremely light demountable structures that do not impede conveyance Council will consider for approval:

- · Simple concrete driveway
- Soft landscaping
- Paving
- Open type awnings (paved flooring only and must not interfere with 4.5m eave clearance)

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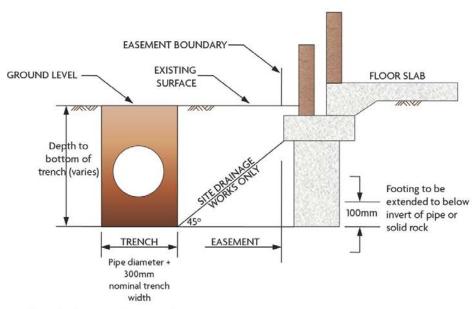
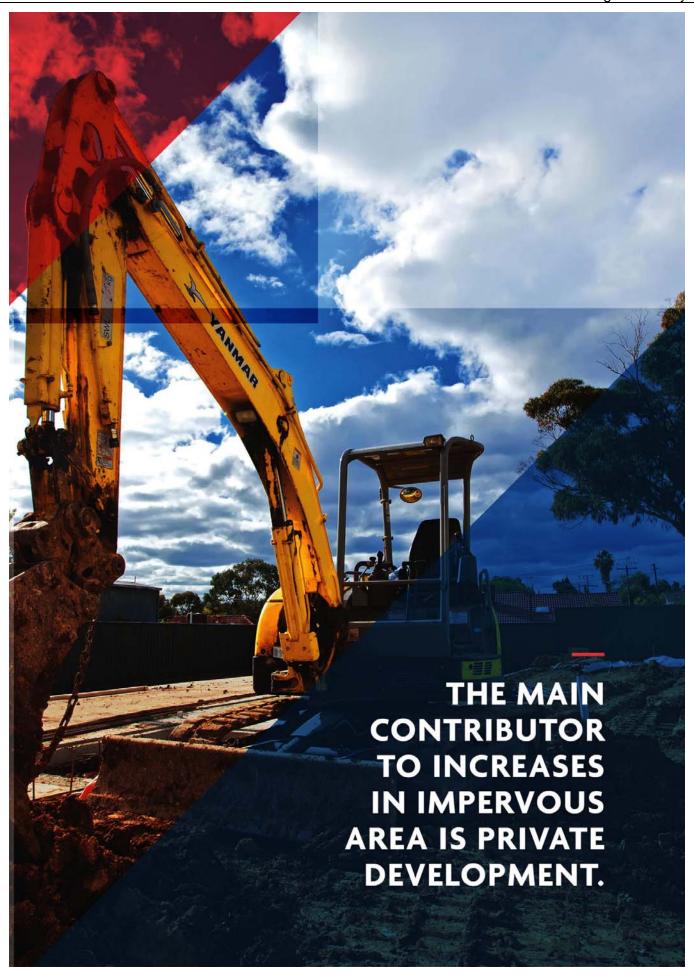


Figure 3 - Footings adjacent to pipes

3.5.5.4. ATTACHED BUILDING DEVELOPMENT

Attached building developments present unique issues in relation to roof drainage. Where the runoff from the attached roofline runs from one lot to the adjoining one, an easement is required over the roof area, valleys, guttering, downpipes and stormwater lines of the downstream lot along the route of runoff as per Appendix I. A positive covenant for the maintenance of the roof, guttering, etc. is required also. In this respect, it is advisable that careful consideration of the roof and drainage layout is given by the architect/consultants prior to the submission of plans for such developments.

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4. ON SITE DETENTION SYSTEMS

Impervious surfaces are areas of the earth that have been covered by any material that impedes the infiltration of water into the soil, including roof areas, concrete driveways and decks. These areas increase the runoff of rain during a storm, which in turn increases flooding and has a variety of impacts on our local creeks and rivers.

The main contributor to increases in impervious area in the Fairfield Local Government Areas is private development and it is essential to keep the impacts of this change to a minimum. Therefore, Council encourages that all impervious surfaces are kept to a minimum to reduce the long-term impacts to our floodplains and local creeks and rivers.

Council combats the increased frequency and severity of flooding due to the increased flows from these impervious surfaces by enforcing On Site Detention. On Site Detention limits the peak discharge from sites in a controlled way to reduce the impact on the local drainage network, as well as to ensure that downstream flooding problems are not exacerbated.

Therefore, to not exacerbate flooding the impervious area of a residential site should not exceed 70%. If this cannot be achieved, on site detention shall be required for the site to reduce the impact of the increased rainfall runoff. All commercial and industrial developments where the impervious surface area is to be increased will also require on site detention, and more detail is available in Table 1.

Development within the Fairfield LGA has experienced significant growth and correspondingly the volume and rate of stormwater runoff from developed areas to the public drainage network and the local creeks have escalated over this time.

To counter the effects of development, Council adopted an onsite detention policy in 1990 that reduces the rate of stormwater runoff discharged from development, consistent with the predeveloped state of the catchment.

Onsite detention (OSD) is a component of the property drainage system which reduces the rate of runoff, mimicking the pre-developed state of the catchment. Therefore, as the rate of water exiting the system is less than the rate of watering entering, OSD systems require a basin area to buffer flows.

On Site Detention Systems

4.1. OBJECTIVES

The objectives of this policy with regard to On Site Detention are;

- To ensure that through the use of OSD, stormwater discharge is controlled thereby ensuring development does not increase the risk
 - of downstream flooding, erosion of unstable waterways or a reduction of the capacity of Council's drainage network.

4.2. PERFORMANCE CRITERIA

The following performance criteria apply to the implementation of OSD within the Fairfield LGA:

URBAN ZONE

- Maximum PSD of 140 l/sec/ha for the 9 hour 100 year ARI for the total site AND
- Maximum PSD of pre-developed site discharge for the 5, 15, 30, 60, 90, 120 and 540 minute duration storms for the 5 and 100 year ARIs for the total site

RURAL ZONE

 Maximum PSD of 78 l/sec/ha for the 5, 15, 30, 60, 180, 360 and 540-minute duration storms for the 5 and 100 year ARIs for the developed site

4.3. DEVELOPMENTS TO WHICH OSD APPLIES

The LGA is separated into three distinct stormwater management zones (please contact Council to confirm zone boundaries);

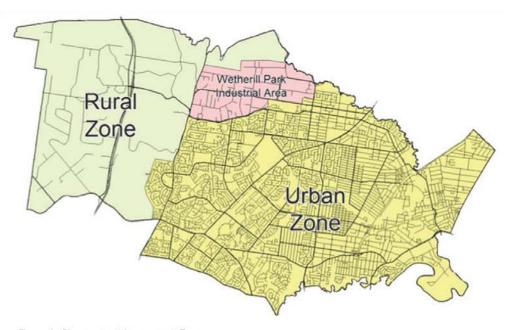


Figure 4— Stormwater Management Zones

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On site detention is required for the following developments;

URBAN ZONE

- Single dwellings and dual occupancies where the final site impervious area is greater than 70%
- All multi dwelling housing and residential flat buildings
- · All commercial and industrial development
- Buildings, car parks and other sealed areas (including artificial lawn) of sporting and recreational facilities

RURAL ZONE

- · All development greater than 30m2 except:
- For properties less than or equal to 1ha OSD is not required for up to 100m² of non-habitable building/ impervious area
- For properties greater than 1ha OSD is not required for up to 1% of the site for a non-habitable building/ impervious area (i.e. 150m² building for a 1.5ha site)

On site detention is not required for the following developments;

URBAN ZONE

- Single dwellings and dual occupancies where the final site impervious area is less than 70%
- Development that lies within the High & Medium Flood Risk Precincts (100 year ARI floodplain) – development that straddles the Medium and Low risk precincts is expected to provide OSD for the area outside of the Medium Risk Precinct.
- Change of use where no physical changes to the outside of the building are proposed

RURAL ZONE

- For properties less than or equal to 1ha for only one non-habitable building/impervious area up to 100m²
- For properties greater than 1ha for only one nonhabitable building/impervious area up to 1% of the site (i.e. 150m² building for a 1.5ha site)
- Development that lies within the High & Medium Risk Precincts (100 year ARI floodplain) – development that straddles the Medium and Low risk precincts is expected to provide OSD for the area inside the Low Risk Precinct.
- Change of use where no physical changes to the outside of the building are proposesWETHERILL PARK INDUSTRIAL AREA
- OSD is not required within the Wetherill Park Industrial Area

4.4. CONTROLS

The following permissible site discharge (PSD) and site storage requirements (SSR) need to be satisfied by the OSD system.

4.4.1. URBAN ZONE

- Maximum PSD of 140 l/sec/ha for the 9 hour 100 year ARI for the total site AND
- Maximum PSD of pre-developed site discharge for the 5, 15, 30, 60, 90, 120 and 540-minute duration storms for the 5 and 100 year ARIs for the total site

4.4.2. RURAL ZONE

- Maximum PSD of 78 l/sec/ha for the 5, 15, 30, 60, 180, 360 and 540-minute duration storms for the 5 and 100 year ARIs for the developed site OR
- SSR of 4.09m³ per 100m² of developed site using the simplified method (section 4.5.1.2)

4.5. DESIGN CONSIDERATIONS

The following general requirements also apply in the design of OSD systems;

- OSD needs to be considered and incorporated into a development as early as possible to ensure a holistic and economical design. The entire site drainage system needs to be considered during the design of a development to ensure that all runoff from impervious surfaces (roofs, gutters, paved yard areas and driveways, etc) is designed to flow into the OSD facility. In addition, a deliberate overland flow path must be created to convey these flows to the facility in the event of blockage or overload, free of obstructions such as fences, buildings, etc.
- The OSD design shall be completed by a professional engineer registered, or eligible for registration, with the National Engineering Register in Civil or Environmental Engineering, specialised in stormwater design.
- The OSD system should be located prior to the point of discharge, generally in the lowest point of the site and located in a common area to facilitate access. This can possibly include a car park, open space area or even roof top areas where no underground storage is possible.
- The OSD storage shall be designed such that run-off in small frequent storms is stored where minimal inconvenience results. In larger storm events, the additional run-off may be stored aboveground in landscaped areas, car parks or driveways where it will cause some inconvenience.

On Site Detention Systems

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- Any stormwater overflow from the gutters of proposed buildings shall be collected by inlet pits on the ground and/or drained via overland flows paths into the detention system. Where this is not possible, the gutter and stormwater system shall be designed to convey the 1% AEP storm event to the detention system.
- Detention storage shall be provided above ground wherever possible and permissible. Underground tanks will only be accepted where above ground storage systems are not feasible due to the site constraints.
- Designers are encouraged to utilise driveway/carpark areas for implementing OSD basin and landscape the grassed detention basin such that the style of planting in the landscape area does not reduce storage volumes or that provision is made for this loss in the design. Pine bark and leaf litter are not to be used and substituted with an alternative weed control medium
- The OSD designer needs to review the final landscape and architectural plans to verify that the OSD design has not been compromised and there are no anomalies in the plans. Development approval will not be issued until all inconsistencies between plans have been addressed.
- A Restriction On The Use Of Land and Positive Covenant must be executed and registered against the title of the lots containing OSD systems to require maintenance of the system. This positive covenant must be prepared prior to issue of the occupation certificate.
- Large systems may require approval of the Dam Safety Committee.

4.5.1. ESTIMATING STORAGE VOLUMES

4.5.1.1. RUNOFF ROUTING AND RESERVOIR ROUTING METHOD

Council's preferred method for estimating storage volumes is by using a runoff routing software package such as DRAINS, Council's preferred software. DRAINS provides a robust calculation process, and can often achieve the required PSD with a smaller volume than Council's SSR. If this method is used, all calculations and models are to be provided to Council to Council with the Development Application and full details of the OSD system is to be provided on the Stormwater Drainage Plan.

4.5.1.2. SIMPLIFIED METHOD (RURAL ZONE ONLY)

Where the applicant decides that the storage volume below for the relevant zone can be accommodated within the proposed development and the following design criteria can be met, the following relationship may be used:

Rural Zone

 $V = 4.09 \times A / 100m^2$

Where V = Volume (m3)

A = Total developed site area plus all catchment leading to the OSD storage (m²)

This is provided that:

- · A High Early Discharge (HED) control is used
- A singular rectangular shape off-line storage basin is provided and
- The outlet is to restrict the discharges to the relevant PSD for the zone,

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4.5.2. HYDRAULIC CONTROL

An important element in preserving the integrity of the OSD design is ensuring that the system functions independently of the street drainage network. The system is not intended to handle surcharge flows from the street drainage network.

For stormwater events where the OSD would be operating there is a high possibility that the street system would surcharge. Due to these effects, whether connection is made to the underground drainage system or the kerb and gutter, the starting hydraulic grade-line level is to be the top of the kerb and gutter at the discharge point to the street drainage system. Locating the outlet control device above this level ensures that the discharges from the basin are unaffected by the downstream hydraulic grade-line or water surface levels. for further details.

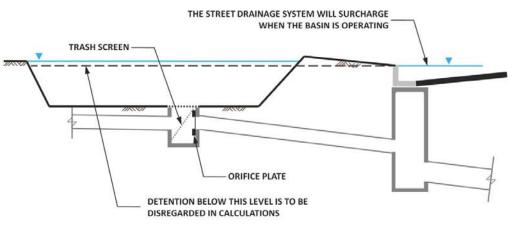


Figure 5 – Unacceptable hydraulic control conditions

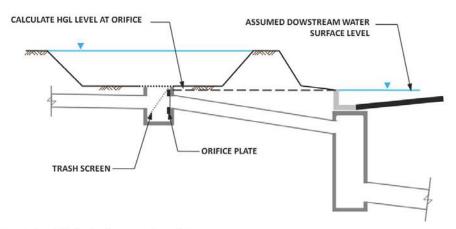


Figure 6 - Undesirable hydraulic control conditions

On Site Detention Systems

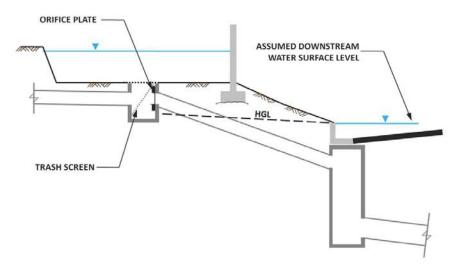


Figure 7 - Desirable hydraulic control conditions

4.5.3. FINISHED FLOOR LEVEL FREEBOARD

The minimum freeboard for the floors of any new structures such as garages, dwellings, commercial and industrial buildings to be constructed on the site, above the adjacent local 100 Year ARI water surface level or 100 Year ARI storage water surface level in the facility, shall be as per Table 3.

Minimum	Minimum 0SD Freeboard	
Habitable floors (including industrial)	300mm	
Non-habitable floors	100mm	

4.5.4. DISCHARGE CONTROL PIT

The discharge control pit is to meet the following conditions;

- · Minimal risk of becoming blocked
- Located in accessible position for easy access for inspection and cleaning
- · Minimal risk of tampering
- Step irons are required for pits greater than 1200mm depth
- Subsoil drainage is required for discharge control pits with an above ground storage to prevent the ground becoming saturated during prolonged wet weather

The orifice plate within the discharge control pit is to meet the following conditions;

 The orifice hole diameter is to be sized using the following equation:

D = Q0.619.62*H*4 []

Where

H = Depth to centreline of orifice opening

Q = Permissable Site Discharge

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- Manufactured from corrosion resistant stainless steel plate with a minimum thickness of 3mm (5mm where orifice diameter exceeds 150mm), with a central circular hole machined to 0.5mm accuracy.
- · Machined hole is to retain a sharp edge.
- Plate to be permanently fixed to the pit wall and be epoxy sealed to prevent the entrance of water around the edges.
- Have an orifice diameter not less than 40mm.
- The plates are to be engraved with the orifice diameter and an identifying mark. The orifice diameters are to be certified by the manufacturers.

The trash screen within the discharge control pit is to meet the following conditions;

- Manufactured from galvanised Lysaght RH3030 Maximesh (or approved equivalent) with galvanised angle steel frame.
- · Is to screen all pit inflows to the orifice.
- Shall be 50 times the orifice area.
- Located to a minimum distance of 150mm from the outlet orifice.
- Positioned as close to vertical as possible. Pits up to 600mm deep should have screens no flatter than 45 degrees. In pits over 600mm deep or in remote positions this should be increased to 60 degrees.
- · Shall include handle(s) for easy removal.

A sump is required in the base of the discharge control pit to assist in avoiding turbulence near the pit floor from affecting the hydraulic performance of the orifice outlet, to prevent silt and debris from blocking the orifice outlet and to allow simple installation of the orifice plate. To ensure drainage of the discharge control pit sump, the following are to be provided:

- The invert of the sump is to be 1.5 times the orifice diameter or 200mm (whichever is greater) below the centre of the orifice outlet.
- The discharge control pit is to be constructed on an aggregate base (minimum 100mm thick) wrapped in geotextile fabric.
- Sufficient weepholes in the sump floor that are to be kept unblocked by construction debris. (Note: Weepholes are not to be installed in sumps where the OSD storage has a combined use and may be affected by pollutants ie. Firefighting water storage, chemical bund storage, spillage control etc.)

A diagram of a typical discharge control pit is in Appendix J

4.5.5. HIGH EARLY DISCHARGE PIT

In addition to the requirements listed above for a Discharge Control Pit, the following conditions need to be met for a High Early Discharge (HED) Pit.

- The minimum height from the centre line of the orifice to the HED overflow weir level is to be 400mm
- The 100 year ARI storage TWL is to be at, or below, the HED overflow weir level
- The PSD Head level (i.e. 100mm above the HED overflow weir) is to be used for sizing the orifice
- The HED overflow weir is to be a minimum of 0.1m long. The length is to be linearly interpolated from the table below

Table 4 - HED Weir Length

Impervious area draining to OSD (m²)	Weir Length (m)
100	0.1
250	0.2
500	0.4
750	0.6
1000	0.8
2000	1.7
3000	2.5
4000	3.3
5000	4.1

A diagram of a typical HED control pit is in Appendix K

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4.5.6. DRAINAGE SYSTEM

The drainage system is to be gravity drained, (i.e. no pump systems will be permitted by Council) and all developments are required to be connected to Council's stormwater system. For properties with adverse grade conditions i.e. falls to the rear, where no inter-allotment drainage is existing, a drainage easement will need to be created over neighbouring properties to achieve connection to the stormwater system.

Full hydrological and hydraulic grade-line (HGL) calculations are to be submitted for the piped internal drainage. The drainage lines must be sized for a minimum of the 1 in 5-year event. Where the piped drainage system is designed for less than a 1 in 100 year ARI event, the designer must show that the overflows

of the drainage system are directed to the OSD basins. The controlling hydraulic level for the piped internal drainage system is the peak water surface level of the basins. By providing hydraulic calculations problems such as hydraulically interconnected basins and unexpected surcharging of the internal drainage system will be highlighted.

Roof gutters and downpipes are also an integral part of the OSD system. As most roof gutters are only able to accommodate approximately the 1 in 20-year storm runoff, any storm events of higher duration can be expected to overflow the guttering. If this overflow is not directed to the originally destined detention basin, either the roof guttering and downpipes have to be designed to accommodate up to the 100-year runoff or the overall drainage design is to take into account this redirection of these additional overflows.

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4.5.7. BASIN OVERFLOWS

To avoid nuisance flows, overflow weirs and spillways are not to become operational in normal circumstances in storms up to and including the 1 in 5-year ARI event. All flows up to this point are to be directed via orifice and pipe discharge.

Overflow weirs/spillways are to be designed to accommodate the maximum 1 in 100 year AR1 discharge, assuming the OSD basin storage is full and the orifice outlet is blocked. Checks should be made to ensure this discharge from the overflow weir / spillway will not inundate nearby dwellings and that the overflows are directed to a flow path through the development and do not concentrate flows onto an adjoining property and the flow path is free of all obstructions.

4.5.8. LOCAL FLOWS

Local flows which enter the site from surrounding properties are to be collected and conveyed through the development. These flows are to be kept isolated from the detention basin systems for all storm events. This discharge is not to be considered in the calculation of the peak discharges of the Permissible Site Discharge.

4.5.9. ABOVE GROUND STORAGE

The following ponding depths will apply to all above ground OSD systems.

Table 5 - OSD Ponding Depths

Storage area	Suggested depth	Frequency of inundation
Pedestrian areas	Beginning to pond	Once in 5 years
	50mm (max depth)	Once in 100 years
Parking & driveways	Beginning to pond	Numerous times per year
	100mm	Once in 5 years
	200mm (max depth)	Once in 100 years
Garden areas	Beginning to pond	Once a year
	200mm	Once in 5 years
	500mm (maximum depth without fence)	Once in 100 years
	1200mm (fenced maximum)	Once in 100 years

On Site Detention Systems

Where above ground storage is provided in hardstand areas used for car parking and pedestrian access the following criteria must be addressed in the design:

- The first 10% or 1m³ of the storage volume, whichever is the greater, shall be provided in an area where frequent ponding in a one year ARI 2-hour event will not create a nuisance. This may be in an area not required for access or in an underground tank or oversized pit or pipe etc;
- Stored water shall not inundate gardens or areas with bare soil, mulch or the like around parking or other hardstand areas. These areas should be above the storage top water level or protected by concrete kerbing or other robust treatment capable of withstanding vehicle impact;

The following criteria shall be considered for the design of above ground storage in landscaped areas:

- All landscaped storage areas should be within common property;
- The design should be undertaken in consultation with the landscape designer to ensure that the plans are not in conflict;
- The first 10% or 1m³ of the storage volume, whichever is the greater, shall be provided in an area where frequent ponding in minor storms will not create a nuisance. This may be in an area not required for access or in an underground tank or oversized pit or pipe etc;
- Batter slopes in landscaped areas shall be generally 1:6 (V:H).
- Where vegetated landscaped areas are to be used for storage (excluding grass only), an additional 20% storage volume, in excess of the design volume, shall be provided to allow for vegetation growth.
- Vegetated landscaped areas are to be a maximum of 20% of adjusted basin size, with the remaining 80% to be grassed.
- Grassed only landscaped areas are not to be positioned in the front setback
- Careful consideration shall be given to types
 of planting and landscaping treatment within the
 basin, to ensure the area can be readily maintained
 and the storage volume is not reduced over time,
 and that there is a variety of plant species to
 be aesthetically pleasing;
- Landscaping shall be designed so as not to generate large amounts of debris or other material likely to cause stormwater pollution. Treatments such as bark chips/mulch or bare soil and the like shall not be permitted within the area of inundation. Only the use of 30-40mm rock as mulch will be permitted;
- Within the Rural zone, the OSD storage should

- be made as pervious as possible and storages on impervious areas should be avoided.
- Vertical sides near driveways or pedestrian areas should be protected with an appropriate treatment such as fencing, kerb, edging or landscaping to minimise hazard to pedestrians and vehicles;
- Suitable access shall be provided for maintenance purposes which may include ramps or accessible gradients;
- Consideration must be given to the likelihood of access by children in rainfall events and the subsequent need for fencing or other controls;
- Where fencing is required it shall be childproof pool type fencing including a self-closing gate;
- Subsoil drainage shall be installed in landscaped storage areas to prevent the area remaining saturated during wet weather;
- The base of landscaped storage is to have a minimum 1% fall to the outlet pit;
- Designers are not to use pine log/timber sleepers as a retaining wall for the storage basin. Brick work or decorative block work only to be used.
- At least one dry access/escape route shall be available to individual residences.

The following criteria shall be considered for the design of above ground storage in tanks (only to be used for non-habitable buildings within the rural zone):

- The design of aboveground tanks must consider appearance and urban design issues.
- Aboveground tanks shall comply with the appropriate engineering criteria as belowground tanks and the same planning criteria as rainwater tanks.
- For dual use tanks, any permanent water storage volumes will not count as part of the SSR
- Additionally, when using rainwater tanks for OSD, consideration must be made to the fact that it is difficult to fit an orifice plate to the tank. The use of an equivalent pipe diameter in place of an orifice is not acceptable as the discharge through a pipe is not the same as through an orifice of the same diameter. Therefore, the design should ensure that suitable calculations are used to determine the discharge pipe diameter and required storage.

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4.5.10. BELOW GROUND STORAGE

Below ground storage should only be used where no suitable hardstand or landscaped area is available. The following design criteria must be met for below ground storage tanks:

- Storage tanks should not be located under habitable floors;
- Storage tanks under non-habitable floors will only be permitted where storage is not possible in any other location;
- For dual use tanks, any permanent water storage volumes will not count as part of the OSD storage;
- Storage tanks shall not be penetrated by any site services such as water, sewer, gas etc;
- A minimum internal (head) height of 1.2m is to be provided. This may be reduced to 750mm for commercial/industrial development or 500mm for residential development, but only where all other practical alternatives have been exhausted and where it can be demonstrated that consideration has been made to allow easy access by the owner of the system to facilitate inspection and maintenance.
- Sufficient ventilation and access points (usually hinged grated lids) must be provided to the storage tank.
- Grates are to be placed in a manner to ensure that the maximum distance from any point in the tank to the edge of the nearest grate is not greater than 3m.
 This is to facilitate access and maintenance of the storage tank.
- At a minimum, two grated inlet/access points shall be provided on opposite sides of the tank to facilitate ventilation. One shall be located over the outlet control pit/screen for maintenance and cleaning and a minimum of 600mm x 900mm;
- Grates are to have a maximum lifting weight of 20 kg. The grate may need to have a double opening to achieve this requirement.
- Grates are to be placed in a manner to ensure that the maximum distance from any point in the tank to the edge of the nearest grate is not greater than 3m.
- Underground storage facilities shall be designed to adequately withstand all service loads and provide adequate service life of 50 years.
- Step irons shall be provided for all storages greater than 1200mm deep, and shall be staggered to give a 300mm spacing vertically and 220mm spacing horizontally;

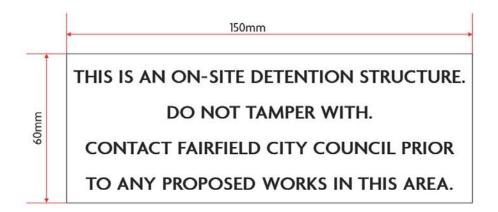
- Grates should be fitted with appropriate locking mechanisms to prevent ingress by children or non-authorised persons;
- For safety, all maintenance access to pits must conform to current Australian Standards and regulations for confined spaces. It is the responsibility of the designer to ensure compliance with these requirements;
- The location of the tank and inspection access should also consider safety of persons undertaking maintenance and inspections. Access points should be located away from driveways or heavily trafficked areas wherever possible.
- The floor of the storage tank shall be graded at a minimum of 1% longitudinally and laterally to the outlet to ensure free and complete dewatering of the system;
- · The tank shall be reinforced concrete or masonry;
- The tank shall be certified by an appropriately qualified and experienced engineer for structural adequacy against appropriate live and dead loads, earth loads, traffic, internal hydrostatic loads as well as external hydrostatic loads (buoyancy).



4.5.11. SIGNAGE

Standard On-Site Detention marker plates are to be fixed on all OSD basins to indicate to owners, residents and maintenance personnel the location of the OSD system. The requirements of the standard On-Site Detention marker plate are as below.

Minimum Size:	150mm x 60mm
Material:	Non-corrosive metal or 4mm thick laminated plastic
Location:	Screwed to the nearest concrete or permanent surface to the OSD system and be above the expected water surface level in the basin. If in doubt, contact Council
Wording:	Minimum letter height of 5mm. Wording to consist of;



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4.6. CONSTRUCTION AND MANAGEMENT

4.6.1. CONSTRUCTION & CERTIFICATION

The construction of the OSD system shall be in accordance with this policy and relevant Australian Standards.

Construction supervision is essential in achieving a properly working OSD system. The designer can contribute to the construction process by providing clear detail on the design drawings with construction set out and level detail that minimises the need for interpretation on site. OSD systems require closer attention to set-out and levels than a conventional drainage system. Without adequate supervision during construction (preferably by the designer or someone very familiar with the design intent), expensive and time consuming rectification works are often necessary prior to certification of construction works by the design engineer and issue of an Occupation Certificate.

The walls of basins and tanks shall be wholly contained within the parent property or common/community property and shall not form a common boundary with adjoining private property whether part of the community/strata scheme or not.

The original drainage design consultant is required to provide two forms of certification of construction to Council.

The first is provided prior to backfilling of the internal drainage lines and is to state that the system has been inspected and found to be in accordance with the approved design, or within the construction tolerances listed below. Where works are outside the construction tolerances the defective work shall be rectified to comply with the approved design prior to certification.

Table 6 - On site detention construction tolerances

Element of OSD system	Construction tolerance
Percentage of area not detained	+/- 5%
Storage Volume	+/- 5% design
Site Discharge	+/-5% design
Freeboard	+/-10% required
Storage Depth	+/-10% or 50mm whichever is lesser
Storage Depth Parking Areas	+/-5% design depth
Pipe Grades	+/- 10% design grade
Tank Height	+/- 5%
Screen Fit	+ 5mm gap between wall and floor

On Site Detention Systems

The second certificate is provided on completion of the drainage works and prior to the issue of a satisfactory Final Inspection. The checklist for this certificate in Appendix L includes:

- Certification that the OSD system will function in accordance with the approved design.
- Identification of any variations from the approved design and certify they are within the construction tolerances.
- Certification and evidence of any elements that were outside the construction tolerances that have been rectified to be within the tolerances and that these variations will not impair the performance of the OSD system
- Verification that all structural elements including storage tanks and retaining walls are structurally sound and fit for purpose;
- Work as Executed Plans prepared by a registered surveyor on a copy of the stamped approved construction plan and include the following:
- o Registered surveyor's details and signature;
- Sufficient levels and dimensions to verify the OSD volumes;
- Location and surface and invert levels of all drainage pits;
- Invert levels of the internal drainage lines and pipe gradients;
- Finished floor levels of structures such as units and garages;
- Verification that the orifice plates have been fitted and the diameter of the fitted plates;
- Verification that trash screens have been correctly installed;
- Location and finished contour levels on any overland flow paths formed through the site;
- Detail of any variations or omissions made from the approved plans.
- o Weir dimensions and levels; and
- o Extent of the above ground storage.

4.6.2. REGISTRATION

OSD systems are long term structures intended to control discharges from the site over the entire life of the development. A well designed and properly constructed system can still be rendered ineffectual by alterations, such as filling of the detention basin and planting of garden beds across flowpath, or by poor maintenance. Therefore, it is necessary that these systems are protected and regularly maintained.

Council requires that the design parameters, location and maintenance requirements are registered in the form of both a Restriction On The Use Of Land and a Positive Covenant on the title of the land prior to occupation of the development, issue of an occupation certificate or issue of a subdivision certificate for the development, whichever comes first.

The developer must supply Council with evidence the Instrument setting out the terms of the Restriction On The Use Of Land and Positive Covenant have been created pursuant to Section 88B or Section 88E of the Conveyancing Act, 1919. The location of the "Onsite Stormwater Detention System" shall be shown on the Deposited Plan or included as a site plan attached to the appropriate documents.

Refer to Appendix M for typical wording for registering a Restriction On The Use Of Land and Positive Covenant to the development site.

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4.6.3. MAINTENANCE

An OSD maintenance schedule shall be prepared for the OSD system. The maintenance manual should be a simple set of operating instructions for future property managers, owners and occupiers. It should include a simplified plan showing the layout of the OSD system.

The maintenance schedule needs to set out simply and clearly the routine maintenance necessary to keep the OSD system working including:

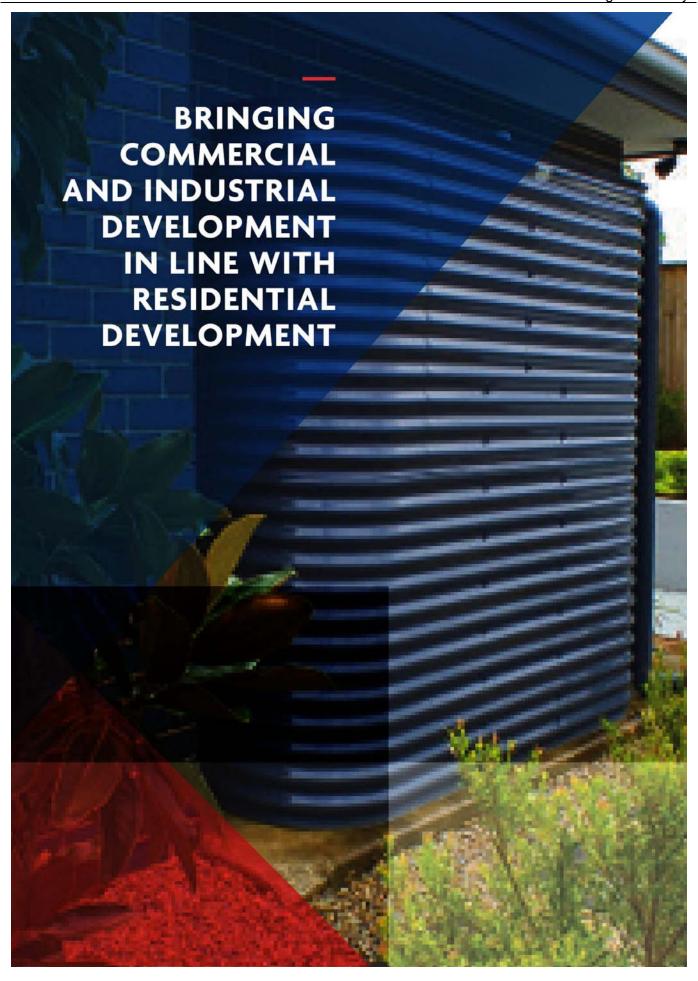
- The location of storages and critical elements;
- · Internal and external overland flow paths;
- · Frequency of cleaning/inspection for each element;
- · How access is gained for cleaning;
- · Equipment/methods needed for cleaning;
- Who can undertake maintenance e.g. handyman, owner, specialist for tanks;
- WHS issues (in particular tanks);
- Critical aspects such as levels in landscaped areas; and
- · Any other matters specific to the particular system.

The maintenance schedule shall be submitted to the PCA prior to the issue of an Occupation Certificate. A copy of the maintenance schedule shall be provided to Council with any notification of the issue of an Occupation Certificate. A sample maintenance schedule is included in Appendix N that can be modified to suit your site.



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5. WATER CONSERVATION

Potable mains water conservation seeks to reduce demand on water resources and wastewater discharges to the environment. The conditions below aim to bring commercial and industrial development into line with the existing BASIX controls for residential development.

5.1. OBJECTIVES

- Reduce water consumption in non-residential properties, consistent with the BASIX scheme requirements in residential properties
- Enable use of non-potable water for toilet flushing, irrigation and other non-potable uses.

5.2. PERFORMANCE CRITERIA

 Reduce water consumption in non-residential properties by 40% consistent with the BASIX Scheme

5.3. DEVELOPMENTS TO WHICH WATER CONSERVATION APPLIES

This chapter applies to all commercial and industrial development (including additions greater than 150m²) in the LGA.

5.4. CONTROLS

All new commercial and industrial buildings and additions greater than 150m² (i.e. not covered by the State Environmental Planning Policy — BASIX) must:

- Ensure that 80% of the roof area of the development is to drain to a tank(s) that has a capacity of 3,000 litres per 100m² of roof area of the development. The tank(s) is to be connected to all non-potable uses including toilet flushing, irrigation, wash down, and laundry
- Ensure any water use fittings demonstrate minimum standards defined by the Water Efficiency Labelling and Standards (WELS) Scheme. Minimum WELS ratings are 4 star dual-flush toilets, 3 star showerheads, 4 star taps (for all taps other than bath outlets and garden taps) and 3 star urinals. Water efficient washing machines and dishwashers are to be used wherever possible.
- Incorporate passive cooling methods that rely on improved natural ventilation to supplement or preclude mechanical cooling
- · Ensure any cooling towers are:
 - connected to a conductivity meter to ensure optimum circulation before discharge
 - include a water meter connected to a building energy and water metering system to monitor water usage
 - o employ alternative water sources for cooling towers where practical and in accordance with the Public Health Act and NSW Health Guidelines
- Water use within public open space (for uses such as irrigation, pools, water features etc) should be supplied from sources other than potable mains water (e.g. treated stormwater or greywater) to meet 80% water use demand.

Water Conservation

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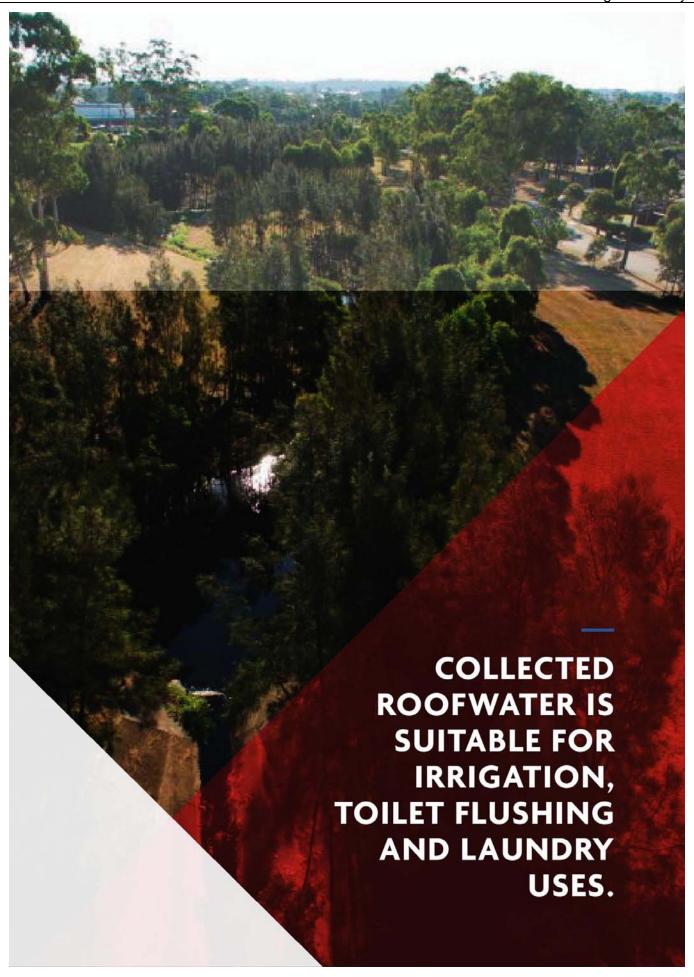
5.5. DESIGN CONSIDERATIONS

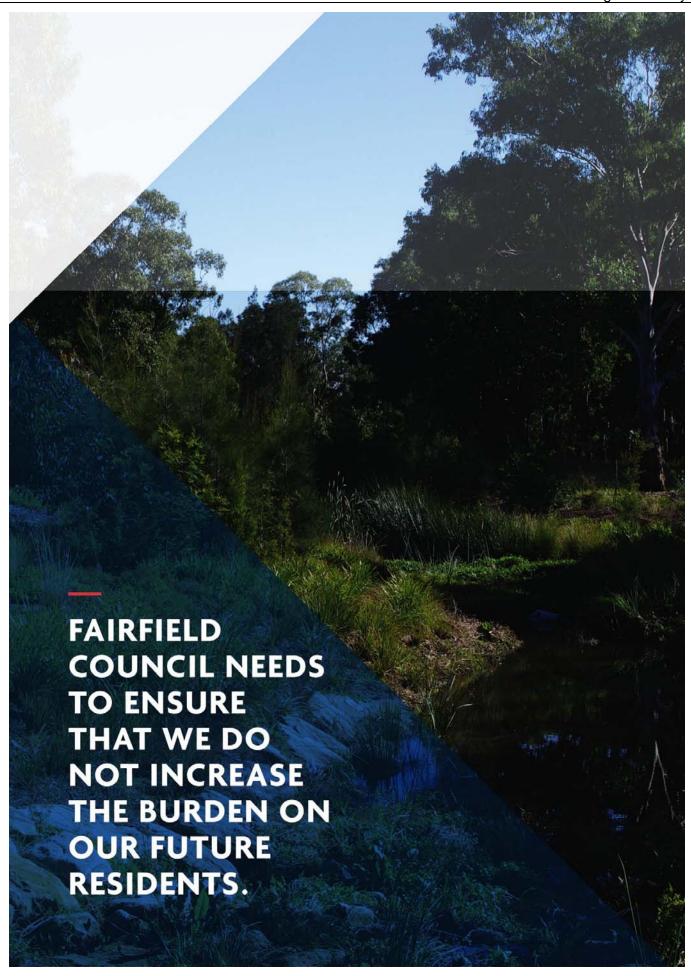
The following general requirements apply to the design of WSUD systems;

- Rainwater runoff from roofs, can be captured and used for toilet flushing, irrigation, washing machines and hot water systems.
- Tanks should be sized according to the area of roof capturing rain water connected to the tank and water demands. Rainwater tanks are most effective when they are sized when the demands are wellmatched to the runoff from the roof area. A desired level of reliability can be achieved with the selection of an appropriately sized tank.
- Roof area and construction The roof area available for rainwater harvesting is determined by the roof configuration and the number of downpipes connected to the rainwater tank. Roofs constructed of cement or terracotta tiles, Colorbond®, galvanised steel, Zincalume®, polycarbonate, fibreglass or slate are suitable for the collection of rainwater.
- Reliability of potable water supply and quality It
 is important that the quality of harvested rainwater
 meets the requirements of the reuse application
 and is sufficient in quantity. The quality of supply is
 typically guaranteed by using a first flush diverter.
 A first flush diverter is a simple device that diverts
 the first portion of runoff, containing leaf debris
 et cetera, away from the tank and once full allows
 water from the roof to pass directly into the tank.
- Tanks can also be fitted with potable water topup devices to ensure supply availability available,
 even during periods of no or little rainfall. This is
 important if rainwater is used for indoor demands
 such as toilet flushing. Potable water top-up is
 achieved by plumbing potable water into the tank
 with an air gap. Where potable water top-up is used
 the tank will need a float activated switch to ensure

- no cross contamination can occur (using appropriate valves) and a backflow prevention device to prevent rainwater from entering the potable supply.
- Applications for rainwater collected stormwater from roofed areas is suitable for irrigation, toilet flushing and laundry uses. Tank water can also be used in hot water systems, where a storage temperature of 60 degrees centigrade will effectively destroy most pathogens in a short amount of time (see Part 4.2 of AS/NZS 3500 for more information).
- Installation A licensed plumber is required to install the rainwater tank with all installations conforming to Australian Standards (AS3500.1.2 Water Supply: Acceptable Solutions). Refer to the Green Plumbers http://www.greenplumbers.com.au for additional information.
- Rainwater tanks require regular preventative maintenance to avoid the need for corrective action.
 If a pump system is used, the pump manufacturer should be consulted for advice on necessary maintenance. Recommended maintenance includes:
 - Inspecting roof areas and gutters once every six months to ensure they are relatively free of leaves and debris.
 - Pruning of vegetation and trees that overhang the roof.
 - Checking and cleaning of first flush devices once every 3 to 6 months.
 - Inspecting bypass screens at inlet and overflow points once every 6 months to check for fouling and clean when required.
 - o Checking tanks once every 2 to 3 years for the accumulation of sludge. Sludge may become a problem if it is deep enough to reach the level of the out take pipe which can produce discoloured or sediment-laden water, or affect storage capacity. When necessary, sludge can be

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6. WATER QUALITY IMPROVEMENT

There are many pressures impacting water quality throughout the Fairfield LGA with some of the more intense pressures arising from population growth and the associated expansion and intensification of infrastructure, industry and urban areas. This not only places a strain on our drainage infrastructure, but also impacts the quality of water in our creeks and rivers.

Fairfield Council needs to ensure that we do not increase the burden on our future residents, by ensuring that current development is sustainable, and ensures we keep our waterways as healthy as possible. Water Sensitive Urban Design (WSUD) is the sustainable management of these pressures through intelligent and integrated design.

WSUD includes technologies such as rainwater tanks to reduce potable water consumption and costs, bioretention systems (raingardens), swales, wetlands, proprietary devices and other approved site-specific measures to reduce pollution from stormwater entering local waterways.

WSUD, like traditional drainage, needs to be integrated into the site, and therefore considered at the initial planning stages. Designers and engineers who choose to leave WSUD as an addition at the end of the design process will find they will achieve poor amenity and water quality outcomes, that will require redesign before Council approval.

WSUD will be used to work towards our community's priority of a 'Cleaner Environment', by improving the cleanliness of our waterways.

Development within the Fairfield LGA has experienced significant growth and correspondingly the quality of stormwater in our local creeks and receiving waters has deteriorated. Water quality and ecosystem health is poor in Prospect and Cabramatta Creeks, which also impacts the Georges River, downstream of the Fairfield LGA.

To counter the effects of development, Council has introduced water quality improvement to this policy to ensure we at least maintain the current condition of our local creeks. The incorporation of Water Sensitive Urban Design (WSUD) in the property drainage design process allows for the capture and treatment of stormwater ensuring the improvement of water quality.

Water Quality Improvement

6.1. OBJECTIVES

The objectives of this policy with respect to water quality improvement are;

- Mitigate the impacts of development on stormwater quality
- Minimise the potential impacts of development and other associated activities on the aesthetic, recreational and ecological values of our local creeks.

6.2. PERFORMANCE CRITERIA

The following stormwater reduction targets must be met by development within the Wetherill Park Industrial Area (taken from the Botany Bay Coastal Catchments Initiative, Prepared by BMT WBM for GRCCC, 2013)

Table 7 – Stormwater quality improvement targets

	Commercial & industria development	
Gross Pollutants	90%	
Total suspended solids (TSS)	80%	
Total phosphorus (TP)	55%	
Total nitrogen (TN)	40%	



6.3. DEVELOPMENTS TO WHICH WATER QUALITY IMPROVEMENT APPLIES

The LGA is separated into three distinct stormwater management zones (please contact Council to confirm zone boundaries)

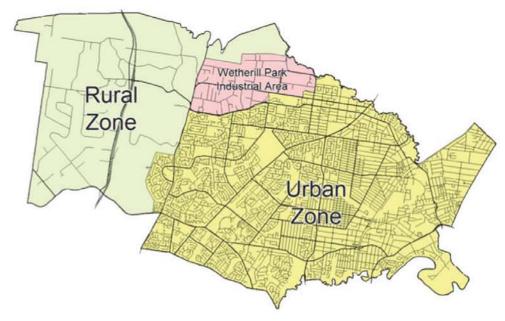


Figure 8 - Stormwater Management Zones

WETHERILL PARK INDUSTRIAL AREA:

 Water quality improvement is required for all development within the Wetherill Park Industrial Area where the impervious area in increased.

URBAN ZONE

Water quality improvement is not required within the Urban Zone

RURAL ZONE

 Water quality improvement is not required within the Rural Zone

Water Quality Improvement

6.4. CONTROLS

6.4.1. DEEMED TO COMPLY

Developments can demonstrate that they achieve the water quality targets by adoption the following deemed to comply solution:

DEEMED TO COMPLY

- Ensure that 80% of the roof area of the development is to drain to a tank(s) that has a capacity of 3,000 litres per 100m² of roof area of the development. The tank(s) is to be connected to all nonpotable uses including toilet flushing, irrigation, wash down, and laundry.
- 2. Provide a bioretention system(s) which has a surface area of at least 1.5% of the total impervious area that does not drain to a rainwater tank.
- The development is to ensure all flows not directed to a rainwater tank are directed to the bioretention system(s)
- The bioretention system(s) is to have a filter media layer 500-600mm deep
- Batters from the raingarden to the natural surface are to be a minimum of 1:6

6.4.2. ALTERNATIVE SOLUTION – WSUD STRATEGY

If a developer seeks an alternate pathway to meet control, the option of a Water Sensitive Urban Design Strategy available. A WSUD strategy is a written report detailing the stormwater quality control measures to be implemented as part of a development, and include the following detail:

- Proposed development Describe the proposed development at the site, including site boundaries and proposed land uses.
- WSUD objectives Identify the WSUD objectives that apply to the proposed development.
- Stormwater quality demonstrate how the stormwater quality targets will be met. It should include stormwater quality modelling results and identify the location, size and configuration of stormwater treatment measures proposed for the development.

- Details of MUSIC Modelling (or equivalent) –
 Modelling parameters to determine the size
 and configuration of WSUD elements must be
 undertaken in MUSIC (or equivalent) and use
 the parameters included in Appendix O of
 this document.
- Costs Prepare capital and operation and maintenance cost estimates of proposed water cycle management measures. Both typical annual maintenance costs and corrective maintenance or renewal/adaptation costs should be included.
- Draft Operation and Maintenance plan –
 An indicative list of inclusions in the maintenance plan is included in Checklist provided in Appendix P of this document
- Checklist outlining the details of the WSUD Strategy and reference of the information source.

Development that needs to consider on-site detention are to refer to Council's Engineering Specifications and Stormwater Drainage for Building Developments documents.

6.5. DESIGN CONSIDERATIONS

The following general requirements apply to the design of ALL water quality improvement systems;

- The entire disturbed area is to drain through WSUD system
- The WSUD system should be located prior to the point of discharge, generally in the lowest point of the site and located in a common area to facilitate access
- Filtration shall be provided above ground wherever possible and permissible. Underground units will only be accepted where above ground systems are not feasible due to the site constraints.
- Designers are encouraged to utilise setback areas for implementing WSUD and to ensure planting within this area is attractive to improve the aesthetics of the area.
- A Restriction On The Use Of Land and Positive Covenant must be executed and registered against the title of the lots containing WSUD systems to require maintenance of the system. This positive covenant must be prepared prior to issue of the occupation certificate.

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6.5.1. BIORETENTION SYSTEMS

Bioretention systems are commonly used in Sydney to meet stormwater quality targets, and are further described in this section. Bioretention systems are vegetated soil media filters, which treat stormwater by allowing it to pond on the vegetated surface, then slowly infiltrate through the soil media. Treated water is captured at the base of the system and discharged via outlet pipes. A typical cross-section of a bioretention system is shown in Figure 8.

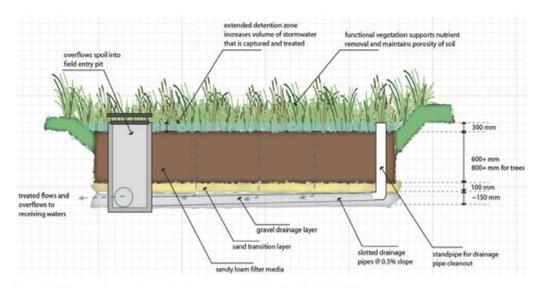


Figure 9 - Bioretention system typical arrangement (Water by Design 2009)

Bioretention systems can be implemented in almost any size/shape in many different locations including street trees in the footpath, or road or traffic calming devices within streetscapes. It is important to have sufficient depth (normally at least 0.8 m) between the inlet and outlet of a bioretention system, therefore they may not be suitable at sites with shallow bedrock or other depth constraints, however they are otherwise a very flexible and effective treatment measure for both suspended and dissolved pollutants.

Bioretention systems are able to meet the meet the stormwater treatment targets identified in Council's DCP and are typically sized to have a filter area of approximately 1.5% of the catchment draining to the treatment element. This size will vary based on the imperviousness of the development and elements of the bioretention system such as extended detention depth and filter depth

STREET TREES

Street tree bioretention systems are small systems that are incorporated into street tree plantings. These systems can be integrated into high-density urban environments and can take on a variety of forms. The filter media should be at least 0.8 m deep to allow for root growth of the tree, therefore substantial depth is required between the inlet and outlet. Examples of street tree bioretention systems are shown in Figure 9.

BIORETENTION RAIN-GARDENS

Rain-gardens can be incorporated in a range of locations, as they can be any shape and size. They are essentially small bioretention basin systems, with typical locations including pocket parks, traffic calming measures and between parking bays. Examples of raingardens are shown in Figure 10.

Water Quality Improvement

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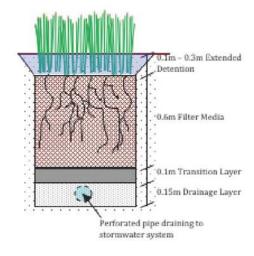


Figure 10 - WSUD in Street Tree pits - Hornsby (left), Meadowbank shops, Ryde (centre left), Sydney University (centre right) (Photos: Equatica).

6.5.1.1. ELEMENTS OF A BIORETENTION SYSTEM

A bioretention system includes the following components:

- Vegetation prevents surface clogging and assists in pollutant removal via biological processes.
 Some plant species that can be used include:
- Fincia nodosa (Syn. Isolepis nodosa) (Knobby Club Rush),
- o Cymbopogon refractus (barbed wire grass)
- o Dichelachne micrantha (short-hair plume-grass)
- o Daviesia gensitifolia (Bitter pea)
- o Goodenia hederacea subsp Hederacea (Hop bush)
- o Juncus usitatus (Common Rush),
- o Themeda triandra (Kangaroo Grass)

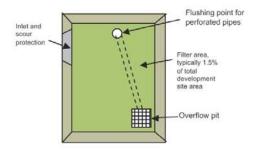


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A minimum of 10 plants per square metre is recommended. Shrubs or trees may also be included.

- Extended detention (or ponding depth) stores stormwater temporarily on the surface to buffer flows so that a greater volume can be treated.
- The filter media is the principal treatment zone. As stormwater passes through the filter media, pollutants are removed by filtration, adsorption and biological processes. The filter media should normally be 0.6 m deep, and 0.5 m is the minimum acceptable depth where the site is constrained. The filter media should be a loamy sand with a permeability of 100-300 mm/hr under compaction and should be clean and free of weeds. The filter media should contain some organic matter (less than 5%) but be low in nutrient content. No fertiliser is to be added.
- A transition layer of clean well graded sand/coarse sand prevents the filter media from washing out of the system
- The drainage layer of clean fine gravel (2-5 mm) collects treated water at the base of the system and contains 90-100 mm perforated pipes to convey treated water out of the system
- An impervious liner may be required to prevent infiltration into surrounding soils, particularly if the treatment system is immediately adjacent to roads or buildings where infiltration may cause structural issues. Note that geotextile filters should not be used within the bioretention system, as they are prone to clogging. If perforated pipes come with a geotextile sock, this should be discarded before installation.
- An inlet for stormwater runoff. The inlet should be designed to protect the surface of the bioretention system from scour and erosion
- An overflow pit (or other controlled overflow point) to allow high flows, beyond the capacity of the treatment system, to escape to the stormwater drainage system in a controlled manner
- A flushing point connected to the perforated pipes, so they can be cleaned in the event of blockage
- Edge treatment (e.g. a raised kerb or series of bollards) may be required to protect the bioretention system from traffic
- Pre-treatment is recommended when sediment loads are likely to be high, or if there is a risk of spills.
 The simplest option is to incorporate a pit with a sump immediately upstream of the bioretention system



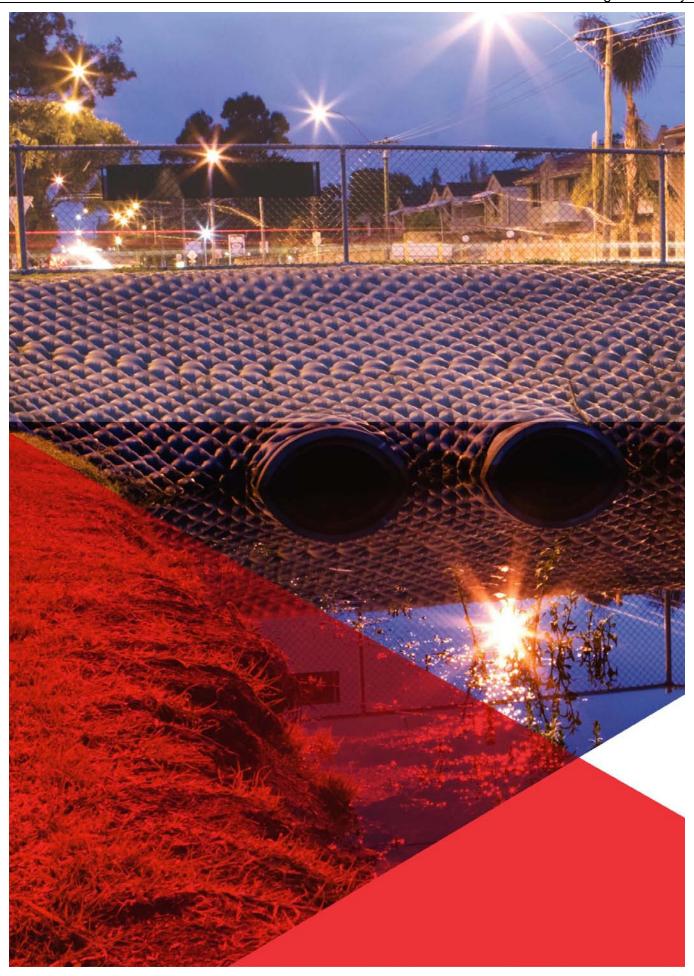
6.5.2. PROPRIETARY STORMWATER TREATMENT DEVICES

Council may consider approving the use of certain proprietary devices in place of bioretention measures, however prior to approval the following information must be provided for Council's consideration:

- The proposed reduction efficiencies need to be justified by rigorous scientific testing and results published in a credible engineering/scientific journals
- Pollutant reduction parameters independently verified using a method to suit local or regional conditions (comparison between climate, pollutant concentrations and soluble pollutants)
- Information on the performance under dry weather flows (to account for potential pollutant leaching)
- Information on the assumed high-flow bypass rate and details about how it was determined, and
- The modelled pollutant reduction efficiency reflects the published figures.

Water Quality Improvement

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Appendices



APPENDIX A - CHECKLIST FOR STORMWATER DESIGN PLANS

Survey Information Requirements	Provided
Boundaries.	
Services within the public footway.	
Site features ie trees, depressions.	
Sufficient levels to provide contour levels at 0.1 m for flat sites ranging to 0.5 m for steep sites on plan extending 10 m into the adjoining properties or as required for detail purposes	
Top of kerb levels.	
Boundary levels.	
North point.	
Levels to AHD where site is affected by overland flows/flooding.	
Benchmark to be indicated on the plans.	
Design Information Requirements	
Plans to be to a suitable scale 1:100 or 1:200	
Designers name, qualifications and contact details are to be included on the plans	
Full hydraulic/hydrological calculations prepared in accordance with the requirements of this policy including catchment plans, overland flow calculations and hydraulic grade line analysis etc.	
Details of the development layout including finished floor, garage and ground levels in accordance with the requirements of this policy	
Driveway levels at boundary and as required	
Full details of connection to Council's stormwater system including levels appropriate details and construction notes	
Location of all public utility services where they cross proposed pipelines from the	
development connecting directly into the street drainage system as required	
development connecting directly into the street drainage system as required Drainage layout with all pit/ pipe types, sizes, grades, invert and surface levels	

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APPENDIX B - OSD DESIGN CHECKLISTS

URBAN ZONE

Has a minimum of 300mm freeboard been provided between the habitable floor levels (or 100mm for non-habitable) and the OSD design storage top water level?	Yes/No
Detailed run-off and reservoir routing calculations provided - preferably in the form of DRAINS	Yes/No
Basin stage-storage-discharge relationship provided?	Yes/No
5 & 100 Year ARI pre and post development site discharges provided?	Yes/No
Above ground OSD storage	Yes/No
First 10% or 1m³ ponds where it will not create a nuisance	Yes/No
Vegetated areas are increased by 20% to accommodate growth	Yes/No
Rock mulch (30-40mm) specified, and no bark chips/organic mulch	Yes/No
Fenced if greater than 500mm deep	Yes/No/N/
No greater than 1.2m deep	Yes/No/N
Base has fall greater than 1%	Yes/No
Below ground OSD tanks	Yes/no
Have 2 x 600mm x 900mm access grates been provided?	
Maximum distance within the tank to a grate is no greater than 3m?	
Access point away from trafficked areas?	
Have step irons been provided for tanks deeper than 1200mm?	Yes/No
Plans to AHD and to a 1:100 scale, which include the following in addition to the standard SDP requirements:-	
The location, extent and maximum depth of all OSD storage areas and their contributing catchments.	
Details of the OSD basin discharge control pit, weir, orifice, trash screen and sump	
Detailed cross-sections through each storage area.	
The discharge points to Council's system (including weirs).	
Pipe long-sections showing size, grade, invert levels and hydraulic grade line levels.	Yes/No
Landscape plan and planting schedule	Yes/No
Letter of intention to grant a drainage easement if inter-allotment easements are required through downstream properties.	Yes/No/N/

DESIGN ENGINEER:	
DATE:	
QUALIFICATIONS:	<u> </u>

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RURAL ZONE

Has a minimum of 300mm freeboard been provided between the habitable floor levels (or 100mm for non-habitable) and the OSD design storage top water level?	Yes/No
Detailed run-off and reservoir routing calculations provided - preferably in the form of DRAINS	Yes/No
Basin stage-storage-discharge relationship provided?	Yes/No
5 & 100 Year ARI pre and post development site discharges provided?	Yes/No
Above ground OSD storage	Yes/No
First 10% or 1m³ ponds where it will not create a nuisance	Yes/No
Vegetated areas are increased by 20% to accommodate growth	Yes/No
Rock mulch (30-40mm) specified, and no bark chips/organic mulch	Yes/No
Fenced if greater than 500mm deep	Yes/No/NA
No greater than 1.2m deep	Yes/No/NA
Base has fall greater than 1%	Yes/No
Below ground OSD tanks	
Have 2 x 600mm x 900mm access grates been provided?	
Maximum distance within the tank to a grate is no greater than 3m?	
Access point away from trafficked areas?	Yes/No
Have step irons been provided for tanks deeper than 1200mm?	Yes/No
Plans to AHD and to a 1:100 scale, which include the following in addition to the standard SDP requirements:-	
The location, extent and maximum depth of all OSD storage areas and their contributing catchments.	Yes/No
Details of the OSD basin discharge control pit, weir, orifice, trash screen and sump	
Detailed cross-sections through each storage area.	
The discharge points to Council's system (including weirs).	Yes/No
Pipe long-sections showing size, grade, invert levels and hydraulic grade line levels.	Yes/No
Landscape plan and planting schedule	Yes/No
Letter of intention to grant a drainage easement if inter-allotment easements are required through downstream properties.	Yes/No/NA

DESIGN ENGINEER:	
DATE:	-
QUALIFICATIONS:	

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APPENDIX C – NATIONAL AND COUNCIL STANDARDS

AUSTRALIAN STANDARDS

NATIONAL CONSTRUCTION CODE

The National Construction Code (NCC) is a uniform set of technical provisions for the design and construction of buildings & other structures throughout Australia. It sets the minimum requirements for design and construction. The Plumbing Code of Australia is contained in NCC Volume three, and should be adhered to with guidance for stormwater systems provided in section D. The remaining volumes provide relevant stormwater requirements based on building class.

AS/NZS 3500

The Australian and New Zealand Standard 3500 was prepared to provide solutions to comply with the NCC. AS/ NZS 3500.3 is focuses on stormwater drainage and sets out requirements for materials, design, installation and testing of roof drainage systems, surface drainage systems and subsoil drainage systems to the point of connection with Councils drainage systems. AS/NZS 3500.1 is also used to detail rainwater tank details and connections.

AUSTRALIAN RAINFALL & RUNOFF

Australian Rainfall & Runoff (ARR) is a national guideline for the estimation of design flood characteristics in Australia and is currently undergoing revision. It provides procedures for rainfall estimation, peak flow estimation and flood hydraulics. Where practical, the requirements from ARR have been summarised in this policy for easy reference

COUNCIL STANDARDS

DESIGN ARIS

The following design ARI's should be applied to the following components of the stormwater system:

Table 8 - Design ARIs

Stormwater Design Element	Design Average Recurrence Interva (Years)	
Local flowpath	100	
Surface/piped drainage	5	
Surface/piped drainage – critical facilities	100	
Eaves gutters/downpipes	20	
Eaves gutters/downpipes – charged line drainage systems	100	
Eaves gutters/downpipes –in association with an OSD system where overflows have not been directed into the basin	100	
Box gutters	100	
Outlet to natural watercourse	20	
Inter-allotment drainage (where a flowpath for flow in excess of the pipe capacity has been provided)	5	

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FREEBOARD

The following freeboards have been adopted to protect development from inundation of stormwater:

Table 9 - Minimum freeboard

Description	Minimum Freeboard (mm)	
Floor level of dwelling in relation to peak water surface level of 100 year local flowpath	300	
Garage level in relation to surrounding ground levels and above peak water surface level of 100year local flowpath	100	
Underside of solid fencing in relation to finished ground levels or the top water surface level of overland flow or flood levels	100	
OSD – Habitable Floor Level	300	
OSD – Garage floor level	100	

Properties affected by mainstream and overland flooding are referred to Council's Citywide Development Control Plan – Chapter 11 for appropriate freeboard levels.

TAILWATER

Water surface level calculations are required to recognise the effect of any downstream controls due to the location of structures or known water surface levels, whether on the development site or external to the site.

Table 10 - Tailwater conditions

Condition	Tailwater
Free outfall	Pipe obvert
Discharge to receiving waters	Flood level of creek during pipe design AR event
Discharge to kerb & gutter or existing pipe	Top of kerb
Discharge to a point designed to surcharge	Height of surcharge

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Consideration will be given to accepting a lower starting level where this is supported by appropriate calculations demonstrating that this is suitable. Conversely, a higher starting level will be applicable in some circumstances, particularly near sag pits where the flow of water may exceed the top of kerb.

HAZARD

In the urban area, the velocity and depth product (flow hazard) shall be less than 0.4 in local flowpaths. Council may require a lower ratio where the development usage may warrant higher safety standards

Easement widths

The following standard easement widths shall be adopted:

Table 11 - Stormwater pipe easements widths

Pipe Diameter (mm)	Width of Easement to Drain Water (m)	
100, 150, 225	7*	
300	1.5	
375, 400	2	
252, 600, 675	2.5	
750, 825, 900	3	
1050, 1200	3.5	
1350, 1500	4	
1650, 1800	4.5	
>1800 and box culverts	As required by Council	
Flowpath/floodway	Full width of nominated flowpath/floodway plus 0.2r	

^{*} The easement width may be reduced to 0.9m between existing dwellings & boundary

The above table is only an indication of easement widths for shallow pipe systems. Consideration may be given to the reduction of the required easement widths where it is demonstrated that the full easement width cannot be obtained and the proposed pipe can be installed, maintained and replaced satisfactorily. Where multiple pipes are proposed, a larger easement will be required. Wider easements may also be required where the pipe depth warrants such an approach for the future maintenance/repairs of a pipeline.

INTERNAL DRAINAGE ELEMENTS

The design of the individual drainage components within the property shall be undertaken in accordance with the relevant Australian Standards. The following information provides a general summary/reference for individual components of the system.

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ROOF RUNOFF

Gutters and downpipes shall be sized in accordance with Section 3 of AS/NZS 3500.3. Gutter and downpipes can be sized using the formulas and tables provided. In the case of OSD design where overflow of the roof system is not directed to the OSD system ALL roof drainage shall be designed for the 100 year ARI event. Design of the roof system shall account for flows in excess of the capacity of the system such that they do not cause nuisance to the drained or downstream properties.

INTERNAL STORMWATER PITS

Stormwater pits or cleaning eyes shall be provided at the following locations where appropriate to provide access and maintenance functions:

- At all junctions, changes of gradient, changes in diameter and changes in direction of site stormwater drains;
- · Inspection openings within buildings;
- · Reflux valves;
- · Flap valves fitted at the downstream ends of subsoil drains; and
- · At a maximum spacing of 30m for cleaning access

Inlet pits are to designed in accordance with AS/NZS 3500.3 and be installed in locations such that:

- · All run-off from roofed and paved areas is collected;
- · Run-off does not enter garages or buildings;
- · Long term ponding of stormwater does not occur;
- · Pedestrian access is not affected by depths of flow; and
- Flows over the public footway are minimised

The following minimum internal pit dimensions shall be incorporated as per Section 7 of AS/NZS 3500.3.

Table 12 - Depth to invert of stormwater pipe outlet

Depth to invert of outlet		Minimum internal dimensions		
	Rectangular		Circular	
	Width (mm)	Length (mm)	Diameter (mm)	
≤ 600	450	450	600	
> 600 ≤ 900	600	600	900	
> 900 ≤ 1200	600	900	1000	
> 1200*	900	900	1000	

^{*} Step irons to be provided for pits in excess of 1.2m deep

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INTERNAL STORMWATER PIPES

Pipe sizes shall be sufficient to cater for the run-off capacity of the attached system. Stormwater pipes shall be designed in accordance with the requirements of AS/NZS 3500.3. The minimum diameter of any pipeline draining a roofed area shall be 90 mm and following longitudinal grades shall be used as per section 6 of AS/NZS 3500.3;

Table 13 - Stormwater pipe gradients

Nominal Size	Minimum Gradient (% fall)	Nominal Size	Minimum Gradient (% fall)
90	1.00	225	0.50
100	1.00	300	0.40
150	1.00	375	0.33

In very flat areas, and where minor filling is not acceptable, consideration will be given to use of a lower gradient. It will need to be demonstrated that the pipe will have a sufficient velocity so that siltation blockage does not occur. Extra provision for cleaning access with pits at every 15 m shall be provided to facilitate the lower gradient.

Minimum pipe cover for internal property drainage systems shall be in accordance with Table 6.2.5 of AS/NZS 3500.3. Inter-allotment drainage lines in non-trafficable areas require a minimum of 450 mm cover and road drainage requires a minimum cover of 600 mm in accordance with Council's Specification For Roadworks & Drainage Associated With Subdivision or Other Development

For smaller developments, hydraulic design charts are detailed in Figure 5.4.11.2 of AS/NZS 3500.3 to assist with sizing pipelines.

The minimum pipe velocity should be 0.6 m/s and a maximum velocity of 6 m/s during the design storm

SILT ARRESTERS

Silt/oil arresters must be placed at the last storm water drainage pit before discharging into Council's drainage system, except for single or dual occupancy type residential development. The silt arrester shall be designed in accordance with the provisions in Section 7 of AS/NZS 3500.3 and will be constructed from a suitable galvanised steel mesh.

SUBSOIL DRAINAGE

Subsoil drainage shall be provided as part of the stormwater management system to protect structures (especially in the industrial area, retaining walls and basements) and mitigate long term surface water ponding. When required, all subsoil drainage shall be in accordance with Section 6 of AS/NZS 3500.3 and the details of proposed connection to the stormwater system shall be provided.

STORMWATER LINES UNDER BUILDINGS

Site stormwater drainage lines proposed under buildings will not be allowed by Council and will only permitted where there is no practicable alternative and pipes cannot be routed around the building. The design must be considered at the DA stage and approved by Council on its merit. Short-circuiting the pipe layout, to save costs, will not be considered.

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Design of any stormwater lines under buildings must be in accordance with Section 6 of AS/NZS 3500.3 as well as the following constraints;

- · the number of pipes underneath the building is to be minimised as much as practicable
- · piping underneath buildings is to be straight with no bends or junctions
- · inspection openings must be provided at all points of entry and exit under the building.
- Structural foundation design must account for the stormwater drainage pipes in the details. The proposed flooring system and foundation design must be suitable for any proposed stormwater pipes beneath the building. Details of penetrations and expansion material must be included in the foundation design.
- Stormwater pipes beneath the building are to be fully water tight and protected against mechanical movement and damage from the foundation system and must be sewer grade or better.
- · All narrow lot development to install sewer grade twin pipes to provide redundancy if one pipe is damaged.

PRIVATE/INTER-ALLOTMENT DRAINAGE DESIGN

The following conditions must be followed when designing a private/inter-allotment drainage line:

- The private drainage system (pipe and overland flowpath) shall accommodate runoff generated from all
 impervious areas of the development based on a 100 year ARI design storm events. A minimum of the 5 year
 ARI is to be contained within the private drainage pipe.
- The private drainage system shall be designed to accept concentrated drainage from existing and future buildings and paved areas on each allotment. An assumption of 80% impervious will be suitable for most single residential developments, but will be decided on a case by case basis.
- Pipes shall be designed to flow full at the design discharge without surcharging at inspection pts.
- The pipeline shall be minimum of 150 mm diameter, and UPVC sewer grade.
- · A major flowpath shall be provided above the pipeline.
- · Inspection pits are to be provided at the following locations:
- o At the upstream end of all lines;
- o At all changes in horizontal and/or vertical alignments; and
- o At all changes in pipe sizes.
- Private drainage shall be connected to Council's stormwater system in accordance with Section 3.4.1. The
 conversion from the private drainage pipe to the steel sections shall be achieved by the construction of an
 inspection pit inside the property boundary.

FLOW RATE DETERMINATION AND HYDRAULIC DESIGN

The characteristics of modern urban stormwater management have evolved beyond the objectives and design solutions that were recommended in even the most recent editions of Australian Rainfall & Runoff. The predictions of peak stormwater flows using the Rational Method may not adequately represent the processes occurring within urban catchments. The use of computer modelling has changed flow rate estimation and hydraulic grade line analysis considerably, with models being able to undertake a large variety of complex calculations. This includes the ability to account for the degree of urbanisation for different land uses, storages in urban catchments (rainwater tanks, OSD & detention basins) and apply unsteady flow throughout conveyance networks. Therefore modern modelling software is the preferred method for flow rate estimation and hydraulic design.

The use of industry standard computer models by Professional Engineers for stormwater design is supported by Council. Should Consultants wish to use a program not mentioned here, details are to be submitted to Council prior to use. In this regard, Council's preferred modelling software is DRAINS, TUFLOW, HEC-RAS & MUSIC. When using these models the following will apply;

- Parameters used in these models must be in accordance with the values acceptable to Council as outlined in Appendix Q and consistent with values recommended in AR&R
- · Where values other than those recommended in Appendix Q are used, their use must be justified.
- · Documentary evidence of the parameters used must be supplied with any submission to Council; and
- Electronic copies of final input and output computer files together with accompanying catchment and layout
 plans, for hydrological, hydraulic and water quality models must be provided for Council's records at the time of
 lodging detailed engineering plans
- Where models are produced using software other than what Council has specified above, full details of the
 model set-up and detailed output files and interpretation will be required in the form of a written report. ILSAX
 models are not permitted and will not be assessed.

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Appendices

RAINFALL IFD CHART FOR FAIRFIELD CITY COUNCIL

Rainfall intensity in mm/hr for various duration and return periods

DURATION	RETURN PERIOD					
MINUTES	5 YEARS	20 YEARS	100 YEARS			
5	133.59	170.89	219.37			
6	125.09	160.24	205.89			
7	118.04	151.25	194.38			
8	112.05	143.54	184.44			
9	106.85	136.82	175.76			
10	102.28	130.91	168.11			
11	98.22	125.65	161.30			
12	94.58	120.92	155.19			
13	91.28	116.66	149.66			
14	88.27	112.77	144.64			
15	85.52	109.22	140.04			
16	82.99	105.95	135.82			
18	78.46	100.12	128.31			
20	74.54	95.08	121.81			
22	71.09	90.65	116.12			
24	68.02	86.73	111.09			
26	65.27	83.23	106.59			
28	62.80	80.06	102.54			
30	60.55	77.20	98.87			
35	55.72	71.06	91.02			
40	51.76	66.04	84.61			
45	48.44	61.83	79.25			
50	45.61	58.25	74.69			
55	43.17	55.16	70.75			
60	41.03	52.45	67.31			
90	32.17	41.26	53.08			
120	26.95	26.95 34.65				
180	20.91	27.00	34.94			
540	10.48	13.73	18.01			

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Attachment A

APPENDIX E - ROCK SIZING FOR SINGLE PIPE OUTLETS

The following Rock Sizing for Single Pipe Outlets is the property of Catchments and Creeks Pty Ltd

www.catchmentsandcreeks.com.au/docs/Rock-Sizing-For-Single-Pipe-Outlets.pdf

Rock Sizing for Single Pipe Outlets

STORMWATER MANAGEMENT PRACTICES





Photo 1 - Rock stabilised pipe outlet

Photo 2 - Rock pad outlet structure

1. Introduction

The primary performance objectives typically relate to minimising the risk of bed erosion at the outlet, and preventing undermining of the outlet head wall. The critical design parameters are the mean rock size (d_{50}) and length of rock protection (L).

The various design charts and tables presented in this fact sheet are based on the acceptance that some degree of rock movement (rearrangement) is expected following installation and that some degree of bed scour will still occur downstream of the rock pad during major flows. The minimum pad length is based on practicality issues and will not necessarily prevent all bed scour, especially when high tailwater levels exist.

2. Sizing rock for single pipe outlet structures

Recommended minimum mean (d_{50}) rock sizes are presented in tables 2 and 3. These values have been rounded up to the next 100 mm increment in recognition of the limited availability of rock sizes and the high variability of expected outcomes. Mean rock sizes are also presented graphically in Figure 1. Some minor variations should be expected between Figure 1 and the tabulated values

A 36% increase in rock size is recommended if rounded rocks are used instead of angular rock.

The rock pad should be straight and aligned with the direction of the discharge. The recommended minimum length of rock protection (L) may be determined from tables 4 & 5. The recommended minimum width of the rock pad immediately downstream of the outlet (W₁) is the greater of the width of the outlet apron or the pipe diameter plus 0.6 m, and at the downstream end of the rock pad (W₂) the greater of W₁ or (D + 0.4L) as shown in Figure 2.

In circumstance where the width of the rock pad is governed by the width of the receiving channel, then the rock protection may need to extend partially up the banks of the channel if suitable vegetation cannot be established on the channel banks.

The thickness of the rock pad should be based on at least two layers of rock. This typically results in an overall pad thickness as presented in Table 1.

The surface elevation of the downstream end of the rock pad should be level with the invert of the receiving channel, i.e. the rocks should be recessed into the outlet channel (Figure 3) to minimise the risk of erosion around the outer edges of the rock pad.

The placement of filter cloth under the rock pad is generally considered mandatory for all permanent structures; however, if heavy sedimentation is expected within the rock voids, then the 'need' for the filter cloth is reduced. The placement of filter cloth is essential in circumstances where it is only practical to place a single layer of rock.

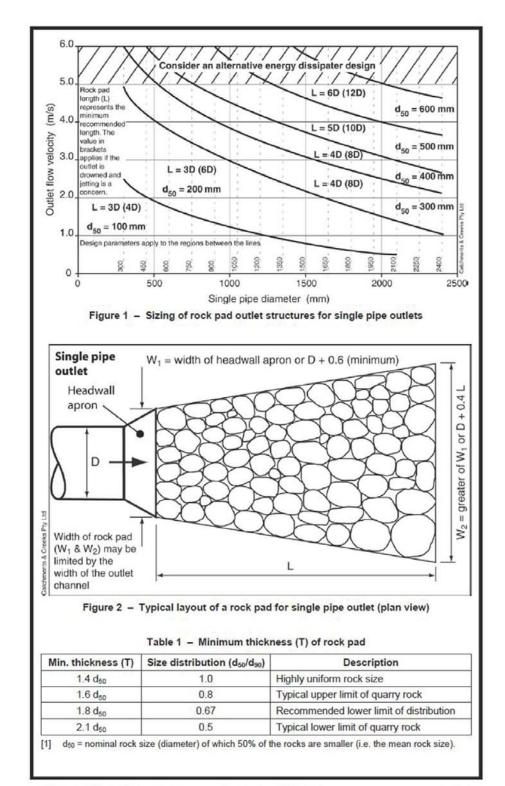
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3. Selecting the appropriate length of rock protection

During low tailwater conditions (TW < D/2) flow exiting the pipe will normally spread rapidly unless confined within the receiving discharge channel. Under such tailwater conditions the rock pad provides scour control benefits as well as energy dissipation. Typically the nominated minimum length of rock protection is considered adequate under these conditions.

As tailwater levels increase in elevation (D/2 < TW < D) energy dissipation as a direct result of the rock pad begins to decrease causing more flow energy to pass over the rocks. In such cases the length of the rock pad may be doubled (i.e. twice the minimum length), but only if it is essential to minimise soil erosion downstream of the rock pad.

When the outlet is submerged (TW > D) an outlet 'jet' can pass over the rock pad with minimal energy dissipation. In such cases the rock pad still provides essential scour protection adjacent to the pipe outlet, but extending the rock protection beyond the nominated minimum length may not necessarily provide any significant increase in energy dissipation or scour control.

Outlet jetting occurs when the outlet is submerged and outlet velocity is significantly greater than the receiving water velocity. High velocity jets can cause bank erosion problems if the outlet is aimed at a downstream embankment. Typically, such problems only occur if an unprotected embankment is less than 10 to 13 times the pipe diameter away from the outlet.

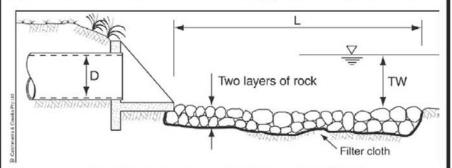


Figure 3 - Rock pad recessed into the receiving channel

4. Background to rock sizing for multi-cell culverts

The rock sizes presented in tables 2 and 3 represent an average of the values achieved by the application of the equations and design tables presented by ASCE (1992), Bohan (1970, for low tailwater) and Orange County (1989). The values have been rounded up to the next 100 mm increment in recognition of the wide variations in recommended rock sizes presented in the various literature.

Alternatively, rock size [m] may be determined from Equations 1 as presented in ASCE (1992).

$$d_{50} = 0.066 \,Q^{4/3} / (TW \cdot D)$$
 (1)

For multiple pipe outlets, refer to the separate fact sheet prepared for 'multi-cell pipe and culvert outlets'.

5. References

ASCE 1992, Design and construction of urban stormwater management systems. ASCE Manuals and Reports of Engineering Practice No. 77, and Water Environment Federation Manual of Practice FD-20, American Society of Civil Engineers, New York, USA. ISBN 0-87262-855-8

Bohan, J.P., 1970, Erosion and riprap requirements at culvert and storm-drain outlets. Research Report H-70-2, U.S. Army Engineer Waterway Experiment Station, Vicksburg, Mississippi, USA

Isbash, S.V. 1936, Construction of dams by depositing rock in running water, Transactions, Second Congress on Large Dams, Washington, D.C. USA

Orange County, 1989, Soil Erosion and Sediment Control Manual. Orange County Planning Department, Hillsborough, North Carolina, USA

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Outflow velocity (m/s)	Culvert height or pipe diameter (mm)								
	300	375	450	525	600	750	900		
0.50	100	100	100	100	100	100	100		
1.00	100	100	100	100	100	100	100		
1.50	100	100	100	100	100	200	200		
2.00	100	100	200	200	200	200	200		
2.50	100	200	200	200	200	200	200		
3.00	200	200	200	200	200	200	200		
3.50	200	200	200	200	200	300	300		
3.75	200	200	200	200	300	300	300		
4.00	200	200	200	300	300	300	400		
4.25	200	200	300	300	300	300	400		
4.50	200	300	300	300	300	400	400		
4.75	200	300	300	300	300	400	500		
5.00	300	300	300	300	400	400	500		
5.25	300	300	300	400	400	500	500		
5.50	300	300	300	400	500	500	500		
5.75	300	300	400	500	500	500	500		
6.00	300	400	500	500	500	500	600		

Table 3 - Mean rock size, d₅₀ (mm) for culvert outlet scour protection

Outflow	Culvert height or pipe diameter (mm)								
velocity (m/s)	1050	1200	1350	1500	1800	2100	2400		
0.50	100	100	100	100	100	100	100		
1.00	100	100	200	200	200	200	200		
1.50	200	200	200	200	200	300	300		
2.00	200	200	200	200	300	300	300		
2.50	200	300	300	300	300	400	400		
3.00	300	300	300	300	400	500	500		
3.50	300	400	400	400	500	500	500		
3.75	400	400	400	400	500	500	600		
4.00	400	400	500	500	500	600	600		
4.25	400	500	500	500	600	600	600		
4.50	500	500	500	500	600	600	600		
4.75	500	500	500	600	600	600	700		
5.00	500	500	600	600	600	700	700		
5.25	500	600	600	600	600	700	700		
5.50	600	600	600	600	700	700	900		
5.75	600	600	600	600	700	900	900		
6.00	600	600	600	700	700	900	900		

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Table 4 - Minimum length (L) of rock pad relative to cell height (H) for culvert outlet protection [1,2]

Outflow	Culvert height or pipe diameter (mm)							
velocity (m/s)	300	375	450	525	600	750	900	
0.50	3	3	3	3	3	3	3	
1.00	3	3	3	3	3	3	3	
1.50	3	3	3	3	3	3	3	
2.00	3	3	3	3	3	3	3	
2.50	3	3	3	3	3	3	3	
3.00	3	3	3	3	3	3	3	
3.50	3	3	3	3	3	4	4	
3.75	3	3	3	3	4	4	4	
4.00	3	3	3	4	4	4	4	
4.25	3	3	4	4	4	4	4	
4.50	3	4	4	4	4	4	4	
4.75	3	4	4	4	4	4	5	
5.00	4	4	4	4	4	4	5	
5.25	4	4	4	4	4	5	5	
5.50	4	4	4	6	6	6	6	
5.75	4	4	6	6	6	6	6	
6.00	4	6	6	6	6	6	6	

Table 5 - Minimum length (L) of rock pad relative to cell height (H) for culvert outlet protection [1,2]

Outflow	Culvert height or pipe diameter (mm)								
velocity (m/s)	1050	1200	1350	1500	1800	2100	2400		
0.50	3	3	3	3	3	3	3		
1.00	3	3	3	3	3	3	4		
1.50	3	3	3	3	3	4	4		
2.00	3	3	3	3	4	4	4		
2.50	3	4	4	4	4	4	4		
3.00	4	4	4	4	4	4	4		
3.50	4	4	4	4	5	5	5		
3.75	4	4	4	4	5	5	5		
4.00	4	4	5	5	5	5	5		
4.25	4	5	5	5	5	5	5		
4.50	5	5	5	5	5	5	5		
4.75	5	5	5	5	5	5	5		
5.00	5	5	5	5	6	6	6		
5.25	6	6	6	6	6	6			
5.50	6	6	6	6	6		1		
5.75	6	6	6	6	6	1			
6.00	6	6	6	6	6	1			

^[1] Values represent the recommended <u>minimum</u> length of rock protection to prevent significant scour; however, some degree of soil erosion should be expected downstream of the rock protection.

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^[2] Under high tailwater conditions (TW > D/2) outlet jetting may extend beyond the rock protection during high tailwater conditions resulting in bed and/or bank erosion downstream of the rock protection. Extending the length of the rock protection will not necessarily reduce the risk of downstream <u>bank</u> erosion under high tailwater conditions.

APPENDIX F - SAMPLE LETTER FOR EASEMENT REQUEST

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Dear Sir/ Madam

Re: Request for drainage easement through your property

I (Bill Bloggs) of (Ace Designs Pty Ltd) am proposing a (multi-unit housing) development at (Lot 1234 DP 2005678) being (10 Abbey Road, Fairfield).

As part of this development I am investigating the possibility of draining the proposed development to (Penny Lane) through your property. The proposed works, should you agree to the proposal, would involve constructing a (225mm) diameter pipe through your property and creation of a (I) metre wide easement in accordance with the attached sketch.

I am prepared to offer fair and reasonable compensation for the right to drain through your property and to this effect I offer (\$xxxx.xx) as has been determined by a registered Land Valuer. I have attached a copy of the valuation for your information.

The construction of the proposed drainage line would be undertaken by licensed tradesmen, under the supervision of Fairfield City Council or an Accredited Certifier.

Any disturbance of your property during the construction phase will be restored to its original condition. I am willing to enter into an agreement to this effect. All costs associated with the pipe construction and easement will be at my expense. Any ongoing maintenance costs will be the responsibility of the owner/s of the proposed development

I urge you to give this proposal serious consideration but regardless request that you fill in the details at the bottom of the letter to state whether or not you will or will not consent to a drainage easement through your property. Please do not hesitate to contact me on (1234 5678) if you require further information or wish to discuss the matter.

Yours faithfully
Bill Bloggs
Owner's Statement
I
Signed:

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APPENDIX G - POSITIVE COVENANT FOR BASEMENT STORMWATER PUMP

Where a development incorporates a Basement Stormwater Pump System in accordance with this policy a Positive Covenant shall be created over the system in the following terms:

Positive Covenant

The registered proprietor of the lot(s) hereby burdened will in respect of the basement stormwater pump-out system:

- Maintain and repair at the sole expense of the registered proprietors the whole of the basement stormwater pump-out system so that if functions in a safe and efficient manner;
- 2. Permit the Council or its authorised agents from time to time and upon giving reasonable notice (but at any time and without notice in the case of an emergency) to enter and inspect the land for the compliance with the requirements of this covenant; and
- Comply with the terms of any written notice issued by the Council in respect of the requirements of this covenant within the time stated in the notice.

The expression "basement stormwater pump-out system" shall include all pump mechanisms, rising mains, collection sumps, ancillary gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to direct stormwater to the basement stormwater pump-out system.

Pursuant to Section 88F(3) of the Conveyancing Act 1919 the Council shall have the following additional powers:

- 1. In the event that the registered proprietor fails to comply with the terms of any written notice issued by the Council as set out above the Council or its authorised agents may enter the land with all necessary materials and equipment and carry out any work which the Council in its discretion considers reasonable to comply with the said notice referred to above; and
- 2. The Council may recover from the registered proprietor in a Court of competent jurisdiction:
 - a. Any expense reasonably incurred by it in exercising its powers under subparagraph (1) hereof. Such expense shall include reasonable wages for the Council's employees engaged in effecting the work referred to in (1) above, supervising and administering the said work together with costs, reasonably estimated by the Council, for the use of materials, machinery, tools and equipment in conjunction with the said work.
 - b. Legal costs on an indemnity basis for issue of the said notices and recovery of the said costs and expenses together with the costs and expenses of registration of a covenant charge pursuant to Section 88F of the Act or providing any certificate required pursuant to Section 88G of the Act or obtaining any injunction pursuant to Section 88H of the Act.

This covenant shall bind all persons who are of claim under the registered proprietor(s) as stipulated in Section 88E(5) of the Act.

Name of Authority having the power to release vary or modify the Positive Covenant shall be Fairfield City Council.

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APPENDIX H - RESTRICTION ON USE AND POSITIVE COVENANT FOR LOCAL FLOWPATHS

Restriction on the Use of Land

- 1) The proprietor of the burdened lot shall not:
 - a) Erect, construct or place any building or other structure,
 - b) Make alterations to the ground surface levels, kerbs, driveways or any other structure, within the land so burdened without the prior written consent of Fairfield City Council.
- 2) No fencing, including boundary fencing shall be erected within the land hereby burdened unless such fencing is of an open style which will not obstruct the flow of water across the land.

Name of authority empowered to release, vary or modify terms of the Restriction on use of land is Fairfield City Council.

Positive Covenant

- The proprietor of the burdened lot from time to time shall do all things necessary to maintain, repair and replace the storm water overland flow path within the land so burdened to the satisfaction of Fairfield City Council and in this regard must comply with any written request of the Council with such reasonable time period as nominated in the said written request.
- 2) Where the proprietor of the burdened lot fails to comply with any written request of the Fairfield City Council referred to in (1) above the proprietor shall meet any reasonable cost incurred by the Council in completing the work requested.
- 3) Full and free right for the Fairfield City Council and every person authorized by it to enter upon the burdened lot in order to inspect, maintain, cleanse, replace, repair any pipeline, grate, pit, other structure or alter surface levels to ensure the maintenance of the overland flow path within the land so burdened.

Evidence of registration of the restriction shall be submitted to the Principal Certifying Authority, prior to occupation.

Name of authority empowered to release, vary or modify the terms of the Positive Covenant is Fairfield City Council.

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APPENDIX I - EASEMENT AND POSITIVE COVENANT FOR ROOF WATER

Terms of Easement

An easement to drain storm water to permit the storm water from the roof of the benefited lot across the roof, along the guttering and through the storm water pipes of the affected lot while the building erected on the benefited lot at the time of granting this easement shall remain on the lot benefited.

Terms of Positive covenant

The registered proprietor(s) of the burdened lots covenant with the Council that they will maintain and repair the structure and works on the land in accordance with the following terms and conditions:

- The registered proprietor(s) will:
 - a) Keep the structure and works clean and free from silt, rubbish and debris;
 - b) Maintain and repair at the sole expense of the registered proprietor(s) the whole of the structure and works so that it functions in a safe and efficient manner.
- 2) For the purpose of ensuring observance of the covenant the Council may by its servants or agents at any reasonable time of the day upon giving to the person against whole the covenant is enforceable not less than two days' notice (but at any time without notice in the case of an emergency) enter the land and view the condition of the land and the state of construction maintenance or repair of the structure and works on the land.
- 3) By written notice the Council may require the registered proprietor(s) to attend to any matter and to carry out such work within such time as the Council may require to ensure the proper and efficient performance of the structure and works and to the extent Section 88F(2)(a) of the Act is hereby agreed to be amended accordingly.
- 4) Pursuant to Section 88F(3) of the Act the authority shall have the following additional powers pursuant to this consent:
 - a) in the event that the registered proprietor(s) fails to comply with the terms of any written notice issued by the Council as set out above the Council or its authorized agents may enter the land with all necessary equipment and carry out any work which the Council in its discretion considers reasonable to comply with the said notice referred to in 3 hereof;
 - b) the Council may recover from the registered proprietor(s) in a Court of competent jurisdiction:
 - i) any expense reasonably incurred by it in exercising its powers under subparagraph (a) hereof. Such expense shall include reasonable wages for the Council's own employees engaged in effecting the said work, supervising the said work and administering the said work;
 - ii) legal costs on an indemnity basis for issue of the said notices and recovery of the said costs and expenses together with the costs and expenses of registration of a covenant charge pursuant to 88F of the Act, or providing any certificate required pursuant to Section 88G of the Act, or obtaining any injunction pursuant to Section 88H of the Act.
- 5) This covenant shall bind all persons who claim under the registered proprietor(s) as stipulated in Section 88E(5) of the Act.

For the purposes of this covenant:

Structure and works shall mean the storm water drainage system constructed on the land including all roof gutters, pipes, drains, walls, kerbs, pits, grates, tanks, chambers, basins and surfaces designed to control storm water on the land.

Name of Authority having the power to release vary or modify the Easement and Positive Covenant shall be Fairfield City Council.

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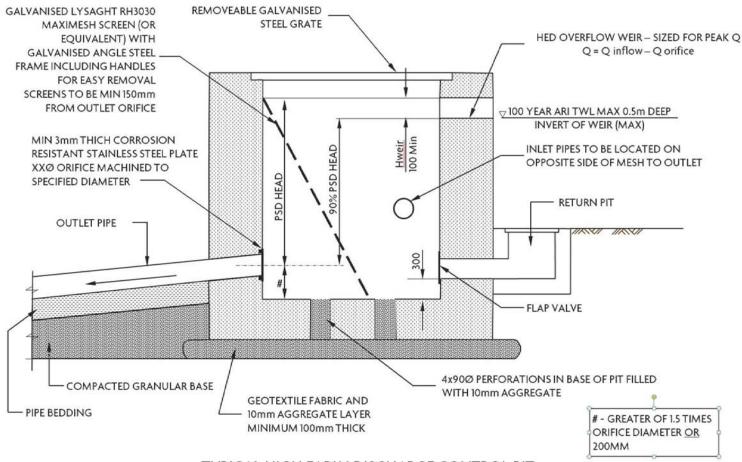
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TYPICAL DISCHARGE CONTROL PIT N.T.S.

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DISCHARGE APPENDIX K **CONTROL PIT TYPICAL HIGH EARLY**



TYPICAL HIGH EARLY DISCHARGE CONTROL PIT

N.T.S.

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APPENDIX L - OSD CERTIFICATION CHECKLIST

OSD Certification Requirements	Provided
Certification that the OSD system will function in accordance with the approved design.	
Identification of any variations from the approved design and certify they are within the construction tolerances.	
Certification and evidence of any elements that were outside the construction tolerances that have been rectified to be within the tolerances and that these variations will not impair the performance of the OSD system	
Verification that all structural elements including storage tanks and retaining walls are structurally sound and fit for purpose;	
Work as Executed Plans prepared by a registered surveyor on a copy of the stamped approved construction plan and include the following;	
Registered surveyor's details and signature;	
Sufficient levels and dimensions to verify the OSD volumes;	
Location and surface and invert levels of all drainage pits;	
Invert levels of the internal drainage lines and pipe gradients;	
Finished floor levels of structures such as units and garages;	
Verification that the orifice plates have been fitted and the diameter of the fitted plates;	
Verification that trash screens have been correctly installed;	
Location and finished contour levels on any overland flow paths formed through the site;	
Detail of any variations or omissions made from the approved plans.	
Weir dimensions and levels; and	
Extent of the above ground storage	

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APPENDIX M - RESTRICTION ON USE AND POSITIVE COVENANT FOR ON-SITE DETENTION SYSTEMS

URBAN ZONE

Terms of Positive Covenant

- 1) The proprietor of the burdened lot from time to time shall do all things necessary to maintain, repair and replace the outlet grates and pipes and structures of and incidental to the stormwater detention system within the land so burdened to the satisfaction of Fairfield City Council and in this regard must comply with any written request of the Council within such reasonable time period as nominated in the said written request.
- 2) Where the proprietor of the burdened lot fails to comply with any written request of the Fairfield City Council referred to in (1) above the proprietor shall meet any reasonable cost incurred by the Council in completing the work requested.
- 3) Full and free right for the Fairfield City Council and every person authorised by it to enter upon the burdened lot in order to inspect, maintain, cleanse, replace, repair any pipeline, grate, pit other structure or alter surface levels to ensure the on-site detention system within the land so burdened functions to:
 - a) Restrict discharge from the site in the nine (9) hour 100 year ARI event to 140 litres per second per
 - b) Limit the outflow from the site in the shorter duration 100 year ARI storm events to the pre-developed site discharge; and
 - c) Restrict the outflow from the site in the shorter duration 5 year ARI storm events to the pre-developed site discharges.

NAME OF AUTHORITY EMPOWERED TO RELEASE, VARY OR MODIFY THE TERMS OF THE POSITIVE COVENANT IS FAIRFIELD CITY COUNCIL.

Terms of Restriction on Use

The proprietor of the burdened lot shall not:

- Erect, construct or place any building or other structure,
- Make alterations to the ground surface levels, grates, pits, kerbs, tanks, gutters or any other structure associated with the on-site detention system.

Within the land so burdened without the prior written consent of the Fairfield City Council.

NAME OF AUTHORITY EMPOWERED TO RELEASE, VARY OR MODIFY TERMS OF THE RESTRICTION ON USE OF LAND IS FAIRFIELD CITY COUNCIL.

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RURAL ZONE

Terms of Positive Covenant

- The proprietor of the burdened lot from time to time shall do all things necessary to maintain, repair and replace the outlet grates and pipes and structures of and incidental to the stormwater detention system within the land so burdened to the satisfaction of Fairfield City Council and in this regard must comply with any written request of the Council within such reasonable time period as nominated in the said written request.
- 2) Where the proprietor of the burdened lot fails to comply with any written request of the Fairfield City Council referred to in (1) above the proprietor shall meet any reasonable cost incurred by the Council in completing the work requested.
- 3) Full and free right for the Fairfield City Council and every person authorised by it to enter upon the burdened lot in order to inspect, maintain, cleanse, replace, repair any pipeline, grate, pit other structure or alter surface levels to ensure the on-site detention system within the land so burdened functions to:
 - a) Restrict discharge from impervious area to 78 litres per second per hectare for all 100 year ARI design rainfall up to and including 12 hour duration.

NAME OF AUTHORITY EMPOWERED TO RELEASE, VARY OR MODIFY THE ABOVE POSITIVE COVENANT IS FAIRFIELD CITY COUNCIL.

Terms of Restriction on Use of Land

The proprietor of the burdened lot shall not:

- 1) Erect, construct or place any building or other structure,
- 2) Make alterations to the ground surface levels, grates, pits, kerbs, tanks, gutters or any other structure associated with the on-site detention system.

Within the land so burdened without the prior written consent of the Fairfield City Council.

NAME OF AUTHORITY EMPOWERED TO RELEASE, VARY OR MODIFY THE ABOVE RESTRICTION IS FAIRFIELD CITY COUNCIL.

Name of Authority having the power to release, vary or modify the Easement and Positive Covenant shall be Fairfield City Council.

Name of Authority having the power to release, vary or modify the Easement and Positive Covenant shall be Fairfield City Council.

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APPENDIX N - OSD MAINTENANCE CHECKLIST

MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Inspect & remove any blockage of orifices	Six monthly	Owner	Remove grate & screen to inspect orifice and clear of any blockage.
Check attachment of orifice plates to wall of chamber and/or pit (gaps less than 5 mm)	Annually	Maintenance Contractor	Remove grate and screen. Ensure plates are mounted securely, tighten fixings if required. Seal gaps as required.
Check orifice diameters are correct and retain sharp edges	Five yearly	Maintenance Contractor	Compare diameter to design (see Work-as-Executed) and ensure edge is not pitted or damaged.
Inspect screen and clean	Six monthly	Owner	Remove grate(s) and screens and remove and debris.
Check attachment of screens to wall of chamber or pit	Annually	Maintenance Contractor	Remove grate(s) and screen(s). Ensure screen fixings are secure. Repair as required.
Check screen(s) for corrosion	Annually	Maintenance Contractor	Remove grate(s) and examine screen(s) for rust or corrosion, especially at corners or welds. Replace screen if corrosion is found in two or more locations or is greater than 10% of the screen.
Inspect walls (internal and external, if appropriate) for cracks or spalling	Annually	Maintenance Contractor	Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect outlet sumps & remove any sediment/sludge	Six monthly	Owner	Remove grate(s) and screen(s). Remove sediment/sludge build-up and check orifices are clear.
Inspect grate(s) for damage or blockage	Six monthly	Owner	Check both sides of a grate for corrosion, (especially corners and welds) damage or blockage. Remove debris and replace grate if corrosion in 2 or more locations or greater than 10% of the grate.

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MAINTENANCE ACTION	FREQUENCY	RESPONSIBILITY	PROCEDURE
Inspect outlet pipe & remove any blockage	Six monthly	Maintenance Contractor	Remove grate(s) and screen(s). Ventilate underground storage if present. Check orifices and remove any blockages in outlet pipe. Flush outlet pipe to confirm it drains freely. Check for sludge/debris on upstream side of return line.
Check step irons for corrosion	Annually	Maintenance Contractor	Remove grate. Examine step irons and repair any corrosion or damage.
Check fixing of step irons is secure	Six monthly	Maintenance Contractor	Remove grate(s) and ensure fixings are secure prior to placing weight on step iron.
STORAGE	·		
Inspect storage & remove any sediment/sludge in pit	Six monthly	Owner	Remove grate(s) and screen(s). Remove sediment/sludge build-up.
Inspect internal walls of storage (and external, if appropriate) for cracks or spalling	Annually	Maintenance Contractor	Remove grate(s) to inspect internal walls. Repair as required. Clear vegetation from external walls if necessary and repair as required.
Inspect & remove any debris/ litter/mulch etc blocking grates	Six monthly	Owner	Check for blockages on grates or within the storage, and remove and debris found.
Inspect areas draining to the storage(s) & remove debris/mulch/litter etc likely to block screens/grates	Six monthly	Owner	Remove debris and floatable material likely to be carried to grates.
Compare storage volume to volume approved. (Rectify if loss > 5%)	Annually	Maintenance Contractor	Compare actual storage available with Work-as Executed plans. If volume loss is greater than 5%, arrange for reconstruction to replace the volume lost or trim vegetation as required is. Council to be notified of the proposal.
Inspect storages for subsidence near pits	Annually	Maintenance Contractor	Check along drainage lines and at pits for subsidence likely to indicate leakages.

Updated from original source: On-site Stormwater Detention Handbook (Fourth Edition), Upper Parramatta River Catchment Trust, December 2005

APPENDIX O - MUSIC MODEL PARAMETERS

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This modelling guide is a draft only. Please check back frequently for a final edition.

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12 INTRODUCTION

This section of the Blacktown Council Developer Handbook for Water Conservation, Water Quality and Waterway Stability Treatment Measures Part 4 provides guidance on the modelling of treatment measures and strategies using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC). MUSIC can be used by designers, consultants, developers and Council to undertake conceptual design (size, configuration, depths) of treatment measures.

Part R of the Blacktown Development Control Plan (DCP) 2006 sets out what development types require water conservation and water quality treatments and any minimum area thresholds. Where Part R applies, Blacktown City Council requires that the MUSIC model must be used to assess conceptual stormwater quality treatment and harvesting strategies, unless the development satisfies the "Deemed to Comply Solutions" from Appendix A. These guidelines are provided to ensure consultants, developers and Council have a consistent and uniform approach to stormwater quality and harvesting modelling within the Blacktown Local Government Area (LGA). The guidelines provide specific guidance on rainfall and evaporation inputs, source node selection, rainfall runoff parameters, pollutant generation parameters and treatment nodes.

This Handbook is an adaptation of the Gold Coast City Council MUSIC Modelling Guidelines and should be read in conjunction with the MUSIC User Guide.

The original version was produced by EDAW and AECOM based on MUSIC 3. This current version has been significantly updated to adapt to the use of MUSIC 5.1 and incorporate MUSIC modelling practises developed at Blacktown Council over a number of years following the adoption of Council's Water Sensitive Urban and Integrated Water Cycle Management DCP Part R.

These modelling guidelines apply to all of Blacktown City Council area including the growth centres and employment lands.

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13 MUSIC MODEL SETUP

There are several steps to be undertaken prior to running a MUSIC model network, as summarised in Figure 1. These steps include selecting the appropriate meteorological data (rainfall and evaporation inputs), defining catchment areas (source nodes) to be incorporated into the model, and inputting soil properties (rainfall runoff properties) and pollutant generation characteristics for selected source nodes.

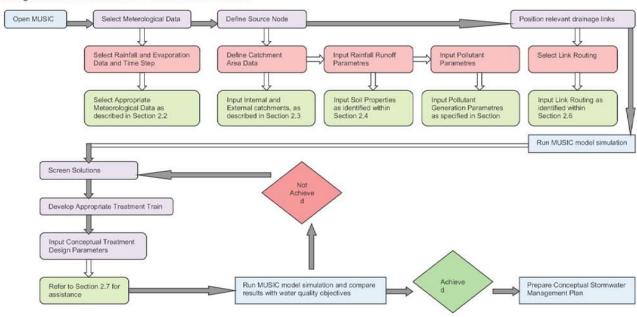


Figure 8: Schematic of MUSIC modelling process (as adapted from the Gold Coast City Council MUSIC Guidelines)

14 RAINFALL AND EVAPORATION INPUTS

Blacktown rainfall is typically 700 to 900 millimetres per year, with maximum rainfall in summer and minimum in winter.

Stormwater runoff (represented as surface runoff and baseflow) is generated in MUSIC through the interaction of rainfall, evapotranspiration and the MUSIC Rainfall-Runoff Model (see *MUSIC User Guide* for a full description of Rainfall-Runoff Model). The following sections outline Blacktown City Council's preferred rainfall and evapotranspiration datasets.

14.1 Rainfall Data for Water Quality Modelling

Blacktown City Council requires the following approach to rainfall simulation be adopted for modelling:

- · Continuous simulation of a minimum of 10 years should be used.
- A 6 minute time step should be used to allow for the appropriate definition of storm hydrograph movement through small-scale treatment measures such as vegetated swales and bioretention systems.

To provide a consistent approach to modelling, Blacktown City Council has identified an appropriate rainfall station for the Blacktown LGA, and periods of modelling to be utilised within the MUSIC model. Two 6 minute data stations were investigated for their suitability. These were the rainfall stations at:

- 067033 Richmond RAAF Base, located approximately 8 kilometres north-west of Blacktown LGA.
- 067035 Liverpool (Whitlam Centre), located approximately 11 kilometres south of Blacktown LGA.

Rainfall data from each of these stations was compared to daily data available at Blacktown (gauge no. 067059), to see which bore a closer resemblance to rainfall conditions within the Blacktown LGA. A common period was compared for all stations: 1964 to 1992. The results of this investigation are shown in figure 2.

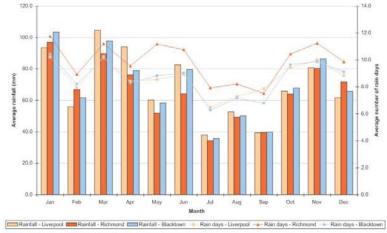


Figure 2: 6 minute rainfall station comparison

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The recommended 6 minute rainfall station for use within Blacktown LGA is 067035 Liverpool (Whitlam Centre).

Both the Liverpool and Richmond stations provide a reasonable match to Blacktown in terms of average monthly rainfall, but the Liverpool data matches Blacktown's rainday pattern better than the Richmond data.

A reasonable length of record is available from Liverpool, with 6 minute records starting in 1965 and continuing to 2001 (with one significant gap during 1978 to 1980). In 2001 the station was closed, but was replaced with Station 067020 Liverpool (Michael Wenden Centre). To ensure a continuous data set, data from both stations will need to be used.

Given the above, Blacktown City Council requires all stormwater quality modelling in MUSIC to be undertaken using the Liverpool 6 minute rainfall data. A modelling period of 1967 to 1976 is recommended, as for this period, the annual rainfall is representative of the long-term average.

Table 1 includes details of the recommended data.

Table 1: Recommended 6 Minute Rainfall Station

Rainfall station	Modelling period	Annual rainfall (millimetres)
067035 Liverpool (Whitlam Centre)	1967 to 1976	857

14.2 Rainfall Data for Hydrologic Modelling

Blacktown City Council requires the following approach to rainfall simulation be adopted for hydrologic assessment modelling (that is, stormwater harvesting and stormwater storage design including rainwater tank sizing on a catchment basis):

- Continuous simulation of a minimum of 20 years should be used.
- A daily time step should be utilised for simulating rainwater/stormwater storage sizes and estimating supply reliability.

A number of daily rainfall stations were investigated for use, as shown in Table 2. The gauges investigated were those with longer available records.

Table 2: Selected daily rainfall gauges in Blacktown LGA

Station	Approximate location in the LGA	Data availability	Mean annual rainfall (millimetres)	Mean number of days per year with equal to or greater than 1 millimetre rain
067059 Blacktown	Central	1963 to 1993	854	84
067076 Quakers Hill Treatment Works	Central	1948 to date	851	77
067016 Minchinbury	South west	1901 to 1970	778	59
067026 Seven Hills (Collins Street)	East	1950 to date	926	86

To provide a consistent approach to modelling, Blacktown City Council has identified 2 appropriate daily rainfall stations for Blacktown LGA and periods of modelling to be utilised within the MUSIC model. The preferred station is 067059 Blacktown, due to its longer record of good quality data (1963 to 1993; 30 years), however 067076 Quakers Hill Treatment Works is also acceptable, for the years specified, due to its location within the catchment. The 1971 to 1992 period has been recommended to avoid significant gaps in the data.

The recommended daily rainfall stations are shown in Table 3. For sub-daily simulation the Liverpool rainfall station must be used, however Liverpool is not recommended for daily

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simulation, as there is a gap in the data from 1978 to 1981 and the 1981 to 2001 period (the longest unbroken period of record available) has a relatively low average annual rainfall. Minchinbury and Seven Hills gauges are not recommended as they exhibit average rainfall conditions somewhat different to those recorded at Blacktown.

Table 3: Recommended daily rainfall station

Rainfall station			Modelling period	Mean annual rainfall (milllimetres) 854		
067059 Blacktown (preferred)		1963-1993				
067076 Quakers Hill		Quakers Hill 1971-1992		832		
Treatment	Works					

14.3 Potential Evapotranspiration (PET) Data

Blacktown City Council requires the following when considering potential evapotranspiration (PET) data in MUSIC:

- Local PET information is preferred (where available).
- In most cases, local data will not be available in which case average monthly data from Sydney (available within the MUSIC model) can be used.
- Average Sydney PET data is suitable for use in modelling water quality and hydrology. The monthly PET values for the Sydney region, including Blacktown, are shown in table 4.

Table 4: Monthly evapotranspiration for the Sydney region

Month	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
PET millimetres	180	135	128	85	58	43	43	58	88	127	152	163

Evaporative loss should normally range from 75 per cent of PET for completely open water to 125 per cent of PET for heavily vegetated water bodies.

3.4 Electronic Modelling

Council is able to supply the Liverpool (Whitlam Centre) rainfall data and evapotranspiration data electronically upon request. This MUSIC file also includes the Source Nodes and some Treatment Nodes acceptable to Blacktown.

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15 SOURCE NODES AND POLLUTANT GENERATION

Once the meteorological data has been input into the model the user must then define the source nodes to reflect the details (that is, area and landuse) of the contributing catchments. MUSIC currently has five standard land uses, these being:

- Urban.
- Agricultural.
- Forest.
- User Defined.
- · Imported Data.

These five source nodes are however not commonly used in the Blacktown LGA. The main exception is "Forest" that can only be utilised where there is a permanent forested conservation area and its use will need to be justified for the particular scenario. Instead for Blacktown the "Urban" node is broken down into four components.

- Roof.
- Road.
- Other Impervious Areas.
- Pervious Areas.

As outlined in the MUSIC User Guide, a comprehensive review of stormwater quality in urban catchments was undertaken by Duncan (1999) and this review forms the basis for the default values of event mean concentrations in MUSIC for TSS, TP and TN. More recently, Fletcher et al (2004) has updated the values provided in Duncan (1999) and specifically provides guidance on appropriate land type breakdown. Table 5 presents the recommended model defaults for various land use categories. These values are consistent with those recommended by the Growth Centres Commission (GCC). Note that for all simulations the MUSIC model must be run with pollutant export estimation method set to "stochastic generated".

Table 5: Stormwater water quality parameters for MUSIC source nodes

Land-use category		Log ₁₀ (milligra litre)	TSS	Log ₁₀ TP (milligrams per litre)		Log ₁₀ Th (milligrams pe litre)	
		Storm flow	Base flow*	Storm flow	Base flow*	Storm flow	Base flow*
Roof Areas	Mean	1.30	1.20	-0.89	-0.85	0.30	0.11
	Std Dev	0.32	0.17	0.25	0.19	0.19	0.12
Road Areas	Mean	2.43	1.20	-0.30	-0.85	0.34	0.11
	Std Dev	0.32	0.17	0.25	0.19	0.19	0.12
Other Impervious Areas	Mean Std Dev	2.15 0.32	1.20 0.17	-0.60 0.25	-0.85 0.19	0.30 0.19	0.11 0.12
Pervious	Mean	2.15	1.20	-0.60	-0.85	0.30	0.11
Areas	Std Dev	0.32	0.17	0.25	0.19	0.19	0.12

^{*} Base flows are only generated from pervious areas; therefore, these parameters are not relevant to impervious areas

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16 RAINFALL RUNOFF PARAMETERS

As outlined in Section 4, stormwater runoff (represented as storm flow and baseflow) is generated in MUSIC through the interaction of rainfall, evapotranspiration and the MUSIC Rainfall-Runoff Model. A full description of the MUSIC Rainfall-Runoff Model is provided in the MUSIC User Guide.

If the reader of this Handbook has no MUSIC modelling experience they should review MUSIC User Guide before reading further.

MUSIC rainfall-runoff parameters have been derived for the Western Sydney region from model calibration studies. The parameters recommended in Table 6 are the same as those recommended by the Growth Centres Commission (GCC) for use in GCC areas. The GCC recommends adoption of these parameters, but also suggests that a sanity check can be performed on total runoff volumes by comparing with the values presented in Figure 2.3 of the CRC-CH's Technical Report 04/8 (Stormwater Flow and Quality, and the Effectiveness of Non-proprietary Stormwater Treatment Measures – A Review and Gap Analysis, Fletcher et. al., 2004).

Table 6: Rainfall-runoff parameters

Parameter	Recommended values		
Rainfall Threshold (millimetres)	1.4		
Soil Capacity (millimetres)	170		
Initial Storage (per cent)	30		
Field Capacity (millimetres)	70		
Infiltration Capacity Coefficient a	210		
Infiltration Capacity Coefficient b	4.7		
Initial Depth (millimetres)	10		
Daily Recharge Rate (per cent)	50		
Daily Baseflow Rate (per cent)	4		
Deep Seepage (per cent)	0		

The steps for setting up the rainfall runoff parameters are described below.

Step 1: Estimate Fraction Impervious

An initial estimate of the impervious fraction for the particular landuse should be made. The impervious area should be based on building density controls developed by Blacktown City Council as well as the development's urban planners and architects.

The building density controls that are of relevance include minimum soft landscaping area, maximum building envelopes, floor space ratios and road design guidelines. These estimates should also be compared to aerial photos of similar recent developments in the vicinity of the proposed development. Where differences between the estimates and the on ground impervious area are significant then estimates should be revised or the differences justified.

As a guide, the fraction impervious for the different development types described in Table 3.3 of the Blacktown City Council *Engineering Guide for Development* (2005) are:

- Public recreation areas 50 per cent.
- New residential lot only 80 per cent.
- Medium density development (villas etc) 85 per cent.
- Half width Road Reserve 95 per cent.

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Industrial areas / commercial areas - 100 per cent.

The above fraction impervious percentage for lots applies to areas outside the growth centres. In the growth centres new residential lots are considered as 85 per cent impervious.

Where landscape areas are over below ground garages, podiums, or basements, consider the area $100\,\%$ impervious.

Step 2: Split MUSIC Catchments into Land Use Types

The catchment must be split into the various land types (that is, roads, roofs, other impervious and pervious surfaces). Each individual source node, with the exception of the Imported Data Node, requires the total area and impervious percentage of the site to be defined.

For a specific development, the site area is to be split into the four landuse source nodes from section 4. For new subdivisions calculate the area of new roads and the area of new lots. The lots can be agglomerated into the four source nodes upstream of the treatment devices.

For low density residential subdivisions **outside the growth centres** allow the following percentages for land use for the new lots only, considering 80 per cent impervious:

- . Roof 55 per cent (of which a maximum of 50% goes to the rainwater tank).
- Road (driveways) 10 per cent.
- · Other Impervious Areas (courtyards, paths) 15 per cent.
- · Pervious Areas 20 per cent.

For low density residential subdivisions within the growth centres allow the following percentages for land use for the new lots only, considering 85 per cent impervious:

- Roof 55 per cent (of which a maximum of 50% goes to the rainwater tank).
- · Road (driveways) 10 per cent.
- . Other Impervious Areas (courtyards, paths) 20 per cent.
- · Pervious Areas 15 per cent.

When utilising this approach:

- Roof areas are to be modelled as 100 per cent impervious. If there is a rainwater tank then it should be modelled immediately downstream of the roof. If only a portion of the roof drains to the rainwater tank, then the roof will need to be split into two separate nodes, one of which bypasses the rainwater tank. Generally Council will only consider a maximum of 50% of the roof area of residential developments draining to the rainwater tank unless there is specific information that provides a different figure when considering a specific development. In such cases the roof areas must match with the BASIX certificate for residential development.
- Roads, driveways, car parks and other areas open to vehicular traffic should be
 modelled with all the impervious area in the "Roads" node. Any pervious areas (for
 example, verges) associated with impervious areas such as roads and car parks
 should be included in the "Pervious areas" node. Future Council roads however may
 be considered with the Roads node as 95% impervious and 5% pervious.

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- The "Other impervious areas" node should include areas such as footpaths, courtyards and decks (including timber decks).
- All pervious areas should be included in the "Pervious areas" node. Pervious areas should be directly connected to the treatment systems. The area of the treatment device itself such as for a bioretention basin, swale, or wetland also needs to be included as a pervious source node.
- The MUSIC model must account for all the areas being developed. Where areas cannot drain to a treatment device these areas are considered as bypass and the specific land use(s) identified.

Step 3: Set Soil Properties

For impervious source nodes, the only rainfall-runoff parameter that plays a part is the rainfall threshold, which should be set to 1.4 millimetres. For all pervious source nodes, the soil characteristics shown in Table 6 should be adopted in MUSIC. For all treatment nodes the Exfiltration Rate (mm/hr) is to be set to zero.

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17 LINK ROUTING

Drainage links are used in MUSIC to connect source nodes to treatment nodes and / or collection points. The drainage links account for the passage of stormwater and the time of travel between 2 nodes. There are 3 options for the routing of stormwater available within the drainage link:

- · No routing.
- Translation of the flood wave (only).
- · Muskingum Cunge method of stream routing.

For single lots and subdivision developments with only a small number of lots no routing is required. For larger subdivisions the applicant may choose not to apply routing to reduce the complexity of the generated model, however, it is noted that this will result in the performance of the treatment measures being underestimated as peak inflows into the treatment nodes will increase. For MUSIC model simulations of large catchments where routing is to be undertaken it is recommended that the translation routing option in MUSIC be used to reflect the travel time for flood wave propagation through the catchment. The user is referred to the MUSIC User Guide for further details.

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18 STORMWATER QUALITY TREATMENT MEASURES

Following the determination of the site's water quality and hydrologic objectives the user (if required) is to develop an appropriate treatment train for the development dependent on site constraints and opportunities.

Within the current version of MUSIC the user has several treatment options available:



Figure 3: Treatment options available in MUSIC

The default parameters in MUSIC for the first order decay k-C* model used to define the treatment efficiency of each treatment measure should be used unless local relevant treatment performance monitoring can be used as reasonable justification for modification of the default parameters. Reference should be made to the MUSIC User Guide (2005, or subsequent versions).

Note: The following measures are not to be modelled in MUSIC: natural waterways, natural wetlands, naturalised channel systems, trunk drainage, environmental buffers and ornamental lake / pond systems.

In order to reduce the confusion of conflicting aspects of treatment node implementation Blacktown City Council provides the following advice for modelling stormwater quality treatment systems within Blacktown LGA.

MUSIC gives the option under the "More" tab to access the "Advanced Properties" for each treatment nodes to k-C* values, orifice discharge and weir coefficients, void ratio and number of CSTR cells. Council does not permit these MUSIC default values to be changed.

For residential developments Council does not permit treatment devices to be located in private courtyards or rear yards. They must be positioned in common areas, or front yards.

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18.1 Wetlands

Constructed wetland systems use enhanced sedimentation, fine filtration and pollutant uptake processes to remove pollutants from stormwater.

Constructed wetland systems consist of an inlet zone (sediment basin to remove coarse sediments), a macrophyte zone (a shallow heavily vegetated area to remove fine particulates and uptake of soluble pollutants) and a high flow bypass channel from the inlet pond (to protect the macrophyte zone). Provide a deeper water zone typically 1.8 m deep and absolute maximum 2.0 m deep.

Wetlands are suitable downstream of pre-treatment measures such as swales, sediment basins, or GPTs designed to remove coarse sediment.

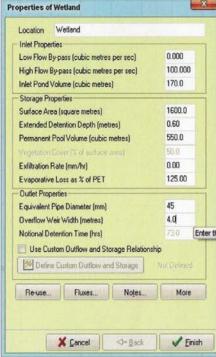
- Input the appropriate bypass characteristics to reduce the impacts on macrophytes within the wetland. The high flow bypass flowrate should be set to the peak 1 year ARI flowrate.
- Estimate the inlet pond volume based on a surface area of 10 per cent of the macrophyte zone surface area, and a maximum depth of 1.8 metres with batters.

 Enter the proposed surface area of wetland macrophyte zone under "Storage Properties". Note that the surface area is the figure that when multiplied by the Extended Detention Depth will give the volume of Storage. Where the sides of the basin are battered the Surface Area is the area at half the Extended Detention Depth i.e. the average basin area.

 Set extended detention depth of between 0.25 to 0.75 metres. Note that any flood storage above the extended detention depth must not be included in the extended detention depth.

 Set the permanent pool volume as the volume of water permanently submerging macrophytes. Set by multiplying the average depth (typically 0.25 metres to 0.4 metres) by the surface area.

- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0 millimetres per hour for wetlands, which should have a liner or 300 mm of compacted clay under to retain water).
- Adjust the Equivalent Pipe Diameter to ensure the treatment measure has a notional detention time of approximately 48 to preferably 72 hours. This is assumed to be at the Extended Detention Depth.
- Tick "Use Custom Outflow and Storage Relationship" where there is significant non linearity in the storage i.e. major



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variations in height versus area.

Figure 4: Example of properties of a Wetland in MUSIC

Other design considerations for wetlands include:

- Provide an internal wall system to increase residence time and avoid short circuiting.
- Provide concrete vehicular maintenance access to the basin at a maximum 10 % grade.
- When designing a wetland within a detention basin, the outlet control structure of the
 detention basin should be placed at the end of the wetland high flow bypass channel.
 This ensures flood flows as 'backwater' across the wetland thus protecting the
 macrophyte vegetation from scour by high velocity flows. The detention node will be
 positioned downstream of the wetland node in MUSIC.
- Allow for an internal drainage system that will allow for the permanent pool and remainder of wetland to be totally drained for maintenance.
- Allow for various water level controls to better control the operation of the wetland particularly during establishment.
- Provide macrophyte zones at varying depths to allow planting of a diverse range of plant species typically from 0.25 to 0.5 m.

18.2 Ponds

Ponds can be sized for three different purposes:

- Pollutant removal.
- Stormwater storage for reuse.
- Ornamental.

For the former two purposes, MUSIC can be used to size the pond and assess its performance as described following. All ponds, though, should be preceded by appropriate pre-treatment to remove coarse sediment.

Water Quality Ponds

Water Quality ponds rely on settling of suspended solids as the principal treatment mechanism. Vegetation (including submerged macrophytes in a deep pond) can promote nutrient removal, and open water can promote ultra violet (UV) disinfection, however these processes are not currently able to be modelled in MUSIC.

Pre-treatment is essential upstream of ponds. In MUSIC, the pollutant removal parameters associated with ponds are based on an assumption that pre-treatment has occurred upstream, and therefore it is essential to include an appropriate treatment train upstream of a pond in the MUSIC model. This could include a swale, sedimentation basin, or a suitable GPT, capable of removing a substantial proportion of coarse suspended solids.

Input parameters include:

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- Identify any high flow or low flow bypasses proposed for the treatment measure.
- Input the surface area of the pond. Note that the surface area is the figure that when
 multiplied by the Extended Detention Depth will give the volume of Storage. Where
 the sides of the basin are battered the Surface Area is the area at half the Extended
 Detention Depth i.e. the average basin area.
- The extended detention depth is the depth between the top of the permanent pool and the lip of the overflow weir. Typically 0.25 to 01.0 m.
- Estimate the permanent volume of water within the treatment measure.
- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0 millimetres per hour for ponds, which should be lined, or 300 mm of compacted clay under to retain water).
- Evaporative loss as % of PET allow 75% for open water bodies with little to no vegetation.
- Modify the discharge pipe diameter to ensure a detention time long enough to allow settling of the target particle size.
 This is assumed to be at the Extended Detention Depth.
- Tick "Use Custom Outflow and Storage Relationship" where there is significant non linearity in the storage i.e. major variations in height versus area



Figure 5: Example of properties for a Pond in MUSIC

Storage ponds

If a pond is used to store treated stormwater for reuse, its performance in balancing supplies and demands can be modelled using MUSIC. In this case, the pond may or may not be modelled with extended detention.

The permanent pool actually represents the volume available for reuse, and the quantity of water is likely to fluctuate widely depending on supplies and demands.

If a storage pond has a permanent pool below the volume available for reuse, this permanent pool should be ignored.

Input parameters are as for above, but add:



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 Enter Re-use details to represent the intended demands on water from the storage pond.

The effectiveness of the pond as a storage system with reuse can be evaluated by checking the node water balance of the pond node once the model has run.

Figure 6: Example of properties for Reuse in a Pond in MUSIC

18.3 Sedimentation Basins

Sediment basins are used to retain coarse sediments from runoff. They operate by reducing flow velocities and encouraging sediments to settle out of the water column.

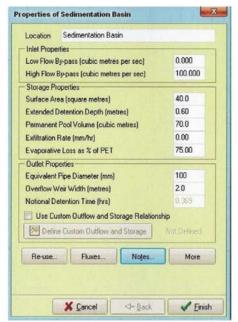
They are frequently used for trapping sediment in runoff during construction activities and for pre-treatment to measures such as wetlands (for example, an inlet pond).

Sediment basins can drain during periods without rainfall and then fill during runoff events.

Sediment basins are sized according to the design storm discharge and the target particle size for trapping (generally 0.125 millimetres).

Input parameters include:

- Identify any high flow or low flow bypasses proposed for the treatment measure.
- Input the surface area of the basin. Note that the surface area is the figure that when multiplied by the Extended Detention Depth will give the volume of Storage. Where the sides of the basin are battered the Surface Area is the area at half the Extended Detention Depth i.e. the average basin area
- The extended detention depth is the depth between the top of the permanent pool (or ground if no permanent pool) and the lip of the overflow weir.
- Estimate the permanent volume of water within the treatment measure. Pool depths can be up to 2 m, but need to allow for batter slopes when calculating volumes.
- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0 millimetres per hour for sedimentation basins, which should be lined, or 300 mm of compacted clay under, to retain water).
- Evaporative loss as % of PET allow 75% for open water bodies.



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- Modify the discharge pipe diameter to ensure a detention time long enough to allow settling of the target particle size.
- Tick "Use Custom Outflow and Storage Relationship" where there is significant non linearity in the storage i.e. major variations in height versus area

Figure 7: Example of properties of a Sedimentation Basin in MUSIC

Note: This treatment measure can be utilised as pre-treatment measure upstream of a wetland or sand filter and allows for a diversion of flows above recommended scour velocities.

18.4 Detention Basins

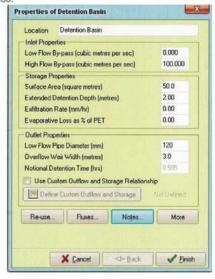
Detention basins can be above ground, or below ground in tanks. Above ground basins are favoured by Council as they are easier to maintain and avoid confined space entry and the associated risks. Council current has two approaches to detention systems. The older established areas of Blacktown LGA use a High Early Discharge (HED) system. HED directs as much of the site as possible straight to the small HED control pit which fills up and thereby reaches close to the maximum discharge quickly. Detention with HED requires a smaller storage volume than a conventional detention system. A conventional detention system is one where the discharge rate rises more slowly than with HED as the storage fills over the entire basin area. The conventional detention system is predominantly used in the growth centres. The default Detention Basin node in MUSIC is based on a conventional detention system with a single outlet. It cannot be used to represent a detention basin with a HED outlet. This needs to be represented differently in MUSIC.

Where water quality treatment (e.g. bioretention, or proprietary filters or devices) is incorporated into a detention basin itself, or enlarged HED pit, the treated flow must discharge downstream of the discharge control pit to ensure ongoing treatment throughout a range of storms. This may require adjustment to the discharge controls to ensure the design discharge is maintained and account for the bypass.

Council's requirement for concrete detention tanks, or above ground detention basins with a concrete base, is for the base to have a minimum grade of 2%. This grade ensures that settled material is flushed from the system. No allowance can therefore be made for the settlement of material and consequently no reduction in TSS, TP, or TN is permitted for concrete detention tanks, or above ground basins with a concrete base. Reduction in TSS, TP or TN is only permitted for vegetated (including turfing) above ground detention basin where settled material can be trapped by the vegetation. Where vegetated above ground detention basins incorporate bioretention in the base, the area of bioretention is to be excluded from the area in detention node.

Conventional Detention Basins

Figure 8: Example of properties of a conventional Detention Basin in MUSIC



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Input parameters include:

- · Identify any high flow or low flow bypasses proposed for the treatment measure.
- Input the surface area of the basin. Note that the surface area is the figure that when
 multiplied by the Extended Detention Depth will give the volume of Storage. Where
 the sides of the basin are battered, the Surface Area is the area at half the Extended
 Detention Depth i.e. the average basin area.
- The extended detention depth is the depth between the average base level of the storage (generally not the centreline of the outlet pipe or orifice) and the lip of the overflow weir, or design storage level.
- Evaporative loss as % of PET allow 0% for tanks and 75% for above ground detention systems.
- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0 millimetres per hour for detention basins, which should be concrete, or on a compacted clay base, or lined to retain water).
- The Low Flow Pipe discharge rate will be initially determined from the detention calculations. Using this discharge a nominal orifice size (low flow pipe diameter) is calculated using the extended detention depth from above and not the actual depth to the orifice or pipe centreline.
- Tick the "Use Custom Outflow and Storage" box for more complex, or multiple basin discharges with the option of importing a discharge spreadsheet where required. This method should be utilised for landscaped above ground basins with uneven base levels and/or batter slopes to better represent the settlement of pollutants over smaller surface areas in more frequent storm events.
- Where a detention node is used for a concrete tank, or an above ground detention basin with a concrete base then, click the "More" tab in MUSIC, and set the "k" values for TSS, TP and TN all to "0". This ensures that no treatment occurs in this type of basin as settled material is flushed from the base.

High Early Discharge (HED) Configuration in MUSIC

The HED discharge control pit has no silt trap in accordance with Council requirements, but contains either a Maximesh, or Weldlok screen (for orifices greater than 150mm diameter). A Generic Node is used to represent the HED pit. As there is no way to contain any pollutants that settle out in the HED pit there is no reduction in TSS, TP, or TN (they simply wash through). Gross pollutants are defined as material that would be retained by a five millimetre mesh screen. It is common not to include Gross Pollutant removal in this HED node, however where required allow 50% removal for Maximesh Screens and 10% removal for Weldlok Screens. The critical input for the HED node is the High Flow Bypass in (m³/s). Council has produced a spreadsheet for calculation of the on-site detention systems with HED. The spreadsheet provides a discharge rate for "High early discharge" in I/s. This is the discharge before overtopping of the weir into the extended detention storage area. To input into the node this flow needs to be converted to m³/s.

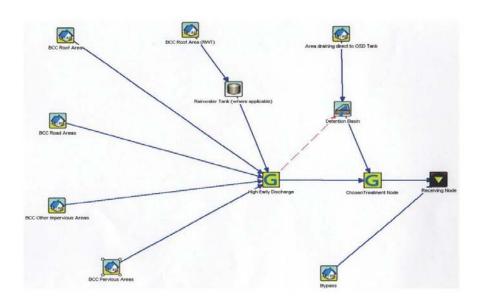
A typical arrangement for a system with HED is detailed below in figure 9.

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The MUSIC model above is set up with the primary flow from the orifice discharging downstream to the next node. The red dashed secondary drainage link is then directed to the detention basin node. This secondary flow is set to the high flow bypass from the HED pit. The detention basin node is as set up for the conventional detention basin excluding the area of the HED pit. The Low Flow Pipe Diameter is set to the orifice size in the HED pit. As Council requires as much of the site as practical to discharge direct to the HED pit, only the area that directly falls within the above ground basin, or for a tank the area above the tank that discharges straight into the tank due to the frequent pit grates, is permitted to be directed to the detention basin node.

The use of this arrangement in MUSIC will provide some assistance in achieving the water quality objectives for above ground landscaped detention basins, but will not achieve overly significant benefits. Many designers choose not to undertake this additional modelling step in smaller developments.

As noted above in the introduction to section 7.4, for concrete detention tanks, or above ground basins with a concrete base, no allowance can be made for the settlement of material and consequently no reduction in TSS, TP, or TN is permitted. Similarly the use of the HED generic node and secondary bypass to the detention node as a modelling approach has limited application for concrete detention tanks, or above ground basins with a concrete base. The only benefit in undertaking this additional modelling step is where the water quality treatment device is downstream of the detention and the reduction in flow rates through this node provides improved performance of this water quality device. Otherwise it is not required.

18.5 Infiltration Systems

Infiltration measures encourage stormwater to infiltrate into surrounding soils. Infiltration measures are highly dependent on local soil characteristics and are best suited to sandy soils with deep groundwater. Infiltration is not recommended in areas of sodic or saline soils or soil contamination, where infiltration could mobilise salts or contaminants. Given the presence of

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clay throughout the LGA as well as significant areas of sodic and saline soils, infiltration will not be permitted in the Blacktown LGA.

18.6 Bioretention Systems

Bioretention systems are a combination of vegetation and filter substrate that provides treatment of stormwater through filtration, extended detention and some biological uptake.

The systems are designed to accept stormwater runoff and allow it to percolate through the filtration media. At the base of the filter media, treated stormwater is collected within a drainage layer comprising a system of perforated pipes laid in gravel, to ensure the treatment measures are drained adequately.

Bioretention systems need to be densely planted out with sedges and shrubs to help maintain the conductivity of the filter media, promote nutrient removal, and create an attractive landscaped form/feature. Large shrubs and some trees are permitted subjected to larger filter media thicknesses. See also Handbook 5 for allowable plant species.

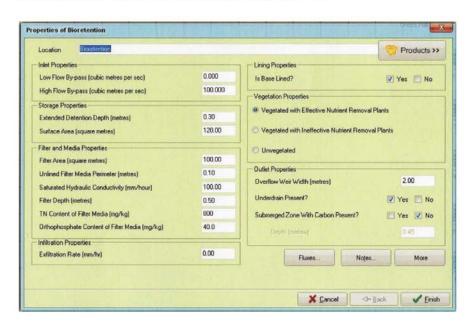


Figure 10: Example of properties of a Bioretention System in MUSIC

Input parameters include:

- Identify whether a bypass structure shall be included within or upstream of the treatment measure to control flows.
- Identify the Extended Detention Depth (ponding depth) in metres prior to overflowing the control weir of the treatment measure. The maximum Extended Detention Depth is 0.4 metres for Blacktown generally, however for public basins within

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Council property the maximum Extended Detention Depth is 0.3 metres. Where a bioretention swale is proposed the Extended Detention Depth is set to zero.

- Provide the Surface Area (m²) of the treatment measure based upon site constraints.
 Note that the surface area is the figure that when multiplied by the Extended Detention Depth will give the volume of Storage. Where the sides of the basin are battered the Surface Area is the area at half the Extended Detention Depth i.e. the average basin area.
- Filter Area (m) is the area of bioretention filter media available for planting and excludes the areas of pits, sediment traps, steps and scour protection.
- Unlined Filter Media Perimeter (m) is set to 0.1 m. (Filter is fully lined).
- The filter media is a sandy-loam mixture designed to provide adequate organic material for vegetation/root growth yet still ensure sufficient flow through drainage characteristics. A typical rate of Saturated Hydraulic Conductivity is 100 millimetres per hour. The maximum Saturated Hydraulic Conductivity permitted in Blacktown is 125 millimetres per hour. (Note Council requires certification from the filter media supplier that that the bioretention filter media has a minimum hydraulic conductivity as defined by ASTM F1815-06 (actual, not predicted) of twice the rate specified in MUSIC.)
- Provide the proposed depth of filter media in metres within the treatment measure. The minimum Filter Depth is 0.4 metres for Blacktown. The following depths are recommended as a minimum within the treatment measure: 0.4 metres for sedges and small shrubs and up to 0.8 metres for tree species. This will ensure adequate area for root growth is provided within the treatment measure. This depth does not include the transition layer, or drainage layer. See also Handbook 5 for minimum depths for specific plant species.
- TN Content of Filter Media (mg/kg) Blacktown requires 800 mg/kg.
- Orthophosphate Content of Filter Media (mg/kg) Blacktown requires 40 mg/kg.
- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0 mm/hr for bioretention basins, which should be lined to retain water).
- Is Base Lined? tick "Yes"
- Vegetation Properties. Highlight "Vegetated with Effective Nutrient Removal Plants".
 See Handbook 5 for specific plant species. Grass is not acceptable.
- · Overflow Weir Width (metres) as per design.
- Underdrain Present? Tick "Yes" (Council requires unsocked PSC slotted pipes within the drainage layer.
- Submerged Zone with Carbon Present? Tick "No". Blacktown does not permit submerged or saturated zones for bioretention.
- The default k-C* values for the bioretention system must not be adjusted without prior approval from Blacktown City Council.

Additional Design Information for Bioretention Systems

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- The bioretention system is to be encased in a low permeability compacted clay (typically 300 mm), in an HDPE liner, or other approved liner.
- The invert levels of all pipes discharging to the bioretention system must be above the top of the filter media. Surcharge pits are not permitted.
- Where bioretention is incorporated as part of a detention basin the subsoil drainage must discharge downstream of the discharge control pit to ensure ongoing treatment through a range of storms.
- Note that where bioretention basins are incorporated as part of an on-site detention system the detention basin storage must exclude the Extended Detention Depth of the bioretention.
- Bioretention systems are very vulnerable to sediment loading and must be protected
 by pretreating discharges to remove as much sediment as possible. A silt arrestor
 pit with screen, or a proprietary gross pollutant trap (GPT) is required upstream.
 Pipe diameters 375 mm or greater must provide a proprietary GPT, but it is also
 preferred for smaller pipe sizes such as 300 mm diameter, or even 225 mm. Council
 will accept a MUSIC node for a proprietary GPT (where the device is approved for
 use in Blacktown), but not for the default silt arrestor pit. Minimum silt arrestor pit
 sizes are detailed below.

Outlet Pipe Diameter (mm)	Pit Dimensions (mm)	Screen Type	Minimum Silt Trap Depth (mm)
100	600 x 600	Maximesh Rh3030	300
150	900 x 900	Maximesh Rh3030	400
225	1200 x 1200	Weldlok F40/203	400
300 (max)	2100 x 2100	Weldlok F40/203	400

Table 7: Silt Arrestor Pit Size and Configuration for Pre-treating Bioretention Systems

18.7 Media Filtration

Media filtration usually refers to sand filters that treat stormwater via infiltration through a soil or sand media. Sand filters, unlike bioretention systems, are not vegetated, are often constructed in tanks underground and can be constructed with much higher filtration rates.

Due to the fact that sand filters are not vegetated, they can be prone to clogging unless adequate pre-treatment is provided upstream of the sand filter. They can also be maintenance intensive. Sediment removal is particularly important to minimise the risk of clogging, and it is recommended that pre-treatment should meet the target for a minimum of 70 per cent removal of the TSS load. Sand filters must be constructed of fine to fine/medium sand, or sandy loam. Coarse sand, or fine gravel materials are not permitted as the top layer for Media Filtration in Blacktown as they will not remove a significant pollutant load. It is common to use the same media in the top layer as for bioretention.

Media filtration should contain a number of common elements.

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- The media filtration system must include a sedimentation basin upstream of the filter as a node in MUSIC. See section 7.3. This basin is designed to capture a minimum 85% of 125 μm particle size, or larger.
- The sedimentation basin must include a high flow bypass set to the 1 year flow or less with a baffle to retain oils and floatables.
- The media filter material should be free of fines and have a relatively uniform grain size distribution.
- Energy dissipaters and flow spreading is required to minimise scour prior to discharge to the filter media.
- · System will include a transition layer and drainage layer.
- Frequent safe access is required for maintenance for the raking or replacement of sand. This is a major consideration with confined space entry into a tank.

Input Parameters into the MUSIC node include:

- · Identify any high flow or low flow bypasses proposed for the treatment measure.
- Identify the ponding depth of stormwater runoff prior to its overflowing the control weir
 of the treatment measure (extended detention depth).
- Provide the estimated surface area (m²) of the storage. Most sand filters in tanks will
 have vertical sides and the area will match the filter area, however where the sides of
 the basin are battered the Surface Area is the area at half the Extended Detention
 Depth i.e. the average basin area for storage.
- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0 mm/hr for media filtration basins, which should be lined or within a concrete tank to retain water).
- Input the surface area of the filter media (m²) within the treatment measure.
- Provide the proposed depth of filter media (m) within the treatment measure. This depth does not include the transition or drainage layer. Minimum is 0.2 m, but 0.4 to 0.6 m is typical.
- Identify the type of filter media proposed based upon Filter Median Particle Size (mm) and Saturated Hydraulic Conductivity (mm/hr). See examples in Table 7. The maximum Saturated Hydraulic Conductivity for a sand media filter in Blacktown is 600 mm/hr. (Note Council requires certification from the filter media supplier, or engineer that that the filter media has a minimum hydraulic conductivity as defined by ASTM F1815-06 (actual, not predicted) of twice the rate specified in MUSIC.).

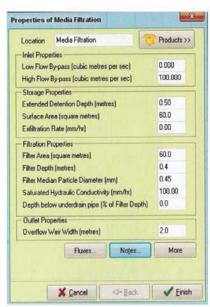


Figure 11: Example of properties of Media Filtration in MUSIC

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Soil Type	Median Particle Size (mm)	Saturated Hydraulic Conductivity (mm/hr)
Sand	0.7	300
Sandy loam	0.45	125

Table 7: Typical Filter Median Particle Size and Saturated Hydraulic Conductivity

 The depth below underdrain pipe should normally be zero. This parameter is only relevant when the filter media extends below the slotted drainage pipe.

18.8 Gross Pollutant Traps (GPTs)

GPTs typically remove rubbish and debris, and can also remove sediment and hydrocarbons from stormwater runoff.

These treatment measures can be very effective in the removal of solids conveyed within stormwater which are typically larger than 5 millimetres in size. Some devices are capable of removing finer sediments. Many devices will not remove any TSS, TP or TN.

All proprietary GPT nodes have to be pre-approved by Blacktown City Council. Council

currently has MUSIC nodes available for a range of devices and designers need to contact Council to obtain them. These nodes will set the removal rates for the pollutants within MUSIC.

The only Input parameter is:

 Calculate the required high flow bypass for the site (often the 3 or 6 month ARI peak flow). Match this flow with the nearest appropriately sized approved proprietary device, or the upstream diversionary weir to the GPT. In some cases the allowable flow through the device approved by Council may be less than that claimed by the manufacturer.

Vortex-type GPTs have been shown to remove some TSS and TP. For further information see Appendix C of the *MUSIC User Guide*. Vortex-type GPTs have TSS removal up to 70 per cent for inflow concentrations greater than 75 milligrams per litre. TP removal can be up to 30 per cent for inflow concentrations greater than 0.5 milligrams per litre. TN removal should be left at zero. Other approved devices will have varying removal rates. Check with Council.

GPTs must have the ability to retain free oil, unless alternate specific hydrocarbon removal measures are undertaken.

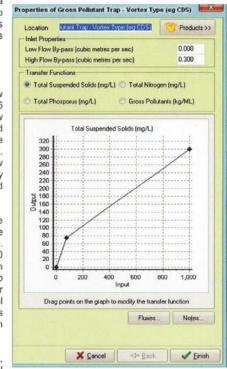


Figure 12: Example of TSS removal in a Vortex style CDS unit in MUSIC

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18.9 Buffers

Buffer or filter strips, in the context of urban stormwater, are grassed or vegetated areas over which stormwater runoff from adjoining impervious catchments traverses en route to the stormwater drainage system or receiving environment.

Buffer strips are intended to provide discontinuity between impervious surfaces and the drainage system. They take water from impervious surfaces in a distributed manner, promote even flows and filter sediments and coarse pollutants entrained in the runoff.

The key to their operation is an even shallow flow over a wide vegetated area. Utilise buffer treatment measures upstream of other treatment measures to assist in sediment drop out prior to stormwater entering secondary treatment measures such as swales.

Distributed flows and a shallow grade (1 to 5 per cent) are essential. The low hydraulic loading over the vegetation allows flows to filter through the vegetation and pollutants to settle out. They also provide a detention role to slow flows down. Where grades exceed 5%, this area is not considered as buffer and is to be excluded from the MUSIC model.

Input parameters include

- Calculate the percentage of upstream area that shall actually pass over buffer. This
 refers to the proportion of the Source Node's impervious area which has buffer
 strips applied to it. For example, in a Source Node with 20 ha of impervious area, 16
 ha (or 80%) may have buffer strips applied. Note that the pervious area of the source
 node is ignored.
- Calculate the size of the proposed buffer area as a percentage of the upstream catchments impervious area. This is a measure of the actual size of buffer strips, defined as the percentage of the Source Node impervious area. The default value is 5%. This means that the total area of buffer strip is equivalent to 5% of the Source Node impervious area.
- · The exfiltration rate must be set to zero.



Figure 13: Example of Buffer properties in MUSIC

18.10 Swales

Vegetated swales are open vegetated channels that can be used as an alternative stormwater conveyance system to conventional kerb and channel along roads and associated underground pipe. The interaction of surface flows with the vegetation in a swale facilitates an even distribution and slowing of flows thus encouraging particulate pollutant settlement. Swales can be incorporated into streetscape designs and can add to the aesthetic character of an area. They are also ideal as a pre-treatment measure for stormwater, particularly for coarse sediment removal. Where there are significant point loads coming in partway along the length of the bioretention swale, the swale needs to be broken up into smaller swale lengths at these points.

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Standard Swale Input parameters include:

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Figure 14: Example of properties of a Swale in MUSIC

- Identify the length of the swale based upon location and site constraints
- Determine the longitudinal slope of the swale. Swales with bed slopes greater than 5 per cent are not recommended as treatment measures (however rock check dams can be used to design swales with steeper slopes and these can still be used as conveyance treatment measures).
- Swales with bed slopes less than 1 per cent are to incorporate a gravel trench with un-socked subsoil line (the gravel trench is to be wrapped in geotextile) within the base of the treatment measure to promote adequate drainage.



- Provide dimensions for the base and top width of the swale.
- Calculate the depth of the treatment measure based upon the base and top width characteristics and identify the height of vegetation within the treatment measure.
 Vegetation heights of 0.05 to 0.3 metres are acceptable, however MUSIC assumes that swales are heavily vegetated when modelling their treatment performance.
 Mown grass swales should not be expected to provide significant stormwater treatment and should not be modelled in MUSIC.
- Exfiltration is the water lost from the treatment measure into the surrounding soil (Council requires 0.00 mm/hr for swales).

Special Requirements for Bioretention Swales

Where a bioretention swale is specified in MUSIC the requirements are as for section 7.6 Bioretention except that:

- · The Surface Area must match the Filter Area.
- The Filter Area is calculated as the length of the bioretention swale component
 multiplied by the width of the filter (this needs to be level across). This ignores any
 other standard swales that may be further upstream and that need to be modelled
 separately.
- · The Extended Detention Depth is set to zero.
- Where there are significant point loads coming in partway along the length of the bioretention swale, the swale needs to be broken up into smaller swale lengths at these points.

There are two options for MUSIC modelling. Firstly you can ignore the swale aspect altogether and simply model the bioretention component as detailed above. This is simpler and easier and commonly undertaken. The second option is that you include the bioretention and swale as two separate nodes in MUSIC.

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The first node is the bioretention node as noted above (i.e. consider the bioretention filter surface by itself). The second (downstream) node is the standard swale node with a single change.

- Swale characteristics are as detailed above for a standard swale ensuring the bed slope does not exceed 5%.
- The only change is that a low flow bypass into the treatment measure needs to be calculated. This is the flow infiltrating through the surface of the bioretention into the underdrain pipes.

This low flow bypass is calculated by the following formulae:

Low Flow Bypass = BSA x k_{sat} / (1000 x 3600) in m^3 /s

Where:

BSA = Bioretention surface area

k_{sat} = Saturated Hydraulic Conductivity of the filter media in mm/hr (max 125 mm/hr).

18.11 Rainwater and StormwaterTanks

Rainwater tanks can serve two main purposes. Primarily, they are designed to provide an alternative source of water for non-potable uses such as irrigation, toilet flushing, laundry, hot water, or industrial process water. They are not intended, nor should they be seen as a component of detention. Rainwater tanks are to only accept runoff from a Roof source node.

To design a rainwater tank for reuse involves balancing the supply and demand and selecting an appropriate tank size to meet a reasonable proportion of demand. This can be achieved in MUSIC.

Rainwater tanks can also be designed to act as a treatment measure, as some settling occurs in the tank, and when rainwater is utilised, some pollutants are removed along with the water.

Non-potable Reuse Rates for Modelling Rainwater Tanks in MUSIC

The following rates are provided as a guide for MUSIC modelling purposes.

Residential development (excluding home units or multistorey dwellings) allow for rainwater reuse per dwelling based on the area of lots as follows:

- Lots > 720 m² allow 0.14 KL/day internal use & 100 KL/year as PET- Rain
- Lots > 520 & < 720 m² allow 0.12 KL/day internal use & 75 KL/year as PET- Rain
- Lots > 320 & < 520 m² allow 0.10 KL/day internal use & 50 KL/year as PET- Rain
- Lots < 320 m² allow 0.08 KL/day internal use & 25 KL/year as PET- Rain

NOTE: Consider each Villa and/or Townhouse dwelling as Lots < 320 m²

Industrial and commercial developments, including schools, child-care centres, hotels/motels, hospitals, halls, sporting fields and aged care and places of worship (including not-for-profits), allow for rainwater reuse as follows:

• For internal rainwater reuse, allow 0.1 KL/day per toilet, or urinal in industrial/commercial developments and generally ignore any disabled toilet. However where the site is only occupied say 6 days per week the daily usage rate is to be

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proportioned by 6 / 7. Similarly where there is an additional afternoon, or night shift using less staff, increase the rate proportionally.

- Other internal usage may involve vehicle washing or other industrial usage and specific data will need to be supplied to justify these reuse rates.
- For irrigation of landscaped areas only allow 0.4 kL/year/m² as PET-Rain for sprinkler systems and 0.3 kL/year/m² for subsurface irrigation. For bioretention filter areas only allow 0.4 kL/year/m² as PET-Rain (subsurface irrigation only). Higher rates may be required by the landscape architect for specific landscape requirements, however such rates will not be accepted by Council in the MUSIC model. This does not stop the Landscape Architect increasing the rainwater tank size to cover such requirements.

First Flush Systems and Rainwater Tank Pre-Treatment

As a means of improving the water quality of the stored water in a rainwater tank, it is common to remove a certain volume of runoff off the roof, referred to as the first flush, on the understanding that most of the pollutants will be contained in this runoff. This reduces the chance of thes pollutants entering the rainwater tank. Typically this may be the first one or two millimetres of runoff off the roof. These systems are then drained via a low flow or dribble pipe. In MUSIC the roof node would connect direct to a detention node to represent the properties of the first flush tank and low flow outlet. The primary flow will be directed to wherever the low flow pipe drains to and the weir overflow will be directed as secondary flow to the rainwater tank.

Where a first flush system is not used, other pre-treatment is usually required for the rainwater tank typically as a screen and silt trap. Unless these are a proprietary device accepted by Council, no credit will be given in MUSIC. Specific requirements for such

devices may be required in charged systems under pressure.

Rainwater Tank Sizes

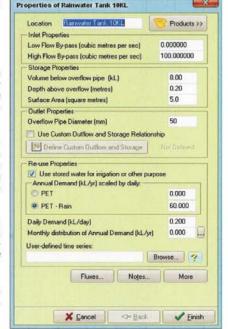
Allow for a 20% loss in rainwater tank volume in MUSIC to allow for anaerobic zones, mains water top up levels and overflow levels. e.g. where a 10 kL tank is specified on the drainage plan it is to be modelled as 8 kL in MUSIC.

For residential development the tank size is as required for BASIX. Where rainwater tank sizes are proposed by the designer are larger than those specified in BASIX, or the roof area draining to the tank varies, the BASIX certificate is to be amended to match.

When assessing low density residential subdivisions allow for a rainwater tank size of 2.5 kL supplied, but modelled as 2.0 kL in MUSIC per dwelling. Also allow for a Surface Area of rainwater tank of 1.7 $\rm m^2$ per dwelling.

For industrial and residential development the rainwater tank size will be determined to meet the 80% non-potable reuse requirement.

Figure 15: Example of properties of a Rainwater Tank in MUSIC



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Input parameters include:

- Identify any high flow or low flow bypasses proposed for the treatment measure.
 Generally the default values are retained.
- . Input the tank volume (with 20% reduction as noted above).
- The depth above overflow, can be estimated roughly or left at default values. This
 parameter does not have a significant influence on the results.
- The surface area can be determined from available information, or roughly estimated.
- The overflow pipe diameter can be estimated roughly or left at default values. This
 parameter does not have a significant influence on the results.
- Tick "Use stored water for irrigation or other purpose". For irrigation usage PET Rain is recommended. It is defined as an annual demand (kL/yr) and scaled according to the daily PET value minus the daily rainfall data contained in the Meteorological Template used to create the model rainfall (i.e. when PET exceeds rainfall, reuse will occur, or more simply you don't water the garden when it is raining.) Daily demand (kL/day) refers to more constant internal usage such as toilet flushing, laundry use, some industrial processes, or vehicle washing. Monthly distribution would only apply to a specific industrial reuse. Details of general allowable rates are indicated above.

The effectiveness of the rainwater tank at meeting the demands upon it can be evaluated by clicking on the Rainwater Tank Node after running MUSIC. Right click on "Statistics" and under "Node Water Balance" review the "% Reuse Demand Met" result in the Flow column. For residential development there is no specific reuse target as the development is subject to BASIX. For commercial and industrial development, Council requires a minimum of 80 % non-potable reuse to be met through rainwater. Residential development is subject to BASIX and has no minimum % reuse requirement for Council. An example MUSIC model setup, showing the location of a rainwater tank, was shown in figure 9.

Stormwater Tank Modelling Constraints

Stormwater tanks differ from rainwater tanks in that they may collect water from a variety of sources including driveways, parking areas and landscaped areas as well as rainwater tank overflows. This adversely affects the quality of water and the range of pollutants that may be captured. Some such pollutants may be adverse to public health and may include poisons used on the garden or chemicals spilt on the driveway, or parking areas. Consequently stormwater reuse is not permitted for residential development at all, nor is it permitted for toilet flushing for commercial or industrial developments. Stormwater reuse is permitted for subsurface drainage of landscaped area for commercial or industrial developments subject to a high level of filtering and any other additional treatments as required by your consultant. Stormwater reuse may also permitted for some industrial processes subject to a more detailed review and risk assessment.

The characteristics of a Stormwater Tank in MUSIC is identical to that of a Rainwater Tank. The designer mainly needs to ensure that when the "Use stored water for irrigation or other purpose box" is checked, that the demands are appropriate and fit for purpose.

18.12 Generic Node

This node allows the user to simulate the treatment performance of treatment measures not listed within the default parameters. The use of these nodes for specific treatment devices is not permitted without direct approval from Blacktown City Council. A range of approved Generic Nodes is available from Council for a range of existing proprietary devices.

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The use of the generic node is permitted when used for a flow transfer function without any treatment. This may be to represent a diversion weir, or as an HED pit as detailed in Figure 9. Such nodes are also used when determining the Stream Erosion Index (SEI) as detailed in section 8.

18.13 Hydrocarbons

Council requires the post development average annual load reduction of 90% for Total Hydrocarbons. Hydrocarbons in water can be found as free floating, emulsified, dissolved, or adsorbed to suspended solids. A hydrocarbon, by definition, is one of a group of chemical compounds composed only of hydrogen and carbon. Microbes in the soils and water have a natural ability to breakdown many of these compounds and any hydrocarbon which is exposed to the air will also have an affinity to volatilise. As well, reactions including photochemistry and the various transformations of the hydrocarbon through these reactions, can enhance the hydrocarbon decomposition. This includes free oils and emulsified hydrocarbons.

MUSIC at this time is unable to assess the removal of Total Hydrocarbons. Consequently empirical methods are required to achieve the required load reduction.

To meet the 90% target for hydrocarbon removal for on-line flows, a system is to be provided capable of retaining hydrocarbons through an appropriately sized baffle system that reduces the flow velocities sufficiently to contain and store the hydrocarbons for the peak flow.

To meet the 90% target for hydrocarbon removal for off-line flows, the system is to be designed to treat the six (6) month flow using a proprietary hydrocarbon removal device, or gross pollutant trap with oil baffle, or an appropriately sized baffle system that reduces the flow velocities sufficiently to contain the hydrocarbons.

Industrial or commercial development with carparks, or manoeuvring areas greater than 1000 $\,\mathrm{m}^2$ must provide a device that specifically targets the removal of hydrocarbons from the treatment train.

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19 CALCULATION OF THE STREAM EROSION INDEX

19.1 How to estimate the Stream Erosion Index (SEI)

Blacktown City Council uses the method developed in the Draft NSW MUSIC Modelling Guide (Aug 2010) that is adapted from Blackham and G. Wettenhall (2010).

Water Sensitive Urban Design (WSUD) strategies are typically modelled using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC). MUSIC can be used to estimate the SEI for a development's stormwater management strategy to determine compliance with the SEI objective.

Blacktown Council requires that the post development duration of stream forming flows shall be no greater than 3.5 times the pre developed duration of stream forming flows with a stretch target of 1.

The Four Steps for Estimating Stream Erosion Index

- Estimate the critical flow for the receiving waterway above which mobilisation of bed material or shear erosion of bank material commences.
- Develop and run a calibrated MUSIC model of the area of interest for predevelopment conditions to estimate the mean annual runoff volume above the critical flow.
- Develop and run a MUSIC model for the post developed scenario to estimate the mean annual runoff volume above the critical flow.
- 4. Use the outputs from steps 3 and 4 to calculate the SEI for the proposed scenario.

19.2 Estimating the critical flow for the receiving waterway

The critical flow for a waterway is defined as the flow threshold below which no erosion is expected to occur within the waterway. This has been estimated (EarthTech, 2005) as a percentage of the pre-development two year ARI peak flow at the location in question. For Blacktown this percentage is 25% based on the dispersive characteristics of the typical local clay soils. The peak flow from the two year ARI storm event corresponding for pre-developed conditions is to be calculated using the probabilistic rational method as described in Australian Rainfall and Runoff¹.

- 1. Using the area of the site (in km²), calculate the Time of Concentration using the probabilistic rational method from equation 1.4 of AR&R Volume 1, Book 4. $t_c = 0.76A^{0.38} \qquad (A(km^2 = Ha/100), t_c(hour))$
- 2. Select I_2 (mm/hr) from the Rainfall Intensity Chart in the Engineering Guide for Development based on the 2 year ARI and the calculated t_c in minutes.
- Determine the two year ARI runoff coefficient C₂ using equation 1.5 of AR&R Volume 1. Book 4.

 $C_2 = C_{10} \times FF_2 = 0.6 \times 0.74 = 0.444$

where C_{10} is the 10 year runoff coefficient from Fig 5.1 from AR&R Volume 2 = 60%, and

FF₂ = the 2 year frequency factor from Table 1.1 of AR&R Volume 1, Book 4 = 0.74.

4. Using the rational method Q_2 = 0.278 x C_2 x I_2 x A, substitute results from 2 and 3 above.

 $Q_2 (m^3/s) = 0.278 \times 0.444 \times I_2 \times A = 0.1234 \times I_2 (mm/hr) \times A (km^2)$

Q_{critical} = Q₂ x 25%.

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19.3 Estimating the mean annual flow for pre and post-development.

The data required for estimating SEI can be directly extracted from MUSIC by interrogating a generic node that is added to the treatment train immediately upstream of the receiving waterway or in this case the receiving node. The generic node in MUSIC provides a flow transfer function which can be simply defined to easily calculate the annual volume of flow above the critical flow. The generic node should be set up to convert all inflows at, or below the critical flow to zero outflows. Flows above the critical flow will be passed through the node at the magnitude by which flow exceeds the critical flow, as described below:

$$\begin{aligned} &Q_{out} = 0 & \text{if} & Q_{in} < Q_{critical} \\ &Q_{out} = Q_{in} - Q_{critical} & \text{if} & Q_{out} > Q_{critical} \end{aligned}$$

Two MUSIC models are to be prepared.

The pre-development model shall incorporate a realistic assessment of the site impervious percentage and any natural features such as ponds or farm dams. The use of the default MUSIC source nodes for Agriculture and Forest may be applicable for some pre-development modelling.

The post development MUSIC model is the same model required to meet the water quality systems targets, but with the Generic flow transfer node added. Note for some subdivisions where Generic nodes are needed to represent future on-site treatment for certain development types, an additional MUSIC model may need to be developed to reflect the use of rainwater tanks and other flow attenuating systems to ensure compliance with the Stream Erosion Index targets.

19.4 Calculating SEI.

Check the flow transfer generic nodes at the downstream end of the MUSIC models for pre and post-development conditions by:

- 1. Right clicking the generic node
- 2. Clicking on 'Statistics' then 'Mean Annual Load'
- 3. Copying the flow output value

The SEI is calculated as the ratio of the output mean annual flow from the generic node for the post-developed model over the corresponding value for the pre-development model as detailed below:

SEI =
$$\sum (Q_{post} - Q_{critical}) / \sum (Q_{pre} - Q_{critical})$$

The SEI has to be less than 3.5 with a stretch target of 1.

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Item:

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APPENDIX P - RAINGARDEN INSPECTION AND MAINTENANCE FORM

APPENDIX P - RAINGARDEN INSPECTION AND MAINTENANCE FORM

This form should be used during inspection and maintenance, as it provides a checklist of the key inspection elements and a permanent record of the maintenance activities undertaken. This form should be submitted to the asset manager following every inspection and maintenance event, so that any persistent problems or issues requiring further investigation can be identified and responded to.

ASSET TYPE			
LOCATION			
INSPECTING OFFICER'S NAME			
DATE		DATE OF LAST RAINFALL	
Photos of site (explanatory notes)			
1			
2			
3			
4			
5			
General comments, sketches, descriptio	n of maintenance undertaken		

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ITEM	WHAT TO CHECK FOR	INSPECTION FREQUENCY	MAINTENANCE UNDERTAKEN	FURTHER ACTION REQUIRED OR COMMENT
CIVIL COMPONI	ENTS		*	
Inlet	No evidence of erosion, blockage, damage or standing water.	Six monthly and following significant storm events		
Outlet	No evidence of erosion, blockage, damage or standing water. Outlet freely draining	Six monthly and following significant storm events		
Other Structures	No evidence of erosion and damage to other structures, e.g. pits, pipes access ramps, walls and rock protection	Yearly		
Batters and bunds	No evidence of erosion	Yearly		
Hydraulic conductivity or permeability	Filter media is draining freely. No water ponded on the surface of the raingarden for more than 12 hours after rainfall.	Yearly and following significant storm events		
Sediment accumulation	Sediment forebay less than 75% full. No major sediment	Yearly		
	accumulation on surface of the raingarden.			
Filter media surface	No surface scour depressions	Yearly		

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ITEM	WHAT TO CHECK FOR	INSPECTION FREQUENCY	MAINTENANCE UNDERTAKEN	FURTHER ACTION REQUIRED OR COMMENT
Fine sediment surface crust	No impermeable or clayey surface on the filter media.	Yearly		
	No major surface crusting (<3mm depth across less than 10% of the filter area is permissible).			
Algal or moss growth	Mo major algal growth (less than 10% of the raingarden area is permissible).	Yearly		
Inspection openeings	Water level is below filter media layer.	Yearly		
	No sediment accumulation in under drain system.			
LANDSCAPE CO	MPONENTS	9	n)	**
Vegetation cover - filter media	Greater than 90% vegetation cover.	Six monthly		
	Plants healthy, free from disease and vigorously growing.			

FURTHER ACTION REQUIRED OR

COMMENT

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	6	
	5	
	5	2
	Ś	2
	6	

ITEM

batters

Weeds

- filter media

- batters Litter

Pests

Vegetation cover -

INSPECTION

FREQUENCY

Six monthly

Six monthly

Six monthly

Yearly

MAINTENANCE UNDERTAKEN

WHAT TO CHECK FOR

Greater that 90% vegetation

Plants healthy, free from disease and growing vigorously.

Less than 10% of the filter

media surface and batters

Filter media surface and

batters free of litter (i.e. less than I piece per 4m2)

No damage by pest animals

covered in weeds.

and insects

Continuous vegetation

cover along the lower

batter.

cover.

APPENDIX Q - DRAINS MODEL PARAMETERS

PARAMETERS TO BE USED IN DRAINS MODELLING

- · Use of values other than those listed here requires Councils prior approval.
- · Where a range of values is given, use of the value selected needs to be justified
- · Where there is any possibility of variation in values, multiple runs to test sensitivity will be required
- DRAINS runs are to be carried out for a range of storms depending on the ARI of the minor system

PARAMETER DESCRIPTION	VALUE
Soil type - normal	4.0
Paved (impervious) area depression storage	1 mm
Supplementary area depression storage	1 mm
Grassed (pervious) area depression storage	5 mm
Antecedent moisture conditions for all ARIs	4.0 mm
Sag Pit blockage factor (major systems)	50%
On grade pit blockage factor	30%
Inlet pit capacity	Max 100l/s for on grade pits
Minimum pit freeboard	150mm

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APPENDIX R - EXAMPLE STORMWATER DESIGN PLANS

SINGLE DWELLING WITH CHARGED LINE

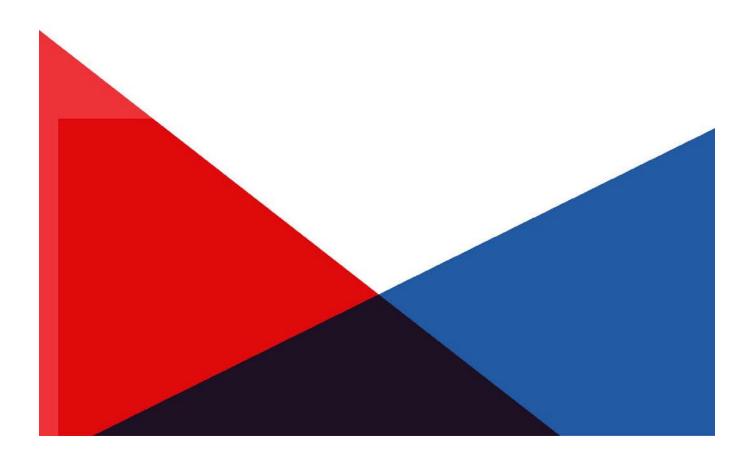
SINGLE DWELLING WITH BASEMENT CAR PARKING

MULTI UNIT RESIDENTIAL BUILDING WITH ABOVE GROUND ON-SITE DETENTION

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STORMWATER MANAGEMENT POLICY



DRAINAGE FOR PROPERTIES

THAT SLOPE AWAY FROM THE STREET

If part or all of your property slopes away from the street, this adds requirements to your development as drainage of stormwater will be difficult. This fact sheet outlines some of your options.

WHAT ARE YOUR MAIN OPTIONS?

Private drainage easement

Properties that slope away from the street are limited in how much paved area they can develop UNLESS they obtain an *easement to drain water* from a neighbour.

An easement to drain water is a legal agreement between your property and your neigbours property which allows your stormwater to flow through their land, and will typically look like the layout below. It requires the neighbouring owner's agreement, a one off payment for the use of the land as well as legal and surveying work to register the easement. A pipe connecting from your property, through the easement in the neighbouring property and into the street below



will be constructed. The easement will also carry water that cannot fit in the pipe during heavy rain. Please see section 3.4.2.1 of the Stormwater Management Policy for additional detail.

Charged line with absorption trench

Sometimes it is not possible to obtain an easement (your neighbours say no, or just do not respond to your request). When that is the case, it MAY be possible to create a charged drainage line. Before a charged line is permitted, you must provide evidence that you could not obtain an easement.

FACT SHEET 1 Pg 1 www.fairfieldcity.nsw.gov.au

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A charged line relies on the roof of your house being high enough to allow the roofwater to drain to the street. With this type of system a section of the pipe always remains full of water.

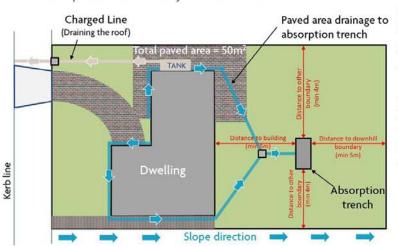
There is a 'deemed to comply' solution for charged lines to make the design process easier, which means it needs to meet the requirements listed below. If you cannot meet these requirements, you can still have the system designed by an engineer whomust prove the charged line will work.

DEEMED TO COMPLY - CHARGED LINE

- 1. The height of charge within the line must be a minimum of 900mm
- 2. The distance from the tank outlet to the kerb outlet must not be greater than 50m
- 3. The roof area must not exceed 350m²



If a charged line is used to drain a house, you will be limited to a 50m² of driveways, paths and minor paved areas on your site. This area will need to drain to an abosrption tench as



shown here. If you wish to have more than 50m² of paved area, you will need to obtain an easement.

Please see section 3.4.2 and 3.4.3 of the Stormwater Management Policy for more details.

Pg 2

Please note: Charged lines are only permitted for dwelling houses, dwelling houses on narrow lots, secondary dwellings and attached dual occupancies.

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Outcomes Committee



SECTION B

'Matters submitted to the Committee for decision subject to the right of referral'

Meeting Date 12 September 2017

Item Number, 105

SUBJECT: Planning Proposal - 400-404 Cabramatta Road West, 2 Orange

Grove Road and 6 Links Avenue, Cabramatta

Premises: 400-404 Cabramatta Road West and 6 Links Avenue Cabramatta

Applicant/Owner: TCON Constructions (Director: Ahmed Taleb)

Zoning: R2 Low Density Residential with additional permitted use of 'multi

dwelling housing'

FILE NUMBER: 15/03740

REPORT BY: Julio Assuncao, Land Use Planner

RECOMMENDATION:

That:

- 1. Council advise the Applicant that the Planning Proposal to rezone the subject site from R2 Low Density Residential to R4 High Density Residential is not supported as it is inconsistent with the key principles of the draft Fairfield Residential Development Strategy.
- 2. Should Council support Option 1 as outlined in the report, it request the Applicant revise the Planning Proposal to seek an R3 Medium Density Residential Zone with increased Floor Space Ratio provisions and develop site specific controls in consultation with Council officers.
- 3. A further report be submitted to Council for its consideration should the Applicant agree to revise the Planning Proposal in accordance with Option 1.
- 4. Council advise the Applicant that, should they seek a review of Council's decision with the relevant Planning Panel, Council would consider that it has met the relevant obligations in regards to providing a decision on this matter. Any further requests to amend the Planning Controls, should that option be pursued by the Applicant, would be subject to a new application.

Note: This report deals with a planning decision made in the exercise of a function of Council under the EP&A Act and a division needs to be called.

SUPPORTING DOCUMENTS:

AT-A Planning Proposal – 400–404 Cabramatta Road West, 2 Orange 203 Pages Grove Road and 6 Links Avenue, Cabramatta - DISTRIBUTED UNDER SEPARATE COVER

Meeting Date 12 September 2017

Item Number, 105

AT-B	Council Officer Assessment	5 Pages
AT-C	Revised Planning Proposal	41 Pages
AT-D	Section 117 Directions	9 Pages
AT-E	RMS Comments to Planning Proposal	3 Pages
AT- <u>F</u>	RMS and TfNSW Joint Submission	3 Pages

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

This report provides Council background and an assessment of a Planning Proposal for land known as 400-404 Cabramatta Road West and 6 Links Avenue Cabramatta.

The site is currently zoned R2 Low Density Residential with an additional permitted use of 'multi dwelling housing' under the Fairfield Local Environmental Plan 2013.

The Proponent proposes to rezone the site to R4 High Density Residential with maximum floor space ratio of 1.9:1 and a height of building ranging between 14-27 metres across the site.

This report undertakes an assessment of the submitted documentation and concludes that the planning proposal in its current form is not supported by Council officers, as the form of development sought by the proposal in the locality is inconsistent with the key principles of the draft Fairfield Residential Development Strategy.

BACKGROUND

- This site has been the subject of a previous Development Application and an amendment to the former Fairfield Local Environmental Plan (FLEP) 1994 to include and additional permitted use of multi dwelling housing.
- The Development Application No. 232/98 was approved in 2002 for the demolition of former residential buildings and the construction of multi dwelling housing comprising of 35 x 3 bedroom and 5 x 2 bedroom units.
- To date the above consent proceeded as far as demolition of the residential buildings however has physically commenced and the development for multi dwelling housing can be constructed.
- A pre-lodgement meeting regarding the rezoning proposal was held with the Proponent in October 2015 in which the following was advised:

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- Council officers would not be in a position to support a change in zone to allow the proposed development of residential flat buildings (up to 9 storeys in height) and a component of retail/commercial presenting to the corner of Cabramatta Road and Orange Grove Road.
- The subject site is outside the areas identified by the draft Fairfield Residential Development Strategy ie. centres and corridors approach to increasing densities.
 Distance to frequent public transport (railway line or bus transit way) and services contained within a major town centre.
- The planning proposal (ATTACHMENT A) was lodged to Council on 21 April 2016 which sought to amend the FLEP 2013 as follows:
 - Rezone the site to R1 General Residential
 - A maximum height of building of 14 27 metres
 - A maximum floor space ratio of 2:1
 - Amend Schedule 1 to remove the additional permitted use of 'multi dwelling housing'
 - Amend Schedule 1 to includes additional permitted uses of 'business premises' and 'office premises'
- The planning proposal utilises its proximity to The Grove Homemaker Centre (previously Orange Grove Mega Centre) (2-18 Orange Grove Road) in Liverpool Local Government Area. A planning proposal is currently under assessment by Liverpool Council to permit 'shops' up to 21,000sqm as part of its justification for higher density residential.
- Council officers undertook an initial assessment of the proposal and provided the applicant with advice (ATTACHMENT B) that stated that the proposal would unlikely be supported. This advice was provided as the subject site has not been identified by the Fairfield Residential Development Strategy as an area that is suitable for higher density residential development.
- The applicant subsequently amended the proposal based on certain aspects of the Council's letter.

THE SITE

The subject site incorporates the following properties:

Property Address	Title Description
400 Cabramatta Road West Cabramatta	Lot: 1 DP: 29449
6 Links Avenue Cabramatta	Lot: 3 DP: 30217
404 Cabramatta Road West Cabramatta	Lot: 7 DP: 709126
2 Orange Grove Road Cabramatta	Lot: 6 DP: 709126
402 Cabramatta Road West Cabramatta	Lot: 1 DP: 503339
402A Cabramatta Road West Cabramatta	Lot: 2 DP: 503339



- The site is irregular in shape with 3 frontages consisting of approximately 64 metres to Cabramatta Road West, 199 metres to Cumberland Hwy and 15 metres to Links Avenue.
- The site has a total combined area of 15,311 square metres (1.53 hectares).
- The site tapers from an approximate width of 57 metres at its narrowest point (excluding the access handle at 6 Links Avenue) to the north and widens to approximately 98 metres to the site.
- Vehicular access to the site for any future proposal is likely to be provided via Links Avenue which has a signalised intersection with the Cumberland Highway.
- To site is bounded by low density residential development to the east and south comprising mainly of single storey dwellings and split level dwellings due to undulating topography of the locality.
- The site has a significant slope from north to south with a gradient change of up to 10 metres.
- To the west the site adjoins Cumberland Highway which separates the site from Cabramatta Golf Course.

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CURRENT PLANNING CONTROLS

The following FLEP 2013 provisions apply to the subject site:

- R2 Low Density Residential
- Schedule 1 Additional permitted use of 'multi dwelling housing'
 - Maximum Floor Space Ratio of 0.45:1
 - Maximum height of 9 metres
 - Minimum site area of 450sqm
 - Minimum site area of 600sqm for dual occupancies

The site does not contain any heritage items, the proposal will not affect the heritage item on the Cabramatta Golf Course, identified as 'redgums', which are listed under Schedule 5 – Environmental Heritage of the Fairfield LEP 2013.

The subject site is note affected by biodiversity provisions.

APPLICANTS PLANNING PROPOSAL

The applicant submitted a revised planning proposal **(ATTACHMENT C)** on 24 June 2017. Certain aspects of the proposal were amended based on the advice of Council's letter. The changes namely related to the zoning, removal of the commercial component and slight changes to the configuration of the built forms.

A comparative table between the original submitted proposal and the amended planning proposal is provided below:

Initial Planning Proposal & Indicative Concept	Amended Planning Proposal & Indicative Concept
Rezone the site to R1 General Residential with 'office' and 'business premises' as additional permitted uses.	Rezone the site to R4 High Density Residential. Remove 'office' and 'business premises' as additional permitted uses.
Increase the maximum building height for the site to part 14 metres and part 27 metres;	Allow heights to permit a range of 4, 6 and 8 storey buildings. Level 7 and 8 on the taller buildings fronting Orange Grove Road and Cabramatta Road West are setback from the street façade.
FSR 2:1	FSR 1.9:1
GFA: 30,780m ² incorporating:	GFA: 28,557m ² incorporating:
 29,580m² residential; and 	 27,357m² residential; and
 1,200m² non-residential. 	 1,200m² non-residential.
Approximately 340 x 2 bedroom apartments	Approximately 327 x 2 bedroom apartments, and 18 x 1 bedroom apartments

ASSESSMENT OF APPLICANT'S PLANNING PROPOSAL

Council should note that Council officer's original assessment of the applicants planning proposal did not indicate that the planning proposal would be supported. Rather the advice related to additional information required for Council to undertake a complete assessment of the planning proposal.

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Council's Strategic Planning Team, Catchment Management, Environmental Health, Natural Resources and Traffic Transport Teams have all been involved in the assessment of the applicant's Planning Proposal.

The main issues with the planning proposal are further discussed below.

FAIRFIELD RESIDENTIAL DEVELOPMENT STRATEGY

The Fairfield Residential Development Strategy (FRDS) was prepared to inform the application of the residential zones (east of the Cumberland Highway) under the FLEP 2013.

The purpose of the FRDS is to establish a framework to ensure that Fairfield LGA can accommodate additional dwelling growth in a sustainable manner.

The FRDS adopts a centres based approach when considering areas that could accommodate additional residential densities. The FRDS also takes into consideration other factors such as accessible public transport and environmental constraints.

Council officer comment

The applicant's submission relies on the outcome of a planning proposal for land located at 2-10 Orange Grove Road and 5 Viscount Place also known as the The Grove Homemaker Centre (Orange Grove) located in the Liverpool Local Government Area (LGA) as part of its justification.

The Orange Grove planning proposal seeks an additional permitted use of 'shops' up to 21,000sqm on the site. At the time of writing this report, the Orange Grove planning proposal was currently under assessment by Liverpool City Council (LCC).

The subject site is located east of the Cumberland Highway and such is subject to the recommendations of the FRDS.

The FRDS does not identify the locality that includes the subject site as an area suitable for increased housing density.

Council officers advised the applicant that using the Orange Grove planning proposal as part of the justification for increased densities on the site could only be formally taken into consideration if this proposal was formally made by the Minister of Planning to amend the Liverpool Local Environmental Plan 2008.

Notwithstanding, Council officers do not consider The Grove Homemaker Centre in Liverpool City should be used to justify the density of residential areas in Fairfield City irrespective of the outcome of the Orange Grove planning proposal.

The categorisation of The Grove Homemaker Centre is further discussed below.

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FAIRFIELD CITY CENTRES STUDY 2015 AND FAIRFIELD CITY CENTRES POLICY 2015

The applicant has utilised the proximity of The Grove Homemaker Centre as part of its justification for increased densities on the subject site.

Council have previously made submissions objecting to numerous Orange Grove proposals on the basis that they was inconsistent with the Fairfield City Centres Study (FCCS) 2015 as the proposal had the potential to impact on the viability centres located in the Fairfield LGA namely Bonnyrigg Town Centre and Cabramatta Town Centre.

Council officer comment

In addition to Council's previous objections to the proposal, it is considered that the following issues need to be addressed regarding The Grove Homemaker Centre and its potential to influence the zoning of residential areas located within the Fairfield LGA.

The proposal is seeking additional permitted use of "shops" for the site. Whilst the proposal has implications for Council's strategic commercial centres, it should not be used to influence the existing planning framework for residentially zoned land located within the Fairfield LGA.

It can be implied that by the DP&E giving an additional permitted use, rather than a standard zone such as B2 Local Centre, that the DP&E do not consider this as a typical town centre which provides for a range of services in addition to those currently permissible or proposed on The Grove Homemaker Centre site.

By way of comparison, the Greenway Supacenta and facilities concentrated on The Horsley Drive located within the Fairfield LGA are zoned B5 Business Development of which the FCCS 2015 defines as a Bulky Goods Centres. These centres are not taken into consideration by the FRDS when considering localities for increased residential densities.

Further, The Grove Homemaker Centre is located outside of the Fairfield LGA and Council had no control over future potential changes in uses on the site that are different (e.g. residential rather than commercial uses) to those currently proposed on the site and used as an argument by the proponent to rezone 400 Cabramatta Road for higher density residential.

If in the instance the argument mounted by the proponent for higher density zoning of 400 Cabramatta Road was supported, this position could be applied to a range of other sites to argue for higher density residential zones due to the proximity to The Grove Homemaker Centre.

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A PLAN FOR GROWING SYDNEY

A Plan for Growing Sydney is the NSW Government's plan for the future of the Sydney Metropolitan Area. The Fairfield LGA is located within the Sydney Metropolitan Area and the key directions and actions within the plan should be used to guide the delivery of housing and employment within Fairfield LGA.

The Planning Proposal is generally consistent with the goals, directions and actions of A Plan for Growing Sydney.

One of the key goals is outlined below:

Goal	Consistency
Goal 2, Direction 2.1:Sydney's housing	The Planning Proposal is consistent with
choices	this action as it seeks to increase housing supply. However, the subject site is not
Action 2.1.1: Accelerate housing supply local housing choices	located in or around an existing centre.

The Plan is also guided by 3 planning principles:

- Principle 1: Increasing housing choice around all centres through urban renewal in established areas
- Principle 2: Stronger economic development in strategic centres and transport gateways
- Principle 3: Connecting centres with a networked transport system.

It is considered Principle 1 is particularly relevant to this proposal as this proposal seeks to increase housing density. However, the proposal is inconsistent in regards to Principle 2 and 3 as the site is not located near a major transport node nor is it located near any major centre.

DRAFT SOUTH WEST DISTRICT PLAN

The following is an assessment of the proposal in accordance with the relevant Actions outlined in the draft South West District Plan where Council has been identified as the lead agency.

The key actions that are relevant to this proposal are outlined below:

Action L3: Councils to increase housing capacity across the District and Action L4: Encourage housing diversity

Fairfield Local Government Area

The Council will:

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- monitor the delivery of Fairfield's five year housing target of 3,050 dwellings recognising the existing opportunities under current planning controls
- progress the current program to implement Residential Development Strategy East to support additional housing
- progress work on the Bonnyrigg Living Communities Project
- in the medium term, investigate further local opportunities to address demand and
- diversity in and around local centres, in infill areas and at locations close to transport.

Council officer comment

It is considered that the proposal is generally consistent with these Actions as it seeks to increase the supply of housing in the Fairfield LGA.

One main aspect of the proponent's justification is the provision of housing diversity in the locality.

The subject site currently benefits from an additional permitted use of 'multi-dwelling housing' which is a form of housing currently lacking in the locality.

Council officers consider that the term housing diversity is a broad term that includes all forms of residential housing such as multi-dwelling housing, secondary dwellings, and dual occupancies and should not be focused on residential flat buildings and the diversity of dwelling sizes within these built forms.

In this regard, there is an opportunity for this site to provide additional housing in the form of medium density housing.

Section 117 Directions

The proposal is generally consistent with the applicable 117 directions (ATTACHMENT D).

PLANNING AND URBAN DESIGN

The following is a merit based assessment of the concept plans submitted by the applicant. This assessment is does not imply Council officer support of the proposal.

Built Form

Floor Space Ratio

The proposal seeks to increase the maximum Floor Space Ratio (FSR) currently applicable to the site from 0.45:1 to 1.9:1.

Council officers consider that the built form is in a scale that is inappropriate for the site given the site is not in proximity to any centre or strategic transport such as rail or bus transit way.

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Height of Building

The proposal seeks to increase the existing maximum height of building from 9 metres to a range of 14 to 27 metres.

Council officers consider that the heights sought by the applicant are not consistent with other sites zoned for R4 High Density Residential within the Fairfield LGA. By way of reference, the maximum height provided to those areas is limited to 20 metres and 16 metres in the case of areas around the Cabramatta Town Centre as a result of the recommendations of the Cabramatta TMAP.

It should also be noted that Council has applied the R4 High Density Residential zone to areas that directly adjoin an existing centre. The proposal seeks to apply a height that is exceeds the maximum allowed on other areas zoned for high density residential.

Setbacks

Council officers consider that the siting of the built forms do not adequately address the existing and more importantly the future development potential of the surrounding land.

The locality was not identified as being in an area where additional residential densities could be accommodated under the draft FRDS. Council officers consider that any built form that adjoins existing low density residential development should be at a similar scale.

This approach would allow for a built form transition to be provided on the subject site rather than relying on development potential of adjoining sites that may not eventuate or unlikely to change.

Accessibility

Notwithstanding Council officers position on The Grove Homemaker Centre, it is considered that the subject site's relationship to this site is disjointed and not pedestrian friendly given access is along a major arterial road with a gradient that is not sympathetic to pedestrians especially those with mobility issues such as the elderly and those with prams.

INTERNAL REFERRALS

Traffic

Council's Traffic Engineers whilst not objecting to the proposal provided the following comments:

 The subject development complies with Council's Citywide Development Control Plan for the provision of car parking spaces. Dimensions of the car park, access driveways and internal circulation shall comply with the relevant Australian Standards.

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- The subject development shall only be accessed from Links Avenue.
- That consideration be made to investigate the indentation of the existing bus stop on the Cumberland Highway, south of Cabramatta Road, to support the use of public transport to the subject development and provide a safe bus stop area at the location.

Catchment Management

Council Catchment Team reviewed the proposal and have concluded that whilst there will be concentrated flows on the site; they are not at a depth that would be considered 'overland flooding'.

Future proposals on the subject site will need to incorporate on site detention measures on site which can be addressed as part of the Development Application process.

Natural Resources

Council's Natural Resources Team has reviewed the Ecological and Arborist reports associated with the report and raise no objections.

A review of historical aerial photographs indicated that the existing trees have all been introduced as part of previous residential development on the site and therefore are not considered as remnant vegetation.

Notwithstanding the above, Council officers advised the proponent that to address issues of visual amenity, any future built forms should be located in areas to maximise the retention of existing trees. In this regard, the siting off the built forms has sought to retain existing trees located along the perimeter of the site where possible.

Environmental Management

Council's Environmental Management Team has reviewed the proposal and have concluded that previous land use records indicate that the potential for contamination on the subject site. This aspect of the proposal may be subject to further investigation as part of the Development Application stage.

STATE AGENCY COMMENTS

The original proposal was referred to the Roads and Maritime Services (RMS) as recommended by Council's Traffic Engineers.

The RMS provided a response that raised no issues to the proposal proceeding to Gateway Determination.

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However, the RMS required that the proposal would need to address the additional matters in a Site Specific Development Control Plan prior to the proposal being placed on public exhibition should Council support the proposal. The issues are briefly outlined below with full details provided as (**Attachment E**).

- Revised Traffic Study more accurately reflect likely traffic impacts that also includes more detail regarding pedestrian impacts and any works required to cater for pedestrians and cyclists mitigate safety and efficiency impacts
- Intersection modelling for the signalised intersections of Cumberland Highway/Cabramatta Road and Cumberland Highway/Links Avenue should be linked.
- All future vehicular access will need to be obtained via Links Avenue, as proposed, as no direct vehicular access to Cabramatta Road or Cumberland Highway would be permitted for the future development.

Council officer's also note that as part of it's submission to the Orange Grove Planning Proposal (**Attachment F**) the RMS and Transport for NSW provided comment in respect to the impact of the that proposal on the intersection of Cabramatta Road and Orange Grove Road.

PLANNING PANEL APPEALS

Council should note that the New South Wales planning framework provide proponents with the opportunity to seek a review of a Planning Proposal in instances where Council does not formally advises that it formally does not support a planning proposal or supports a revised planning proposal.

Such reviews are undertaken by the relevant Planning Panel that has been appointed by the State Government to deal with matters relating to the Fairfield LGA.

Council should note that the Planning Panel will only consider planning proposals as originally submitted to Council by the proponent and not any revised planning proposals such as that subject to this report.

In the event that the applicant pursues this option, Council would consider that its obligations to report the matter have been met.

CONSULTATION STRATEGY

Should Council support the proposal, Council officers consider that due to the scale of the proposal the following consultation approach be required in order to provide the community with an opportunity to respond.

- Public exhibition is required for a minimum statutory period of 28 days
- Notification to landowners both within 400 metres of the proposal
- Notification to all land owners for land accessed of Links Avenue

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- Notice in the local newspaper; and
- Publication of all relevant information on Council's website.

The above consultation requirements will be in addition to those that may be stated by the DP&E should a gateway determination be issued for the proposal.

DELEGATION

In addition to the above, the recommendations to this report include a request being made to the DP&E for Council to exercise its delegation in the final steps in processing of the planning proposal.

OPTIONS

The following are some options available to Council in its consideration of this planning proposal.

Option 1 – (As recommended by Council Officers) Refuse the planning proposal in its current form and support a revised planning proposal subject to the applicant significantly revising the Planning Proposal to R3 Medium Density Residential

Whilst Council officers are not supportive of an R4 High Density Residential Zoning proposed by the applicant, there is an opportunity to formalise the zoning of the site to R3 Medium Density Residential.

The subject site meets the criteria as set out in the large lot policy for R3 Medium Density Residential. The subject site already benefits from an additional permitted use of 'multi dwelling housing' and this option would formalise the zone on the subject site.

Given the characteristics of the site a higher FSR may be considered within the confines of the existing 9 metre height limit to encourage basement carparking, this option would require the proponent to formally amend the planning proposal in consultation with Council officers and to develop site specific controls to ensure orderly development of the site.

The R3 Medium Density Zone also permits the land uses of 'medical centre' and 'Neighborhood Shop' which can be utilised to activate part of the site located on Cabramatta Road and Orange Grove Road.

Should the applicant seek a review of Council's decision by the relevant Planning Panel, this option would be forfeited and any future LEP amendments would be subject to a new application.

This option is recommended by Council officers as there is the potential for the subject site to accommodate a higher form of medium density residential than that currently permitted under the existing planning controls.

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Option 2 - Refuse the planning proposal in its current form and support a revised planning proposal subject to the applicant significantly revising the Planning Proposal to reduce the scale of the development

This option would refuse the proposal in its current form and require the applicant to reduce the scale of development under a R4 high Density Residential zone to a form that is sympathetic to the low density character of the locality.

This option is not recommended by Council officers as this form of development on the subject site is outside of Council's current planning framework. The subject site is not located in and around an existing centre or near a major transport node.

Should Council support this option, the applicant would be required to amend the planning proposal in consultation with Council officers and to develop site specific controls to ensure orderly development of the site. This option would also require an amendment to the FRDS to provide a framework for the assessment of other similar proposals.

Option 3 – Support the planning proposal

This option would see Council formally adopt the revised planning proposal as submitted by the proponent and refer it to the Department of Planning and Environment requesting a Gateway Determination to allow the proposal to proceed to public exhibition.

This option is not recommended by Council officers as the proposal is inconsistent with Council's existing planning framework as detailed in this report.

Further should Council support this proposal, Council officers would require the applicant develop a Site Specific Control Plan in consultation with Council officers to guide the orderly development of the site.

CONCLUSION

An assessment has been undertaken on the planning proposal that sought to rezone the subject site from R2 Low Density Residential to R4 High Density Residential to facilitate apartment development on the subject site.

Council officers consider that the proposal is not consistent with the key principles of the draft FRDS as it seeks a built form that is more appropriate in areas that are in or around existing centres or major transport nodes.

Further, there are concerns regarding the overall scale and density of the proposal which is a significant departure from the existing character and form of the surrounding low density residential area found in this part of Fairfield City.

Whilst Council officers are not supportive of the R4 High Density Residential zone, there is an scope for the subject site to accommodate a higher form of medium density residential development than what is currently permitted under the existing planning provisions.

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It is therefore recommended that Council support the option that provides an opportunity for the applicant to submit a revised proposal for an R3 Medium Density Residential Zoning of the land, subject to preparation of a Site Specific DCP in consultation with Council officers to ensure orderly and suitable development of the subject site.

Julio Assuncao Land Use Planner

Authorisation:

Coordinator Strategic Planning Executive Strategic Planner

Outcomes Committee - 12 September 2017

File Name: OUT120917_4.DOC

**** END OF ITEM 105 *****

Placeholder for Attachment A

Item 105 Outcomes Committee

Planning Proposal - 400-404 Cabramatta Road West, 6 Links Avenue, Cabramatta

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In reply please quote: 15/03740 Contact: Julio Assuncao on 9725 0885

10 June 2016

Mr Ahmed Taleb TCON Constructions Pty Ltd 127 Water Street Cabramatta West NSW 2166 cc: Jim Murray

Dear Mr Taleb.

PLANNING PROPOSAL – 400-404 CABRAMATTA ROAD WEST, 2-18 ORANGE GROVE ROAD & 6 LINKS AVENUE, CABRAMATTA

Dear Mr Taleb,

The following comments are provided following on from our meeting held at Council's administration centre on 26 May 2016.

Fairfield Residential Development Strategy

The Fairfield Residential Development Strategy (FRDS) is the strategic framework that examines areas of the Fairfield Local Government Area (LGA) east of the Cumberland Highway where additional residential density can be accommodated and underpins the residential zones contained within the Fairfield Local Environmental Plan (FLEP) 2013.

This FRDS generally takes a centres based approach where criteria areas such as areas in close proximity to an established town centres, availability of public transport as areas where higher forms of residential development can be accommodated.

The subject site and the general locality have not been identified in the FRDS as areas suitable for higher forms of residential development.

It is acknowledged that part of the submitted proposal relies on housing delivery as justification for the increase in density sought for the site. The subject site also has access to a regular public transport. However, these criteria alone cannot be relied upon as justification given the zone and densities sought on the subject site.

Status of the 10 Orange Grove Road, Warwick Farm Planning Proposal

It is noted that the proposal includes proximity of the subject site to the 10 Orange Grove, Warwick Farm otherwise known as the Orange Grove Megacentre to the south as justification for higher form of density on the subject site. It is also noted that a planning proposal is currently being processed by Liverpool City Council to allow an additional permitted use of 'shops' up to a maximum gross floor area of 21,000sqm.

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The outcome of this proposal has the potential to affect the planning framework relating to the adjoining residential zones located in the Fairfield LGA.

Given the above, the status of the Orange Grove proposal currently being processed by Liverpool Council to allow an additional permitted use of 'shops' to the already existing additional permitted uses of 'retail' and its outcome will impact on the potential suitability of the locality that includes the subject site for higher forms of residential development.

The additional use of 'shops' at the Orange Grove Megacentre will essentially contain facilities such as those defined as 'Sub Regional (Town) Centre' under the Fairfield City Centres Policy 2015.

At the time of writing this letter a Gateway Determination had not been issued by the Department of Planning for the Orange Grove proposal.

In order for Council Officers to take into account the Orange Grove Megacentre and the facilities that it is likely to provide similar to those of a 'Town Centre', that particular Planning Proposal will have needed to be substantially progressed through the rezoning process.

At a minimum, the Orange Grove Proposal will only be considered by Council officers in the event Liverpool City Council formally adopts the Planning Proposal to allow the additional permitted use of 'shops' on the site following on from public exhibition process and its subsequent submission to the Department of Planning and Infrastructure (DP&I) for finalisation.

For greater certainty, the subject Planning Proposal would not proceed until the amendment to the Liverpool LEP is formally amended (Gazettal) to allow 'shops' on the Orange Grove site.

Notwithstanding the comments provided above, Council requires the following additional information in order to be able to continue processing the application. It is important to note that provision of the following information does not imply that the proposal will be supported in its current form.

Additional Flood Information

The flood analysis that accompanied the planning proposal has not adequately analysed the potential for flood affectation on the subject site.

The Fairfield Overland Flood Study (2005) provided basic information relating to overland flow paths. This study shows an overland flow path directly to Cabramatta Creek originating from the subject site.

A1926155

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The flood analysis provided for the site has not undertaken any analysis, and it's conclusion that the site is not flood affected has ignored the site survey and aerial photography.

Due to no detailed overland flood study being undertaken for the catchment area encompassing the subject site a detailed flood analysis (including flood modelling) is required in order for Council to adequately address this aspect of the proposal.

Please note the findings of this detailed study may impact on the building envelopes proposed as part of this proposal. The flood analysis should also review the provisions of the Chapter 11 - Flood Risk Management of the Fairfield City Wide Development Control Plan (DCP) 2013 to inform the design building envelopes proposed for the subject site at this early stage.

Proposed R1 General Residential Zoning

As discussed in the meeting, Council officers are unlikely to support an R1 General Residential Zone on the subject site. The application of this zone in the FLEP 2013 applies to the Bonnyrigg Redevelopment Site 'New Leaf' which is underpinned by an overall Masterplan that guides the built forms over the redevelopment site.

The residential uses sought under this proposal as permissible under the R4 Residential Flat Building zone. It is acknowledged that should the proposal proceed under the R4 zone, 'Dual Occupancies' will be prohibited.

The planning proposal should be amended accordingly.

Additional Permitted Uses of Business Premises and Office Premises

An assessment of the documentation submitted has concluded that a case for the additional permitted uses of for a maximum 1200sqm of 'business premises' and 'office premises' has not been made and in this regard Council Officers provide the following comments:

The Fairfield City Centres Policy 2015 applies to planning proposals that provide for or relate to retail/commercial development regardless of the scale of the project.

It is acknowledged that the corner of Cabramatta Road and Cumberland Hwy is inappropriate to locate residential dwellings on the ground floor and that providing non residential uses on the ground floor will result in a better outcome by activating this frontage.

The land use tables of the R4 High Density Residential and R1 General Residential currently applicable under the FLEP 2013 provide for the following non-residential land uses that can be utilised to activate this frontage such as a 'medical centre' and 'neighbourhood shop'.

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Additional economic advice prepared by a suitably qualified consultant will be required to support the 1200sqm of additional permitted uses of 'business premises' and 'office premises' on the subject site. This advice is required to give effect to the Fairfield City Centres Policy 2015 and clearly demonstrate the need for these uses in the locality.

Alternatively, the planning proposal should be amended to omit the additional permitted uses of 'business premises' and 'office premises'.

Built Forms

As discussed in the meeting, discussion around built forms is dependent on the outcome of the Orange Grove proposal at which point the built forms provided under the current proposal will be further reviewed.

However, the following preliminary comments are provided.

- The flood modelling that is required to be undertaken for the subject site may necessitate amendments to the built forms as submitted as part of the proposal.
- The FRDS generally provides for a transition between the residential zones as follows, R4 High Density Residential transitions into R3 Medium Density Residential which in turn transitions to R2 Low Density Residential.
 - Council does not currently have a framework that looks at the future zoning of that locality, therefore in lieu of any established framework, the built forms submitted as part of this proposal (adjoining neighbouring properties) will have to take into account the transition methodology referred to above.
- The maximum height available in the R4 High Density Residential Zone (located around existing centres) within the Fairfield Local Government Area is 20 (6 storeys) metres which is the currently the maximum height across all residential zones (excluding those within town centres).
 - Consideration of any maximum height and floor space ratio controls for the subject site will likely reflect its location in relation to town centres and other established R4 High Density Residential zones across the Fairfield LGA.
- Preparation of a Site Specific Development Control Plan (to be incorporated into Chapter 7 of the Fairfield City Wide Development Control Plan) may be required to ensure the orderly development of the site and manage any potential impacts on the adjoining dwellings.

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- It is council officer's preference that the removal of existing trees should be minimised where possible in order to maximise the visual screening of any built form when viewed from the adjoining low density dwellings. As discussed during our meeting, progressing with this matter prior to the outcome of the Orange Grove proposal being known is likely to result in the proposal not being supported by council officers.
- Notwithstanding, the outcome of the Orange Grove proposal should it be formally adopted does not imply that this proposal will be supported by council officers but rather it will have implications to the future planning of the adjoining residential zones located in the Fairfield LGA that may require a review of the FRDS for the locality.
- Given the above, the proposal is unlikely to be supported until Council reviews the FRDS to take into account the Orange Grove Megacentre should the Liverpool LEP be formally amended to permit 'shops'.

Should you wish for council officers to proceed with processing of the planning proposal additional flooding information (including modelling) and economic advice is required for the proposed additional permitted uses of 'business premises' and 'office premises' is required.

The timing of a report to Council is subject to Council officers being able to make an assessment of the submitted additional information (including peer reviews that may be required such as in the case of economic advice). In addition, a report to Council may also be delayed as the result of the Local Government Elections which are scheduled to for September 2016.

If you have any questions regarding this correspondence please do not hesitate to contact me on 9725 0228.

Yours faithfully,

Julio Assuncao
SENIOR LAND USE PLANNER

A1926155





JM 15203 23 June 2017

Mr Julio Assuncao Senior Land Use Planner Fairfield City Council via email: jassuncao@fairfieldcity.nsw.gov.au

Dear Julio

PLANNING PROPOSAL 400-404 CABRAMATTA ROAD WEST, CABRAMATTA

1.0 INTRODUCTION

We write on behalf of TCON Constructions in response to Fairfield City Council's (Council) initial assessment of the planning proposal (letter dated 10 June 2016 and email dated 7 February 2017) for the above site. This letter is an addendum to the planning proposal. It sets out the amendments to the previous indicative concept, responds to Council's matters, and provides a summary assessment against the relevant strategic planning considerations. This letter should be read with reference to the following:

- Initial Assessment of the Planning Proposal (Council, Attachment 1);
- · Amended Urban Design Report (Aleksandar Design Group, Attachment 2);
- Revised Fairfield Local Environmental Plan 2013 zoning maps (JBA, Attachment 3);
- Flood Assessment (ANA Civil P/L, Attachment 4); and
- Drains model (ANA Civil P/L, Attachment 5).

2.0 AMENDED PLANNING PROPOSAL

The scale, density and land use zoning originally proposed has been amended to address the matters raised in Council's letter (Attachment 1). The following table compares the key components of the original planning proposal with the amended planning proposal. Refer to Attachment 2 for further design details and Attachment 3 for the revised zoning maps.

Table 1 - Comparative analysis

Initial Planning Proposal & Indicative Concept	Amended Planning Proposal & Indicative Concept		
Rezone the site to R1 General Residential with 'office' and 'business premises' as additional permitted uses.	Rezone the site to R4 High Density Residential. Remove 'office' and 'business premises' as additional permitted uses. Allow heights to permit a range of 4, 6 and 8 storey buildings. Level 7 and 8 on the taller buildings fronting Orange Grove Road and Cabramatta Road West are setback from the street façade.		
Increase the maximum building height for the site to part 14 metres and part 27 metres;			
FSR 2:1	FSR 1.9:1		
GFA: 30,780m² incorporating: 29,580m² residential; and 1,200m² non-residential.	GFA: 28,557m² incorporating: 27,357m² residential; and 1,200m² non-residential.		
Approximately 340 x 2 bedroom apartments	Approximately 327 x 2 bedroom apartments, and 18 x 1 bedroom apartments		

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3.0 RESPONSE TO COUNCIL COMMENTS

The following section summarises and responds to the matters raised by Council.

3.1 Fairfield Residential Development Strategy

"This FRDS generally takes a centres based approach where criteria such as areas in close proximity to an established town centre, availability of public transport as areas where higher forms of residential development can be accommodated...

It is acknowledged that part of the submitted proposal relies on housing delivery as justification for the increase in density sought for the site. The site also has access to regular public transport. However, these criteria alone cannot be relied upon as justification given the zone and densities sought on the subject site."

Response

In November 2016, the State Government determined that the Orange Grove planning proposal should proceed through the Gateway, and that the amending LEP is to be finalised within 12 months (i.e. November 2017). The Orange Grove planning proposal is likely to result in an additional 21,000m² floor space for 'shops'. This will result in Orange Grove accommodating approximately 40,000m² retail floor space a 10-minute walk from the site.

In this context, Council acknowledge that the site is proximate to a future 'sub-regional town centre', and it is strategically appropriate and justified to consider high density residential development on the site.

3.2 Status of the Orange Grove Road, Warwick Farm Planning Proposal

"The additional use of 'shops' [to a maximum GFA of 21,000m²] will essentially contain facilities such as those defined as 'Sub Regional (Town) Centre' under the Fairfield City Centres Policy 2015...

In order for Council Officers to take into account the Orange Grove Megacentre and the facilities that it is likely to provide similar to those of a 'Town Centre',...the subject Planning Proposal would not proceed until the amendment to the Liverpool LEP is formally amended (Gazettal) to allow 'shops' on the Orange Grove site."

Response

As stated above, the Orange Grove planning proposal received a positive Gateway determination from the Delegate of the Greater Sydney Commission. Prior to the Gateway determination, the planning proposal was reviewed by the Planning Assessment Commission (PAC), who supported its progress. This should provide Council with an appropriate level of certainty that the Orange Grove planning proposal has been assessed comprehensively, is supported at both Local and State Government level, and will proceed within the required timeframe.

Therefore, it is reasonable for Council to consider the Orange Grove planning proposal as part of their strategic assessment of the planning proposal for the subject site. Waiting for the formal amendment of the Liverpool LEP will unnecessarily delay the opportunity to rezone land that will enable the future delivery of approximately 340 additional dwellings in the Fairfield LGA.

Further, proceeding with the planning proposal for the subject site is consistent with the State Government's recently released package of measures to improve housing affordability across NSW. These measures include boosting housing supply in Sydney by accelerating rezoning in the right areas. The subject site is in the right area for rezoning and delaying the progress of the planning proposal at this stage is not consistent with the objectives of the State Government's housing affordability package 'to accelerate the supply of available housing capacity by rezoning urban renewal sites'.

JBA = 15203 = JM 2

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3.3 Additional Flood Information

"...a detailed flood analysis (including flood modelling) is required in order for Council to adequately address this aspect of the proposal.

...the findings of this detailed study may impact on the building envelopes proposed as part of this proposal. The flood analysis should also review the provisions of the [DCP] to inform the design building envelopes proposed for the subject site at this early stage."

Response

Flooding analysis and modelling has been undertaken with regard to the amended indicative concept design (refer **Attachments 4** and **5**). The analysis concludes that overland flow can be managed by the existing and future stormwater drainage infrastructure and swales. In this regard, there will be no additional impact on surrounding properties and the analysis does not identify any requirement to adjust the indicative building layout or raise finished floor levels.

3.4 Additional Permitted Uses of Business Premises and Office Premises

"An assessment of the documentation submitted has concluded that a case for the additional permitted uses...has not been made"

Response

The planning proposal has been amended to omit the additional permitted uses.

3.5 Built Forms

The following table addresses Council's built form comments.

Table 2 – Summary of Council meeting held 14 October 2015

Comment	Response	
The flood modelling that is required to be undertaken for the subject site may necessitate amendments to the built forms as submitted as part of the proposal.	Refer to Section 3.3 above. No amendments are required. The proposed built forms reflect the Council's transition methodology. The indicative concept design transitions from the surrounding R2 land (9m) by proposing a 4 storey (14m) height limit on built forms adjacent to the shared boundaries with R2 land. The built form transitions again to a higher density six storey (19m) height limit to an eight storey (27m) height limit on the prominent corner buildings. The upper levels of the two 8 storey buildings are setback from the street facade to reduce the perceived bulk and scale of the built form.	
The FRDS generally provides for a transition between the residential zones as follows, R4 High Density Residential transitions into R3 Medium Density Residential which in turn transitions to R2 Low Density Residential. Council does not currently have a framework that looks at the future zoning of that locality, therefore in lieu of any established framework, the built forms submitted as part of this proposal (adjoining neighbouring properties) will have to take into account the transition methodology referred to above.		
The maximum height available in the R4 High Density Residential Zone (located around existing centres) within the Fairfield Local Government Area is 20 metres (6 storeys) which is currently the maximum height across all residential zones (excluding those within town centres). Consideration of any maximum height and floor space ratio controls for the subject site will likely	space. Council acknowledge that the additional retail floor space will result in the Orange Grove centre assuming the retail characteristics of a sub-regional town centre. The Fairfield Centres Policy 2015 identifies Prairiewood and Bonnyrigg as sub-regional town centres. The	
reflect its location in relation to town centres and other established R4 High Density Residential zones across the Fairfield LGA.	following considers the planning proposal against the development standards for land in Prairiewood and Bonnyrigg.	

JBA = 15203 = JM 3

Prairiewood

Opportunities for urban renewal within the walking catchment of Prairiewood town centre is constrained in the short -medium term due to the balance of land already accommodating low density single dwellings.

Nevertheless, the Fairfield LEP 2013 permits development up to 26m with an FSR of 3:1 on certain land. The planning proposal to increase the maximum height on the subject site to between 14m and 27m with an FSR of 1.9:1 is not inconsistent with the Council's approach to land use in Prairiewood.

Bonnyrigg

The Council planning proposal for the Bonnyrigg town centre is currently on exhibition. The planning proposal will amend the Fairfield LEP 2013 to permit development in the R4 zone up to 26m. No FSR controls are proposed. The planning proposal to increase density on the subject site is not inconsistent with Council's strategic approach to residential land use in Bonnyrigg.

Preparation of a Site Specific Development Control Plan...may be required to ensure the orderly development of the site and manage any potential impacts on the adjoining dwellings.

The Urban Design Report (Attachment 2) demonstrates that the indicative design concept will not create any unreasonable shadow or privacy impacts to the existing or future residential dwellings east and south of the site. The preparation of a site specific DCP can occur post Gateway and prior to public exhibition if required.

It is Council Officers preference that the removal of existing trees should be minimised where possible in order to maximise the visual screening of any built form when viewed from the adjoining low density dwellings.

The built form in the indicative concept design has been sited to minimise the number of significant trees required to be removed. In this regard, a Preliminary Arboricultural Assessment was submitted with the initial planning proposal.

The indicative design concept is setback from the shared boundaries with adjacent R2 land in accordance with the requirements of the Apartment Design Guide. This allows the existing trees along the eastern and southern boundary to be retained which will maximise the visual screening of any future built form when viewed from the adjoining R2 land.

The Proposal is unlikely to be supported until Council reviews the FDRS to take into account the Orange Grove Megacentre should the Liverpool LEP be formally amended to permit 'shops'.

As outlined at Section 3.2 above, the Orange Grove planning proposal is supported at both Local and State Government levels and has received a positive Gateway determination. It is reasonable for Council to consider the planning proposal for the subject site within that strategic context now, rather than wait until the Liverpool LEP is formally amended.

The balance of land in the Fairfield LGA within walking distance of Orange Grove accommodates typical suburban low-density dwellings. The likelihood of this land being developed in the short-medium term is relatively low regardless of whether Council determine to rezone the land following their review of the FRDS.

The proposed controls and indicative concept design for the subject site are generally consistent with the scale and type of residential development the Fairfield LEP 2013 envisages in locations within sub-regional town centres that have capacity for change.

The planning proposal has been designed to comply with the relevant residential design criteria. It will not restrict

JBA • 15203 • JM 4

future development on the adjoining properties. The planning proposal demonstrates that the site can accommodate the scale and density of residential development proposed without generating unreasonable environmental impacts.

Undertaking a review of the FDRS prior to proceeding with the planning proposal imposes an unnecessary additional step in the rezoning process.

4.0 DRAFT SOUTH WEST DISTRICT PLAN 2016

Following the submission of the initial planning proposal, the Greater Sydney Commission released the *Draft South West District Plan 2016* (draft District Plan). For completeness, the relevant strategic considerations are addressed below.

Housing targets and delivery are a key strategic objective of broader metropolitan plans. The metropolitan and regional targets inform Council housing strategies and LEPs. The draft District Plan identifies that the Fairfield LGA population is projected to grow by 20,450 by 2036. In response, the Plan sets an initial housing target of 3,050 new dwellings in Fairfield before 2021. The draft District Plans' approach to housing delivery is underpinned by a set of liveability priorities. The planning proposal will directly address three key liveability priorities as outlined below, and is considered to be consistent with the intent of the draft District Plan.

Table 3 - Draft District Plan liveability priorities

Priority	Comment	
Improve housing choice	The planning proposal will contribute approximately 340 new dwellings to meeting the five-year target. It has been prepared in response to a design-led strategic analysis of the site's locational qualities proximate to a future sub-regional centre.	
Improve housing diversity and affordability	The planning proposal will provide a mix of 1 and 2 bedroom apartments. Smaller housing of this type caters to broad range of the population at various stages of their lives. The provision of apartment dwellings will enable a greater proportion of the local community to remain in the LGA throughout their lives. The planning proposal will improve housing diversity and affordability in the LGA.	
Create great places – not just building houses	The planning proposal will facilitate the creation of a design-led development that responds to and respects the existing residential amenity and character of the surrounding streets. It will also facilitate the provision of approximately 340 new dwellings within walking distance of the Orange Grove centre and the Cabramatta Creek recreation corridor.	

5.0 STRATEGIC MERIT ASSESSMENT

The Department of Planning and Environment have established strategic and site-specific merit tests to assess whether planning proposals should proceed to a Gateway determination. The following discussion assesses the planning proposal against the relevant strategic and site-specific merit considerations.

5.1 Strategic Merit Test

The key factor in determining whether a proposal should proceed to a Gateway determination should be its strategic merit. The Department has strengthened the Strategic Merit Test and proposals will now be assessed to determine if they are (among others):

JBA = 15203 = JM 5

"responding to a change in circumstances, such as the investment in new infrastructure or changing demographic trends that have not been recognized by existing planning controls".

The planning proposal meets this criteria for the following reasons:

- The FRDS is the strategic planning document that generally informs Council's decisions regarding land rezoning for residential purposes in the Fairfield LEP 2013. The FRDS was prepared 8 years ago in 2009.
- The planning proposal is responding to a recent change in circumstances that was not a consideration for Council when they were preparing the FRDS in 2009. Namely, the positive Gateway determination to proceed with the Orange Grove rezoning represents a significant change to the strategic context and character of the surrounding area. Council acknowledge that once rezoned, Orange Grove will have the characteristics of a sub-regional town centre. The subject site is within easy walking distance of the Orange Grove site. This planning proposal seeks to amend the Fairfield LEP 2013 to facilitate the future delivery of appropriate housing types that will reflect the subject site's strategic location.

For these reasons, the planning proposal clearly meets the DPE's strategic merit test.

5.2 Site-Specific Merit Test

The table below considers the planning proposal against the DPE's site-specific merit considerations.

Table 4 - Site-specific merit test

Consideration	Assessment
The natural environment (including known significant environmental values, resources or hazards);	Ecological
	An Ecological Issues and Assessment Report has been prepared by Gunninah (Appendix D to the initial planning proposal). In summary the assessment concluded that, The site is located within a significant area of existing urban development and has been substantially cleared and developed in the past. The existing vegetation on the site is described as 'synthetic' and is dominated by introduced species and horticultural plantings. The development area is not considered critical or importan for the survival of a viable local population of any threatened biota or threatened or migratory species. Therefore, the removal or modification of vegetation and trees from the site is not of particular concern. Where possible, trees around the periphery of the site should be retained for aesthetic and amenity reasons – they do not have any notable ecological value or function. The Planning Proposal to facilitate higher density development on the site is supportable on ecological grounds.
	Tree retention
	A Preliminary Arboricultural Assessment has been prepared by Urban Forestry Australia (Appendix C to the initial planning proposal). The assessment identified 75 trees on-site. None of the trees are listed as threatened under the Threatened Species Conservation Act 1995 or the Environmental Protection and Biodiversity Conservation Act 1999. Of the 75 trees, 32 (i.e. 42%) are located around the perimeter of the site and are able to be successfully retained subject to detailed design at any future development application stage.
	Flooding and overland flow

JBA = 15203 = JM 6

Flooding analysis and modelling has been undertaken with regard to the amended indicative concept design (refer Attachments 4 and 5). The analysis concludes that overland flow can be managed by the existing and future stormwater drainage infrastructure and swales. In this regard, there will be no additional impact on surrounding properties and the analysis does not identify any requirement to adjust the indicative building layout or raise finished floor levels.

The existing uses, approved uses and likely future uses of land in the vicinity of the land subject to the proposal; and

The surrounding land to the east and south is zoned R2 Low Density Residential and generally accommodates typical suburban single lot dwellings. The indicative concept design complies with the relevant boundary separation and solar access requirements to the adjoining properties.

As outlined above, the subject site is within walking distance of the Orange Grove site to the south. The Orange Grove site currently accommodates the following:

- Service NSW;
- Restaurants and takeaway food outlets;
- 'Fashion Spree' (40 well-known brands)
- Fitness centres;
- Homemaker retailers;
- Electrical retailers;
- AMF Bowling; and
- Stationery retailers.

Liverpool City Council, the Planning Assessment Commission and the Greater Sydney Commission support the current planning proposal for the Orange Grove site to allow approximately 21,000m² additional retail floor space. The planning proposal received a positive Gateway determination in November 2016. The Delegate of the Greater Sydney Commission included an instruction to finalise the amending LEP within 12 months of the Gateway determination (i.e. November 2017).

Therefore, in a matter of months, the Orange Grove site is likely to be zoned to facilitate retail development that Fairfield City Council acknowledge will make it equivalent to a sub-regional town centre.

The planning proposal for the subject site seeks to provide additional residential development at a scale and density that is appropriate for a location within walking distance of a sub-regional town centre without creating any unreasonable impacts on existing or future development in the surrounding area.

The services and infrastructure that are or will be available to meet the demands arising from the proposal and any proposed financial arrangements for infrastructure provision.

The site is immediately adjacent to bus routes that provide direct access to Liverpool and Cabramatta. These bus routes run frequently during peak times and have travel times of no more than approximately 12 minutes to each centre.

The RMS recently upgraded the Orange Grove Road and Cabramatta Road West intersection. The Traffic Impact Assessment Report (Appendix B in the initial planning proposal) determined that the proposed increase in vehicle movements generated by the planning proposal can be accommodated without creating any significant impact on the operation of the surrounding road network.

Additionally, the site is well serviced by social infrastructure in the form of schools, recreational and sporting facilities (refer to the initial planning proposal).

JBA = 15203 = JM 7

The Council's Direct Development Contributions Plan 2011 (Amendment 10) outlines the funding and infrastructure required to support the population growth identified in the FRDS (i.e. 14,400 additional dwellings in the eastern side of the LGA).

The FRDS identifies that approximately 12,600 new dwellings can be accommodated within the existing centres or as medium density on the fringe of centres. The planning proposal has the potential to deliver approximately 340 of the 1,800 dwellings that the FRDS does not seek to accommodate. Therefore, the demand for infrastructure that the planning proposal will create is already accounted for in the existing Development Contributions Plan. No additional funding mechanisms are required at this stage.

The planning proposal clearly meets the site-specific merit test.

6.0 CONCLUSION

We thank Council for the opportunity to respond to the matters raised following their initial review of the planning proposal. In conclusion, we believe that the proposed amendments address Council's concerns and the planning proposal can proceed to Gateway for the following reasons:

- The planning proposal responds to a recent change in circumstances that was not a consideration for Council when they were preparing the FRDS in 2009. Namely, the positive Gateway determination to proceed with the Orange Grove rezoning represents a significant change to the strategic context and character of the surrounding area. Council acknowledge that once rezoned, Orange Grove will have the characteristics of a sub-regional town centre. The subject site is within easy walking distance of the Orange Grove site. This planning proposal seeks to amend the Fairfield LEP 2013 to facilitate the future delivery of appropriate housing types that will reflect the subject site's strategic location.
- The Orange Grove rezoning is supported by Liverpool City Council, the Planning Assessment Commission and the Greater Sydney Commission. Fairfield City Council can reasonably consider the quantum of likely future land uses at Orange Grove to determine the strategic suitability of the planning proposal for the subject site.
- The proposed amendments to the land use zone, FSR and building heights provide a density
 and scale that is generally consistent with Council's existing and proposed controls for
 residential development on comparable land within walking distance of Prairiewood and
 Bonnyrigg sub-regional centres.
- Undertaking a review of the FRDS imposes an unnecessary additional step in the rezoning process. The balance of land in the Fairfield LGA within walking distance of Orange Grove accommodates typical suburban low-density dwellings. The likelihood of this land being developed in the short-medium term is relatively low regardless of whether Council determine to rezone the land following their review of the FRDS.
- The planning proposal meets the relevant strategic merit test and site-specific merit test criteria.

Should you have any queries about this matter, please do not hesitate to contact me on 02 9956 6962 or jmurray@jbaurban.com.au.

Yours faithfully

Jim Murray *Principal Planner*

JBA = 15203 = JM 8



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This Urban Design report has been prepared by Aleksandar Design Group on behalf of TCON Constructions as part of a Planning Proposal that seeks to review the key controls for 400-404 Cabramatta Rd West, Cabramatta.

TCON Constructions have expressed a desire to develop the site into a multi-residential development. The proposal seeks a change to the sites zoning, and an increase to both the height limit and FSR. The proposal seeks to deliver high density housing in an appropriate location.

This urban design report examines:

- The position of the surrounding buildings, their height limits and FSR, whether those buildings are likely to be redeveloped and their potential height etc at a micro context. The analysis also consider the proximity of adjoining buildings to the subject site, and whether specific setbacks should be applied.
- Building envelope testing (height, setbacks, floor plate, efficiencies, bulk, mass and overshadowing, Apartment Design Guide amenity/ building separations).
- 3D modelling of the built form proposed on the subject site and on adjacent properties is provided to demonstrate impact as well as contextual fit.
- The impact of the redevelopment on neighbouring sites,

In thoroughly examining these issues this report identifies a preferred built form that satisfies the above objectives. The site is defined by the following factors:

- Large raw site, 15349m² site area
- Significant street frontage to Cabramatta Road West and Cumberland Highway
- Close proximity to key transport infrastructure and town centres
- Close proximity to key leisure, retail and commercial areas

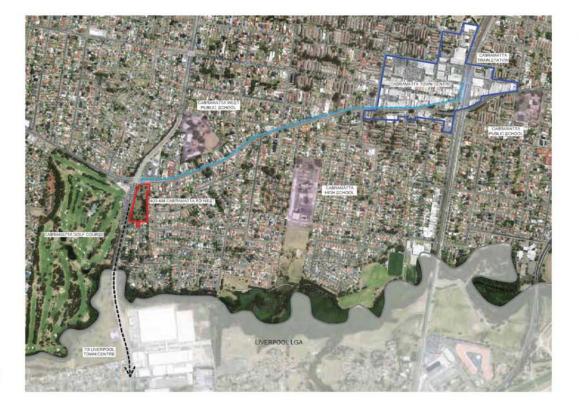






The site is defined by its proximity to key areas and infrastructure including:

- Cabramatta Town Centre
- Liverpool Town Centre
- · Cabramatta Train Station
- Cabramatta Golf Course
- Local schools
- Local Commercial + Retail precincts













The subject site is currently undeveloped. It is approximately 210m long x 74m wide at the centre, with a site area of 15349m². The site runs along a north-south axis with the long boundary to Cumberland Highway facing west and the short side to Cabramatta Road West facing north. The site is surrounded by low-density residential housing to the east and south.

The site is defined by its proximity to Cabramatta and Liverpool Town Centre's, key transport infrastructure as well as key leisure, retail and commercial areas.





The site is subject to a number of opportunities and constraints including:

- . Open views to the west over Cabramatta Golf Course
- · Ideal solar orientation along a north-south axis
- Generous street frontage
- Potential noise from Cumberland HWY and Cabramatta Rd West





Item:

The Site sits within the Fairfield City Council local government area, The Fiarfield Local Environmental Plan 2013 is the key planning instrument for the Site.

The key controls that affect development on the Site are:

- · Land zoning:
- Floor space ratio;
- · Height of buildings;
- Key Site controls



PLANNING FRAMEWORK

Land Zoning

The site is zoned R2 Low Density Residential.



Floor Space Ratio

The site is permitted to have a floor space ratio of 0.45:1 (C). With a site area of 15,349 sam, the maximum floor space permitted is 6.907 sqm.

Maximum Floor Space Ratio (n:1)

Maximum
A1 0.1
A2 0.33
C 0.45
E 0.57
U 0.8
N 1
R 1.45
S 1.5
T 2
U 2.5



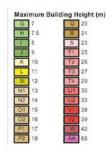




PLANNING FRAMEWORK

Height of Buildings

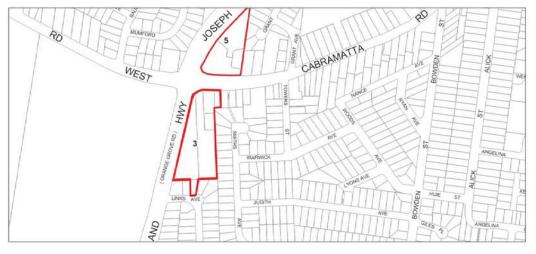
The site is permitted to have a building height of 9m (J).



Key Sites Map

The site is nominated as a key site.





Building Envelope Testing

In order to identify the key opportunities and constraints of the site, the proposed building envelopes have been tested against a set of objectives. These objective include:

- allow solar access to surrounding buildings/key sites
- allow view comidors
- provide a logical transition of building heights and scale with surrounding areas
- define the street edge
- creates a clear transition between public and private space
- allows for the creation of mid-block connections and laneways
- contributes positively to the urban environment

In order to do this, future building forms were projected for the neighbouring sites to the east and south of the subject site. These forms have been derived with reference to the relevant planning controls, including the current LEP height control of 9m. It is envisaged that these neighbouring sites might be amalgamated and developed in the future.

Proposed Building Envelopes

The proposed buildings vary in height from 4 storeys to 8 storeys. The tallest buildings are positioned towards the street to define the street edge. The smaller buildings are positioned to the east of the site, creating a logical transition of scale from the street to the lower density residential zone behind.

The buildings along the street are defined by a 4 storey podium level with 4 storey massing above. The podium has been designed to split the horizontal massing into two distinct volumes. The street edge is further articulated by generous open spaces between the buildings.

The smaller buildings to the east are defined by highly orticulated facades. These buildings are also separated by generous communal open spaces that create a landscape buffer between the buildings and the neighbouring sites.

Future Development Envelopes

It is envisaged that the neighbouring sites to the south-west and east of the site will be amaigamated and redeveloped in the future. Future development envelopes have been proposed for the neighbouring sites immediately to the south-west. These envelopes have been developed with reference to the DCP and Apartment Design Guide. It is envisaged that access to these sites will be via the proposed laneway.



MASSING EVOLUTION

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MASSING EVOLUTION



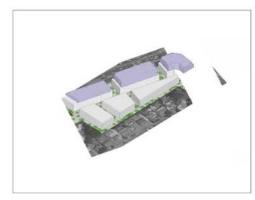
1. 4 STOREY MASSING EXTRUDED WITH REFERENCE TO DCP SETBACKS.



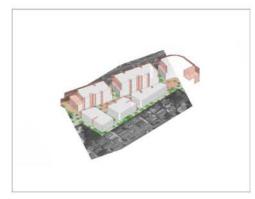
2. MIDDLE MASSING REMOVED TO PROVIDE INTERNAL CIRCULATION.



3. FURTHER MASSING REMOVED TO DEFINE INDIVIDUAL BUILDINGS.



MASSING RELOCATED TO STREET FRONT TO DEFINE STREET EDGE.



5. BUILDING FACADE ARTICULATE TO PROVIDE SOLAR ACCESS + NATURAL VENTILATION.



6. PROPOSED MASSING DEFINED.

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7 TYPICAL FLOOR PLAN



■ GROUND FLOOR PLAN

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7 TYPICAL FLOOR PLAN



■ TYPICAL LEVEL 2 - 4

7 TYPICAL FLOOR PLAN



■ TYPICAL LEVEL 5 - 6

7 TYPICAL FLOOR PLAN



■ TYPICAL LEVEL 7 - 8



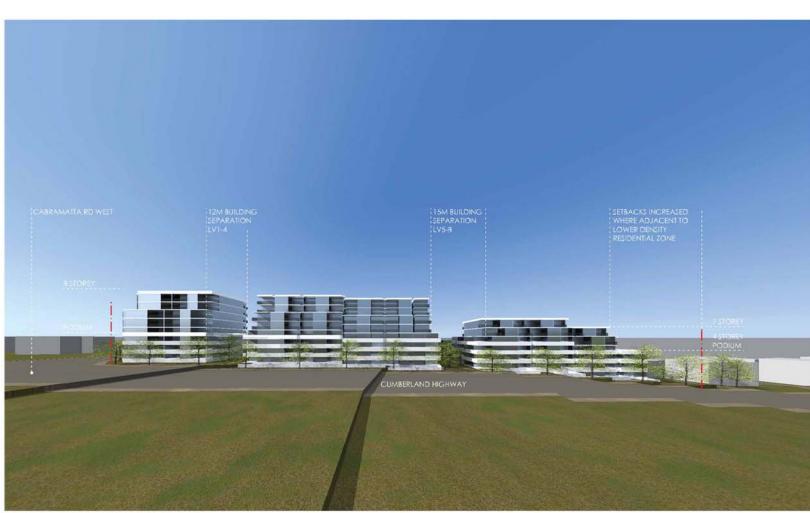
■ TYPICAL BASEMENT LEVEL

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Attachment C

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VIEW LOOKING EAST FROM CABRAMATTA GOLF COURSE



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8 BUILDING ENVELOPE STUDY



VIEW LOOKING EAST FROM CABRAMATTA GOLF COURSE

Attachment C

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8 BUILDING ENVELOPE STUDY



TETT EGGING TOTTANDS COMBEREATON

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URBAN DESIGN REPORT

VIEW LOOKING TOWARDS CUMBERLAND HWY FROM EAST BOUNDARY

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VIEW LOOKING TOWARDS CABRAMATTA RD WEST FROM SOUTH BOUNDARY

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URBAN DESIGN REPORT



VIEW LOOKING NORTH ALONG CUMBERLAND HWY

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Attachment C



VIEW LOOKING SOUTH ALONG CUMBERLAND HWY

Attachment C

SHADOW DIAGRAMS

WINTER SOLSTICE 21st OF JUNE 9AM



WINTER SOLSTICE 21st OF JUNE 10AM

Shadow Testing

minimal overshadowing.

The overshadowing impacts of the proposed design were tested for the 21st June mid-winter. In order to test potential impacts, the existing built forms were projected for the neighbouring sites. The testing indicated that the proposed massing did not prevent the neighbouring sites from receiving

solar access to their private open space or living areas during mid-winter. The two neighbouring sites to the south-west did receive some overshadowing, however they were still able to

receive 2hrs solar access. It is envisaged that the proposed massing to the south-west can be revised in order to ensure



WINTER SOLSTICE 21st OF JUNE 11AM

SUBJECT SITE





WINTER SOLSTICE 21st OF JUNE 1PM



WINTER SOLSTICE 21st OF JUNE 2PM



WINTER SOLSTICE 21st OF JUNE 3PM



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SHADOW DIAGRAMS

Shadow Testing

The overshadowing impacts of the proposed design were also tested for the 21st December. Again the testing indicated that the proposed massing did not prevent the neighbouring sites from receiving solar access to their private open space or living areas. The majority of the overshadowing occurred to the west of the site at 9am, only affecting the Cumberland Hwy.





SUMMER EQUINOX 21st OF DECEMBER 10AM



SUMMER EQUINOX 21st OF DECEMBER 1PM





SUMMER EQUINOX 21st OF DECEMBER 2PM





SUMMER EQUINOX 21st OF DECEMBER 12PM



SUMMER EQUINOX 21st OF DECEMBER 3PM

10 ADG ASSESSMENT

Solar Access to Apartments

The building envelopes have been designed to maximise solar access, with buildings orientated along a north-south axis, 71% of units achieve 2hrs of solar access between 9am - 3pm 21st June, satisfying the minimum requirement of the Apartment Design Guide. The adjacent diagram indicatively shows those apartments which receive 2hrs of solar access.



■ TYPICAL LEVEL 5-8



TYPICAL LEVEL 1-4

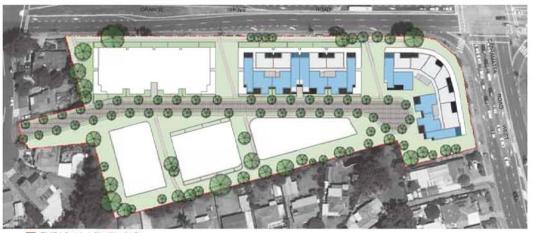




10 ADG ASSESSMENT

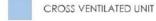
Cross Ventilated Apartments

The building facade is articulated to enable cross ventilation. 68% of units are cross ventilated, satisfying the minimum requirement of the Apartment Design Guide. The adjacent diagram indicatively shows those apartments which are cross ventilated.



■ TYPICAL LEVEL 5-8







■ TYPICAL LEVEL 1-4

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10 ADG ASSESSMENT

ADG Building Separation

The proposed building separations comply with the Apartment Design Guide minimum separation distances of:

Up to four storeys (approximately 12m):

- 12m between habitable rooms/balconies
- 9m between habitable and non-habitable rooms.
- · 6m between non-habitable rooms

Five to eight storeys (approximately 25m):

- 18m between habitable rooms/balconies
- 12m between habitable and non-habitable rooms
- · 9m between non-habitable rooms

Nine storeys and above (over 25m):

- 24m between habitable rooms/balconies
- 18m between habitable and non-habitable rooms
- 12m between non-habitable rooms



TYPICAL LEVEL 5-8

400-404 CABRAMATTA RD WEST, CABRAMATTA





Maximum Floor Space Ratio (n:1)

C 0.45

S 1.9



JUDITH

LINKS AVE

Item: 105



Maximum Building Height (m)

J 9

N2 14

T3 27

Q 19





Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
1. Employment and Reso	urces		
1.1 Business and Industrial Zones	 Encourage employment growth in suitable locations. Protect employment land in business and industrial zones. Support the viability of identified strategic centres. 	The proposal does not impact on the intent of this direction.	N/A
1.2 Rural Zones	 Protect agricultural production value of rural land. 	The proposal does not impact on the intent of this direction.	N/A
1.3 Mining, Petroleum Production and Extractive Industries	■ Ensure future extraction of State and regionally significant reserves of coal, other minerals, petroleum and extractive materials are not compromised by inappropriate development.	The proposal does not impact on the intent of this direction.	N/A
1.4 Oyster Aquaculture	 Ensure that Priority Oyster Aquaculture Areas and oyster aquaculture outside such an area are adequately considered when preparing a planning proposal. Protect Priority Oyster Aquaculture Areas and oyster aquaculture outside such an area from land uses that may result in adverse impacts on water quality and consequently, on the health of oysters and oyster consumers. 	The proposal does not impact on the intent of this direction.	N/A
1.5 Rural Lands	 Protect the agricultural production value of rural land. Facilitate the orderly and economic development of rural lands for rural and related purposes. 	The proposal does not impact on the intent of this direction.	N/A
2. Environment and Herit	age		
2.1 Environment Protection Zones	 Protect and conserve environmentally sensitive areas. 	The proposal does not impact on the intent of this direction.	N/A
2.2 Coastal Protection	 Implement the principles in the NSW Coastal Policy. 	The proposal does not impact on the intent of this direction.	N/A
2.3 Heritage Conservation	Conserve items, areas, objects and places of environmental heritage significance and indigenous heritage significance.	The planning proposal itself does not relate to a property of heritage significance as identified under Fairfield LEP 2013. However there are items of heritage significance, namely the Red Gums located on the Cabramatta	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
		Golf Course which are unlikely to be affected by this proposal.	
2.4 Recreation Vehicle Areas	 Protect sensitive land or land with significant conservation values from adverse impacts from recreation vehicles. 	The proposal does not impact on the intent of this direction.	N/A
2.5 Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs	 Ensure that a balanced and consistent approach is taken when applying environmental protection zones and overlays to land on the NSW Far North Coast. 	The proposal does not impact on the intent of this direction.	N/A
3. Housing, Infrastructure	e and Urban Development		•
3.1 Residential Zones	 Encourage a variety and choice of housing types to provide for existing and future housing needs Make efficient use of existing infrastructure and services and ensure that new housing has appropriate access to infrastructure and services Minimise the impact of residential development on the environment and resource lands. 	The planning proposal seeks to rezone the site to R4 High Density Residential and a Height of Buildings to accommodate for up to 8 storeys. The proposal is generally consistent with this direction. However, the subject site already benefits from an additional permitted use of 'multi dwelling housing'. This form of medium density housing is currently not available in the locality. This built form is more sympathetic to the surrounding properties which are zoned R2 Low Density Residential with a maximum Height of Buildings of 9 metres.	YES
3.2 Caravan Parks and Manufactured Home Estates	 Provide for a variety of housing types Provide opportunities for caravan parks and manufactured home estates. 	The proposal does not impact on the intent of this direction.	N/A
3.3 Home Occupations	Encourage the carrying out of low-impact small businesses in dwelling houses.	The proposal will not affect any existing permissibility or exemptions for home occupations.	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
3.4 Integrating Land Use and Transport	 Improve access to housing, jobs and services by walking, cycling and public transport. Increase choice of available transport and reducing car dependency. Reduce travel demand and distance (especially by car) Support the efficient and viable operation of public transport services Provide for the efficient movement of freight 	The subject site is located the corner of two existing arterial roads with four accessible bus routes. The bus routes that service this site are the Badgerys Creek to Liverpool, Liverpool to Orange Grove, Mt Pritchard to Cabramatta, and Greenfield Park to Cabramatta. However, this site is not within a reasonable walking distance to a major transport node such as train station.	
3.5 Development Near Licensed Aerodromes	 Ensure effective and safe operation of aerodromes Ensure aerodrome operation is not compromised by development Ensure development for residential purposes or human occupation, if situated on land within the ANEF contours between 20 and 25, incorporate noise mitigation measures. 	The proposal does not impact on the intent of this direction.	N/A
3.6 Shooting Ranges	 Maintain appropriate levels of public safety and amenity when rezoning land adjacent to an existing shooting range, Reduce land use conflict arising between existing shooting ranges and rezoning of adjacent land Identify issues that must be addressed when giving consideration to rezoning land adjacent to an existing shooting range. 	The proposal does not impact on the intent of this direction.	N/A
4. Hazard and Risk			
4.1 Acid Sulfate Soils	 Avoid significant adverse environmental impacts form the use of land that has a probability of containing acid sulfate soils. 	The subject site does not contain soils that are deemed to be acid sulfate soils.	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
4.2 Mine Subsidence and Unstable Land	 Prevent damage to life, property and the environment on land identified as unstable or potentially subject to mine subsidence. 	The proposal does not impact on the intent of this direction.	N/A
4.3 Flood Prone Land	 Ensure that development of flood prone land is consistent with the NSW Government's Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005. Ensure that the provisions of an LEP on flood prone land are commensurate with flood hazard and includes consideration of the potential flood impacts both on and off the subject land. 	The subject site is not flood prone. However, some adjoining properties are likely to be affected by overland flooding that originates from this site. It is considered that the level of overland flooding is not at a level of risk that prevents the use of this site for higher forms of residential development.	N/A
4.4 Planning for Bushfire Protection	 Protect life, property and the environment from bush fire hazards, by discouraging the establishment of incompatible land uses in bush fire prone areas. Encourage sound management of bush fire prone areas. 	The subject site is not identified as being bushfire prone.	N/A
5. Regional Planning			
5.1 Implementation of Regional Strategies	■ To give legal effect to the vision, land use strategy, policies, outcomes and actions contained in regional strategies.	The proposal does not impact on the intent of this direction.	N/A
5.2 Sydney Drinking Water Catchments	To protect water quality in the hydrological catchment.	The proposal does not impact on the intent of this direction.	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	 Ensure that the best agricultural land will be available for current and future generations to grow food and fibre. Provide more certainty on the status of the best agricultural land, thereby assisting councils with their local strategic settlement planning Reduce land use conflict arising between agricultural use and non-agricultural use of farmland as caused by urban encroachment into farming areas 	The proposal does not impact on the intent of this direction.	N/A
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	 Protect the Pacific Highway's function, that is to operate as the North Coast's primary inter and intra-regional road traffic route Prevent inappropriate development fronting the highway Protect public expenditure invested in the Pacific Highway Protect and improve highway safety and efficiency Provide for the food, vehicle service and rest needs of travellers on the highway Reinforce the role of retail and commercial development in town centres, where they can best serve the population of the towns. 	The proposal does not impact on the intent of this direction.	N/A
5.8 Second Sydney Airport: Badgerys Creek	■ Draft LEPs shall not contain provisions that enable the carrying out of development, either with or without development consent, which at the date of this direction, could hinder the potential for development of a Second Sydney Airport at Badgerys Creek	Whilst the Fairfield City Council Local Government area is partly affected by the "Badgerys Creek—Australian Noise Exposure Forecast—Proposed Alignment—Worst Case Assumptions" map, from the Second Sydney Airport Site Selection Program Draft Environmental Impact Statement, the subject site does not fall into within the area of affectation.	N/A
5.9 North West Rail Link Corridor Strategy	Draft LEPs must: promote transit-oriented development and manage growth around the eight train stations of the North West Rail Link (NWRL) ensure development within the NWRL corridor is consistent with the proposals set out in the NWRL Corridor	The proposal does not impact on the intent of this direction.	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
5.10 Implementation of Regional Plans	The objective of this direction is to give legal effect to the vision, land use strategy, policies, outcomes and actions contained in regional strategies.	It is considered that the most relevant action applicable to this proposal is Action L4: Encourage housing diversity. The proposal is generally consistent with this direction. However, the term housing diversity is a broad term that includes all forms of residential housing such as multi-dwelling housing, secondary dwellings, and dual occupancies and should not be focused on residential flat buildings and the diversity of dwelling sizes within these built forms. It is considered given that the subject site is outside not located within or around an existing town centre or major transport node that the best form of development is multi-dwelling housing.	YES
6. Local Plan Making			
6.1 Approval and Referral Requirements	 Ensure LEP provisions encourage the efficient and appropriate assessment of development 	The planning proposal has been referred to RMS for comment. It is likely that the RMS and other state agencies will be given further opportunity to comment at the formal exhibition stage should a Gateway Determination be issued.	YES
6.2 Reserving Land for Public Purposes	 Planning proposal to facilitate the provision of public services and facilities by reserving land for public purposes Facilitate the removal of reservations of land for public purposes where the land is no longer required for acquisition. 	The proposal does not impact on the intent of this direction.	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
6.3 Site Specific Provisions	Discourage unnecessarily restrictive site specific planning controls	The subject site is subject to additional permitted uses under Schedule 1 the FLEP 2013. Additional permitted uses are for the purpose of multi dwelling houses. It is considered that the proposal in its current form will require the provision of Site Specific Controls to ensure that development is sympathetic to the adjoining low density residential development.	Yes
7. Metropolitan Planning			

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
7.1 Implementation of A Plan for Growing Sydney	Planning proposals shall be consistent with the NSW Government's A Plan for Growing Sydney published in December 2014.	The proposal seeks to increase residential densities in an established area. It is therefore considered that the proposal is consistent with a number of directions within the NSW Government's A Plan for Growing Sydney 2014 including: - Direction 2.1: Improve housing supply across Sydney - Direction 2.2: Ensure more homes closer to jobs - Direction 2.3: Improve housing choice to suit different needs and lifestyles - Direction 3.1: Revitalise existing suburbs However, the proposal is inconsistent with Direction 2.4: Deliver well planned new areas of housing The proposal is seeking a form of residential housing in an area has not been identified by the Fairfield Residential Development Strategy.	Generally consistent
7.2 Implementation of Greater Macarthur Land Release Investigation	 Ensure development within the Greater Macarthur Land Release Investigation Area is consistent with the Greater Macarthur Land Release Preliminary Strategy and Action Plan (the Preliminary Strategy). 	The proposal does not impact on the intent of this direction.	N/A

Section 117 Direction No. and Title	Consistency	Planning Proposal	Comply
7.3 Parramatta Road Corridor Urban Transformation Strategy	Facilitate development within the Parramatta Road Corridor that is consistent with the Parramatta Road Corridor Urban Transformation Strategy (November, 2016) and the Parramatta Road Corridor Implementation Tool Kit, (b) provide a diversity of jobs and housing to meet the needs of a broad crosssection of the community, and (c) guide the incremental transformation of the Parramatta Road Corridor in line with the delivery of necessary infrastructure.	The proposal does not impact on the intent of this direction.	N/A
7.4 Implementation of North West Priority Growth Area Land Use and Infrastructure Implementation Plan	 Ensure development within the North West Priority Growth Area is consistent with the North West Priority Growth Area Land Use and Infrastructure Strategy (the Strategy). 	The proposal does not impact on the intent of this direction.	N/A



FAIRFIELD CITY COUNCIL

-8 JUN 2016

TO: J. ASSUNCAD
FILE: 15/03740
DOCID:
GRM.
3CAN DATE:

3 June 2016

Roads and Maritime Reference: SYD16/00556 (A13180885) Council Reference: 15/03740

General Manager Fairfield City Council PO Box 21 Fairfield NSW 1860

Attention: Julio Assuncao

Dear Sir/Madam.

PRELIMINARY CONSULTATION PLANNING PROPOSAL – AMEND FAIRFIELD LEP 2013 - 400-414 CABRAMATTA ROAD WEST, 2-18 ORANGE GROVE ROAD & 6 LINKS AVENUE, CABRAMATTA

Reference is made to Council's letter dated 20 April 2016, concerning the abovementioned pre-Gateway planning proposal which was referred to Roads and Maritime for comment. Roads and Maritime appreciates the opportunity to comment on the pre-Gateway proposal.

Roads and Maritime has reviewed the information provided and notes the planning proposal seeks to rezone the abovementioned site from R2 Low Density Residential to R1 General Residential, with additional permitted uses to allow for a business/office component, and an increase to the maximum FSR from 0.45:1 to 2:1. Roads and Maritime raises no objection to the planning proposal proceeding through the Gateway process, however, requests that the additional assessment requirements and other matters detailed at **Attachment A** are addressed prior to exhibition (and the gazettal of the LEP amendments).

If you have any questions in relation to the above matters, please contact the nominated Land Use Planner, Rachel Nicholson on phone 8849 2702 or development.sydney@rms.nsw.gov.au.

Yours sincerely.

Greg Hlynn Manager Strategic Land Use Network and Safety Section

Roads and Maritime Services

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Attachment A Detailed Comments/Assessment Requirements:

Traffic Assessment:

1. The traffic impact assessment should assess the traffic impacts of the maximum development yield facilitated by the planning proposal, for a 'worst case' traffic assessment. Council should be satisfied that 340 units (and 1,200m² business/office floor space) represents the maximum yield that could be developed with the proposed planning provisions, as opposed to a potential development.

It is noted that the amendments to the LEP propose neighbourhood shops, office and business premises as additional permitted uses for the subject site, limited to a maximum floor space of 1,200m², and as such the assessment of non-residential traffic impacts has been based on this maximum. The maximum floor space limit should be reflected in the site specific clause in Schedule 1 of the LEP as proposed.

- 2. The residential traffic generation rate used in the Traffic Study submitted in support of the Planning Proposal, being an average of the rates for Rockdale and Liberty Grove sites from the RMS TDT 2014/03a Updated Traffic Surveys, is likely to understate the potential traffic generation of the subject site facilitated by the planning proposal. Both the Rockdale and Liberty Grove sites surveyed have significantly better access to public transport (10-15 minute walk to heavy rail stations connecting to the Sydney CBD and short walk to bus services), shops, commercial areas and other services. The indicative future development of the subject site is likely to be heavily reliant on private vehicle transport at this location, given it is located over 25 minutes walking time to heavy rail services, and with a few bus services in the vicinity, surrounded by predominantly low-density residential development with limited shops, commercial areas and services within short walking distance. For the purposes of undertaking a 'worst case' traffic assessment, it is recommended that a similar site with similar land use characteristics, accessibility factors etc should be surveyed for comparison and justification of the application of the rate 0.3vtph. Alternately, it is recommended that the highest observed traffic generation rate for both AM and PM peaks for high density residential uses from RMS TDT 2014/03a is applied.
- 3. Intersection modelling for the signalised intersections of Cumberland Highway/Cabramatta Road and Cumberland Highway/Links Avenue should be linked, utilising a program such as Sidra 6/7 Network. The cycle times applied for the modelling should reflect SCATS signal settings (i.e. 140 seconds maximum cycle time for Cumberland Highway/Cabramatta Road, with the cycle time at Cumberland Highway/Links Avenue reflecting this).
- Roads and Maritime is currently developing concept plans for proposed upgrade works at the intersection of Cumberland Highway/Cabramatta Road and Cumberland Highway/Links Avenue, with a view to finalise the plans later in 2016.

Depending on the timing of the exhibition, consideration should be given to modelling the 'with development' scenario with existing intersection layouts and road network assumptions, to reflect a worst case traffic assessment in the event that upgrades are not delivered prior to the making of the Plan and subsequent development occurring.

Active and Public Transport Infrastructure:

5. Roads and Maritime considers that the subject planning proposal and subsequent development is likely to generate a significant increase in pedestrian activity in the immediate area surrounding the site. It is recommended that the traffic study provides more detail regarding the pedestrian impacts of the development and identifies any improvement works required to cater for pedestrians and cyclists to mitigate safety and efficiency impacts. An assessment of pedestrian desire lines to/from the site should be undertaken to identify pedestrian access requirements, particularly at the intersection of Cumberland Highway/Links Avenue. The SIDRA intersection modelling should be revised to include pedestrian crossing

- facilities on all legs of the intersection, or at the very least a pedestrian crossing on the Links Avenue leg of the intersection, to understand the impacts of the additional pedestrian activity on the operation of the intersection.
- 6. Further to the above, the Cumberland Highway corridor is identified as a strategic cycling and walking corridor in Sydney's Cycling Future. The development should provide sufficient setback to allow for the provision of a 3.5m shared path within the footway area (ie between the kerb and the property boundary there would need to be at minimum 0.5m clearance from the path to the kerb and sufficient clearance from the path to the property boundary to accommodate utilities e.g. ELPs) for both the Cumberland Highway and Cabramatta Road frontages. The setback requirements should be reflected in a Site Specific DCP for the site. Active transport links should be provided through the site to encourage walking and cycling. Transport for NSW should be consulted for more specific requirements in this regard.

Vehicular Access:

7. All future vehicular access will need to be obtained via Links Avenue, as proposed, as no direct vehicular access to Cabramatta Road or Cumberland Highway would be permitted for the future development. It is noted that the existing lots on the frontage of these roads are fragmented, and do not currently have access through to Links Avenue, relying on Lot 3 DP30217 (6 Links Ave) to obtain future access to Links Avenue. To ensure that all vehicular access will be obtained via the proposed arrangement, Roads and Maritime requests that the access arrangements are set out in a DCP for the site, a Section 88B Instrument to provide a Right of Way over Lot 3 DP30217, and/or a site specific clause in the LEP written instrument (local provisions) to require the amalgamation of the subject lots for any future development of the site under the proposed provisions.



Roads and Maritime Reference: SYD16/00317

Council Reference: 049719.2017

8 May 2017

Manager, Strategic Planning Liverpool City Council Locked Bag 7064 Liverpool BC NSW 1871

Attention: Amy van den Nieuwenhof

Dear Mr Macnee

DRAFT LIVERPOOL LOCAL ENVIRONMENTAL PLAN 2008 (AMENDMENT NO. 61) PROPOSED USE OF SHOPS UP TO MAXIMUM GFA OF 21,000 SQUARE METRES 5 ORANGE GROVE ROAD, LIVERPOOL

I refer to Liverpool City Council's correspondence of 28 February 2016 inviting Roads and Maritime Services to comment on the abovementioned planning proposal. Roads and Maritime appreciates the opportunity to provide comment on the proposal and apologises for the delay in providing a submission. This submission has been prepared in consultation with Transport for NSW.

Roads and Maritime has reviewed the subject planning proposal and notes that the planning proposal will generate approximately 1,658 vehicle trips per hour (vtph) on Thursday PM and 1,145 vtph on Saturday midday peak. This level of traffic generation is likely to have an impact on the existing operational performance of Cumberland Highway as this major arterial road with a primary movement function has limited spare capacity to cater for this level of additional vehicle trips.

Roads and Maritime, as well as TfNSW, wish to better understand the impacts of this planning proposal on the existing operational performance of Cumberland Highway and potential mitigation measures, prior to the determination of this planning proposal. Roads and Maritime and TfNSW are of the view that to better understand the impacts of the proposal on the existing road network, the following additional traffic analysis is required:

 It is noted that the existing signalised intersection of Orange Grove Road (Cumberland Highway) and Viscount Place has been modelled by the proponent with a cycle time as low as 80 seconds. Roads and Maritime advises that this intersection is part of a coordinated signal corridor on the Highway with a cycle time of 140 seconds. The proponent shall update the SIDRA models with a cycle time of 140 seconds.

Roads and Maritime Services

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- Due to the level of traffic generated by the proposed development, Roads and Maritime and TfNSW are
 of the view that the proponent should also model the existing signalised intersections on Cumberland
 Highway at Hume Highway and Cabramatta Road West for both the Thursday afternoon peak period
 and Saturday midday peak period.
- The intersections should be modelled under the following scenarios:
 - Without development (base case)
 - Base case plus with development scenario
 - 10 year background growth without development
 - o 10 year background growth plus development scenario
- Performance measures should include the following:
 - Degree of Saturation
 - o Level of Service (overall intersection performance and worst movement).
 - o 95th back of queue for all movements
 - Travel time for north and south bound motorists on Cumberland Highway between Hume Highway and Cabramatta Road West for all abovementioned modelling scenarios. Base case (without development) travel time should be calibrated with several travel trips via motor vehicle.
- Assessment of the traffic generation on the mid-block capacity of Cumberland Highway to the north
 and south of the Viscount Place intersection should be undertaken with reference to Austroads Guide
 to Traffic Management.
- Potential mitigation measures (including associated staging plan linked to Gross Floor Area) to
 maintain existing operational performance of Cumberland Highway (between Hume Highway and
 Cabramatta Road West) and Hume Highway at Homepride Avenue should be investigated and put
 forward for consideration by Roads and Maritime and TfNSW.
- Identification of potential funding mechanisms for consideration by Liverpool City Council and advice from Roads and Maritime, as well as TfNSW.

Roads and Maritime in collaboration with TfNSW is happy to facilitate a meeting with the proponent and Liverpool City Council to discuss this submission in further detail and assist where possible in collating the necessary data (i.e. strategic EMME Highway data) to undertake the abovementioned additional modelling analysis.

In addition to the above, Roads and Maritime and TfNSW are aware of other potential planning proposals adjacent the subject site for high residential density with significant population uplift. The cumulative impact of the subject planning proposal and potential future planning proposals for high residential density may not be able to be accommodated within the existing road network due to limited capacity, as well as limited potential for any significant mode share to public transport due to the distance of this precinct from Liverpool and Warwick Farm Stations. As a separate exercise, Council may wish to give consideration to undertaking and/or commissioning a cumulative transport study to identify the cumulative impacts of potential zoning changes within this Orange Grove Road precinct and potential mitigation measures, strategic cost estimates and associated funding mechanisms. This could involve extending the existing Liverpool City Centre studies to incorporate this precinct area.

Thank you again for the opportunity of providing advice on the subject proposal. If you require clarification of any issue raised, please contact James Hall – Senior Land Use Planner on 8849-2047 or james.hall@rms.nsw.gov.au .

Yours sincerely

Greg Flynn

Program Manager, Land Use

Meeting Date 12 September 2017

Item Number, 106

SUBJECT: Fairfield City Aboriginal Heritage Study and Draft Development Control

Plan

FILE NUMBER: 15/13571

REPORT BY: Estelle Grech, Strategic Planner; Des Smith, Community Project Officer -

Aboriginal and Torres Strait Islanders

RECOMMENDATION:

That:

- 1. Council endorse the findings and recommendations of the Fairfield City Aboriginal Heritage Study (Attachment A of the report) prepared by Mary Dallas Consulting Archaeologists, as the basis for implementing measures to protect and respect Aboriginal Heritage of the City.
- 2. The draft amendment to the Fairfield City Wide Development Control Plan (DCP) 2013 governing Aboriginal Heritage matters as outlined in Attachment B of the report, be placed on public exhibition for a minimum period of 28 days from the day it is advertised in the local newspaper in accordance with the provisions of Clause 18 of the Environmental Planning and Assessment Regulation 2000 and the Consultation Strategy outlined in the report.
- 3. The outcome of the public exhibition of the Draft DCP Amendment be reported back to Council following completion of the exhibition period.

Note: This report deals with a planning decision made in the exercise of a function of Council under the EP&A Act and a division needs to be called.

SUPPORTING DOCUMENTS:

AT-A Fairfield City Aboriginal Heritage Study
AT-B Proposed Amendment to Fairfield City Wide DCP 2013

150 Pages 5 Pages

CITY PLAN

This report is linked to *Theme 1 Community Wellbeing* in the Fairfield City Plan.

Meeting Date 12 September 2017

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SUMMARY

The Fairfield City Aboriginal Heritage Study is identified as an important initiative under the 2013-17 Delivery Plan and has been prepared by consultants specialising in Aboriginal Heritage matters - Mary Dallas Consulting Archaeologists (MDCA).

Preparation of the Study is a key part of Council's ongoing commitment to Aboriginal and Torres Strait Islander reconciliation and represents an important milestone in delivering a number of actions identified under Council's Aboriginal and Torres Strait Islander Reconciliation Action Plan, known as 'Dyalgala'.

In parallel with the formal planning processes and procedures required by the *National Parks & Wildlife Act 1974*, the Aboriginal Heritage Study will allow Council to better protect, promote and celebrate local Aboriginal history and heritage in the Fairfield Local Government Area.

In keeping with the recommendations of the Study, amendments to the Fairfield City Wide Development Control Plan (DCP) – Attachment B, are also proposed in order to provide guidance to applicants about how to best manage and protect Aboriginal Heritage in the Fairfield Local Government Area.

It is noted that a number of other Western Sydney councils (including Campbelltown, Blacktown and Penrith Councils) have also prepared similar studies and implemented a range of actions, including DCP provisions, which help to safeguard and highlight the importance of Aboriginal Heritage in the region.

The outcomes of the Study and DCP do not recommend listing of any specific sites in the City as Aboriginal Heritage items under the Fairfield Local Environmental Plan (LEP) 2013. Rather the Study and DCP provide a framework for implementing existing due diligence requirements of State Government Legislation aimed at avoiding the destruction of Aboriginal Heritage in new development.

BACKGROUND

In 2015, Council commissioned Mary Dallas Consulting Archaeologists to prepare an Aboriginal Heritage Study for the Fairfield Local Government Area (LGA). Undertaken between December 2015 and December 2016, the main aims of the study were to:

- Investigate the Aboriginal heritage and history of Fairfield City;
- Identify, assess and record places of Aboriginal cultural significance and archaeological potential;
- Explain why the places identified within Fairfield City are significant; and
- Recommend ways of managing and conserving items of significance.

Council commissioned the study to provide a basis for Aboriginal heritage management within the planning context of Council, and to provide a resource which identifies the known Aboriginal history and heritage of the Fairfield City Local Government Area.

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Preparation of the Study involved close liaison and discussions with the Aboriginal community of Fairfield including elders, Aboriginal community groups, and representatives of the Deerubbin and Gandangara Land Councils.

What is Aboriginal Heritage?

Aboriginal heritage can include any place used by Aboriginal people up to and including the present day. Aboriginal heritage is not limited to the physical remains of a place such as a structure or archaeological site, but can also include the associations people have had, or continue to have with a place – a place's social history and social significance.

As places of Aboriginal significance are not always physical sites, managing Aboriginal heritage is therefore not only concerned with protecting a place from development impact, it is also about celebration, remembrance and recognition. In some cases, this can be achieved through permanent signage onsite (even where nothing physical remains of the place), documenting oral histories, curating an arts exhibition or creating a website.

Existing Legislative Requirements

There are 3 pieces of State legislation that govern the management and protection of Aboriginal heritage that Council is required to address, being:

- The National Parks & Wildlife Act 1974 under which it is an offence to harm either an Aboriginal object or Aboriginal Place in NSW;
- The NSW Heritage Act 1977 which regulates the establishment of heritage registers; and
- The *Environmental Planning and Assessment Act 1979* (EP&A Act) that governs the way these protections are managed in the planning system.

Under the State legislation an essential requirement in all development (including works on Council owned land) is in following Due Diligence procedures. Specifically, under the *National Parks and Wildlife Act 1974*, evidence of following due diligence procedures in development is a defence against prosecution for the strict liability offence under Section 86(2) if an Aboriginal Object or Place is unknowingly harmed without an Aboriginal Heritage Impact Permit (AHIP).

Under the above legislation, local government plays a key role in Aboriginal heritage conservation. Not only is Council responsible for determining future land uses or assessing development applications, it is also a 'developer' itself through its activities on Council owned lands.

NSW Aboriginal Heritage Information Management System

All places of known Aboriginal Heritage in NSW are identified on the Aboriginal Heritage Information Management System (AHIMS Register) administered by the NSW Office of Environment and Heritage.

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Currently there are approximately 85 known sites in Fairfield City registered on the AHIMS Register and includes former camp sites, scarred trees and sites where Aboriginal artefacts have been discovered.

The Fairfield Aboriginal Heritage Study has not identified or recommended any additional sites for inclusion on the AHIMS Register.

The AHIMS Register also lists Aboriginal Places, determined under Section 84 of the National Parks and Wildlife Act to have "special significance" to Aboriginal people (e.g. historical settlements or mythological sites).

To date no such places have been identified or declared within Fairfield City.

Aboriginal heritage in Fairfield Local Government Area

Aboriginal people have had connections within the Fairfield LGA for over tens, hundreds and thousands of years. These connections are remnant not only in archaeological findings such as stone axes (figure 1) or scarred trees (figure 2) but also social sites of dispossession such as The Male Orphan School building (Bonnyrigg House; figure 3), as well as contemporary sites of social significance such as Bonnyrigg public school.

Within the Fairfield LGA, the types of Aboriginal heritage places and associated histories that the Aboriginal Heritage Study identifies include:

- Pre-European occupation sites including campsites, scarred trees and other evidence of occupation and lifestyles
- Early colonial era campsites with European materials, historical evidence of conflict early colonial assimilation policies
- Later 19th and Early 20th century Aboriginal people continuing to live within the area, both with and apart from European residents.
- Mid to late 20th century individuals and families moving to the area for a range of reasons, and migration from country NSW and elsewhere in Sydney to government housing estates, the formation of Aboriginal service organisations, arts and cultural groups.



Figure 1: Ground edged hatchets (stone axes) from the Fairfield Area



Figure 2: Scarred tree along Orphan School Creek, stone artegacts were found near the tree when it was first recorded in 1988, grass cover has now obscured these

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Figure 3: Aboriginal children were present at the school for some of the Male Orphan's school use from the 1820s to 1850

Implementation of the Aboriginal Heritage Management System

The specific actions to be undertaken grouped according to MDCMA's assessed urgency as immediate, medium and long term proposed actions. These actions are to be undertaken by Council's Strategic Planning Branch

In brief, implementation of the Aboriginal Heritage Management System involves the following key immediate actions:

- 1. Implementing DCP assessment procedures as detailed in Attachment B to this report
- 2. Staff training on the Aboriginal Management System and establishing relevant information on Council's GIS System.
- 3. Research and celebrating Aboriginal history and heritage.

This includes actions already being undertaken by Council that celebrate and promote Aboriginal heritage in the City, particularly through the Fairfield City Museum and Gallery such as the recent Talk the Change/Change the Talk exhibition.

The Study also recommends a review of the Aboriginal Heritage Management System in 5 years' time to ensure its continuing usefulness and continued compliance with any amended state legislative or policy requirements.

Proposed Amendments to Fairfield City Wide DCP

In keeping with the recommendations of the Study, it is proposed that Council's Aboriginal Heritage Management System is formalised and communicated to the public via an amendment to the Fairfield City Wide DCP 2013 as contained in Attachment B to this report.

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The proposed new DCP provisions explain what Aboriginal Heritage is, outlines the existing statutory framework that protects Aboriginal Heritage from development impact, informs applicants of Council's procedure for managing Aboriginal Heritage during the Development Assessment process, and that an Aboriginal Heritage Assessment report may be required (including standards that must be met) as part of this process.

The information proposed to be included in the City Wide DCP seeks to ensure that development takes into account the significance of Aboriginal heritage, and that no Aboriginal objects are harmed in the development process.

The amendment will inform applicants of the existing statutory frameworks in place to protect aboriginal heritage, including Due Diligence Requirements under the National Parks and Wildlife 2009 Regulation.

Potential Investigation Areas

A key aspect of the Aboriginal Heritage Management System is the provision of potential investigation areas as shown in the map contained in Attachment B. Under the study, the process of identifying a potential investigation area involved review of aerial photos (dating back to 1943) and analysis of historical records of the City relating to urban development of Fairfield City.

In general, a potential investigation area is located in areas within proximity of a creek line in open space areas of the City in Council ownership, and vacant parcels of privately owned land adjoining creek lines (approximately 5 sites identified) that have not undergone urban development since 1943 (See Attachment B).

In addition, land in the Western Sydney Parklands and rural/residential areas of the City within 200 metres of a creek or major ridgelines can constitute a potential investigation area. However, the classification does not apply to the part of a site that currently contains a building or has been utilised for farming activities.

Areas within 50m of the registered location of all Aboriginal sites within Fairfield LGA are also designated as Potential Investigation Areas.

During the exhibition of the proposed amendment to the Fairfield City Wide DCP, affected land owners will be directly notified that their land may be wholly or partly located within a potential investigation area. An information brochure will also be provided as part of this process to explain how this may affect them, and who they can contact for further information.

It is important to emphasise that the potential of Aboriginal heritage within a site does not prohibit development. Rather it ensures that the required due diligence process is followed and if needed appropriate mitigation strategies are included in the design of a proposal.

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Consultation Strategy

As the proposed amendments are largely seeking to formalise and clarify existing legislative requirements, it is recommended that public exhibition of the amendment involves notification in the local press and on Council's website, with an exhibition period of 28 days.

Owners of land partly or wholly located within a potential investigation layer will be directly notified during the exhibition process.

CONCLUSION & NEXT STEPS

Completion of the Aboriginal Heritage Study represents a key milestone in provision of a strategic framework to deliver a range of actions identified Councils Aboriginal and Torres Strait Islander Reconciliation Action Plan - 'Dyalgala'.

The Study proposes the implementation of an Aboriginal Heritage Management System, both establishing planning procedures that meet the requirements of State Government due diligence guidelines, as well as providing a strategy that will allow Council to better understand, promote and celebrate Aboriginal Heritage in the LGA.

In keeping with the recommendations of the Aboriginal Heritage Study, the proposed amendment to the *Fairfield City Wide Development Control Plan 2013* seeks to ensure that no Aboriginal objects are harmed in the development process, as well as provide clarity for applicants of what will be required if there is, or likely to be Aboriginal heritage impacted by their development.

Estelle Grech
Strategic Planner

Des Smith

Community Project Officer - Aboriginal
and Torres Strait Islanders

Authorisation:

Executive Strategic Planner Manager Cultural Development

Outcomes Committee - 12 September 2017

File Name: OUT120917 3.DOC

***** END OF ITEM 106 *****



HERITAGE ARCHAEOLOGY HISTORY ▼ ASSESSMENT MANAGEMENT INTERPRETATION

FAIRFIELD CITY COUNCIL ABORIGINAL HERITAGE STUDY









FINAL REPORT

Mary Dallas Consulting Archaeologists

May 2017

Report to Fairfield City Council

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FAIRFIELD CITY COUNCIL ABORIGINAL HERITAGE STUDY

Aboriginal people have lived in the Fairfield area for thousands of years. Their presence shaped the land encountered by the first Europeans and gave places like Cabramatta their name. Aboriginal people from a wide range of backgrounds have played an active part in Fairfield's history over the last century and continue to shape its present and future.

A ground-edged hatchet (stone axe) from the Fairfield area

Axes have been used by Aboriginal people for thousands of years to cut bark for canoes, containers and other implements from trees, and to climb trees to catch possums.

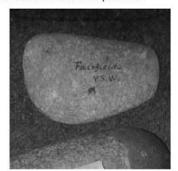


Image Courtesy Fairfield City Museum & Gallery

The Gandangara Local Aboriginal Land Council building, Canley Vale

This building was purchased by Aboriginal people in the early 1980s and was a community hub for a number of years, as host to the Land Council and other Aboriginal community services.



The Male Orphan School building (Bonnyrigg House)

Aboriginal children were brought to the orphan school farm from the Blacktown Native Institution in the 1820s.



Scarred tree along Orphan School Creek, Canley Vale

Among urban development, this tree is a link to the deep Aboriginal past.



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Fairfield City Council Aboriginal Heritage Study

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1.0 Introduction

1.1 The Fairfield City Council Aboriginal Heritage Study

This report has been produced by MDCA [Mary Dallas Consulting Archaeologists] at the request of Fairfield City Council [Council]. It presents the results of an Aboriginal heritage study for the City of Fairfield undertaken at the request of Council. The study was undertaken between December 2015 and December 2016. An initial draft was provided to Council by MDCA in August 2016. Upon receipt of comments from Council a revised draft was sent for limited Aboriginal community comment in November 2016 with the current final report being produced in February 2017.

The main aims of the study were to:

- · investigate the Aboriginal heritage and history of Fairfield City;
- identify, assess and record places of Aboriginal cultural significance and archaeological potential;
- · explain why the places identified within Fairfield City are significant; and
- · recommend ways of managing and conserving items of significance

The study area investigated is the Fairfield Local Government Area (LGA), located within the Western Sydney region (Figure 1.1). It currently includes over 27 suburbs spread across an almost $104 \mathrm{km}^2$ area. It contains densely occupied residential areas, industry, rural lands and portions of the Western Sydney Parklands (Figure 1.2). It is bounded by the LGAs of Liverpool to the south, Blacktown to the north and west, Cumberland to the northeast and Canterbury-Bankstown to the east. It stretches roughly from Prospect Reservoir in the north, to Prospect Creek, Villawood and Bass Hill in the east, to Cabramatta Creek, North Liverpool Road and Elizabeth Drive in the south and to Mt Vernon and Kemps Creek in the west. At the time of the 2011 census, Fairfield LGA featured a population of over 187,000 people, 1,323 of whom identified as Aboriginal or Torres Strait Islander people.

Council commissioned the study to provide a basis for Aboriginal heritage management within the planning context of Council, and to provide a resource which identifies the known Aboriginal history and heritage of the Fairfield City Local Government Area. No previous Aboriginal heritage planning study has been undertaken within the LGA, however several studies commissioned by Council in the late-1980s provided some initial information on the Aboriginal sites in the western portion of the LGA and along Orphan School Creek, and suggested ways to manage areas with the potential to contain currently undocumented Aboriginal archaeological sites. In recent years, Council commissioned historian Dr Stephen Gapps to research the history of the area, which was published in 2010 as the book Cabrogal to Fairfield City: A History of a Multicultural Community. The book contained the first published account of the history of Aboriginal connections to the Fairfield City area, though the information it contains has yet to be incorporated into Aboriginal heritage planning by Council. The current study has drawn on information from these and other studies and data sources, along with conversations with local Aboriginal community members, to provide an overview of Aboriginal history and its associated places within the LGA – from the earliest times until recent decades.

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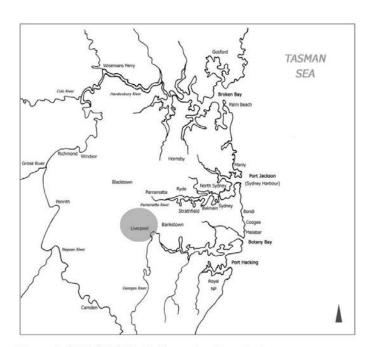


Figure 1.1 Fairfield City in its regional context.

[Base map Tuck 2010]

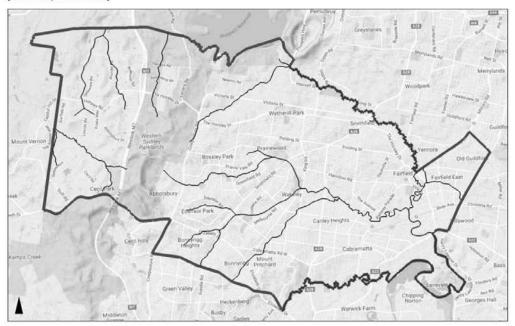


Figure 1.2. The Fairfield LGA showing suburbs, major topography and creeklines.

[Adapted from Google Maps terrain map 2016]

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1.2 What is Aboriginal Heritage?

There has been considerable research in recent years as to what can and should constitute Aboriginal heritage in New South Wales (e.g. Byrne et al. 2001, Byrne & Nugent 2004, English 2002). Most people think of 'sites' when they think of Aboriginal heritage, such as rock engravings, shell middens or stone artefacts. These are all important, but it is now recognised that heritage can include any place used by Aboriginal people up to and including the present day. Not only that, but it is not just, or necessarily even, the physical remains of structures or sites that are significant, but the associations people have had or continue to have with those places — their social history and their social significance. Indeed, heritage places need not contain anything 'built' e.g. natural features with spiritual significance. Similarly, there does not need to be anything physically surviving of a structure or building that was used for the place to remain significant.

Aboriginal heritage then is about the places in which history 'happened'. This need not only be momentous events of broad significance. It can be the personal memories of one person or one family about things of significance to them. It is what can be put together to tell the story of how a person or group of people experienced life in a particular area at a particular time. Putting together that story also means linking places and considering places as part of a broader 'cultural landscape' – the way a particular group of people perceived and used their surroundings at a particular time. For example the way Aboriginal people viewed and moved through their familiar landscape of western Sydney in 1788 was very different to how Europeans, with ideas of 'normal' based on their own homelands, experienced it. It was also very different to how the Aboriginal descendants experienced it 50 or 100 years later, and different again to how families moving to Bonnyrigg from country NSW 30 years ago experienced it. Reconstructing past 'landscapes' requires both history (what happened when) and heritage (where it happened) and an appreciation of the connections between places.

What do we do with heritage? It is a misconception about heritage and heritage management that it is about 'saving' every old building or site from destruction. One of the main tasks of any heritage project, including studies like this, is to determine what is significant and why, and work out the most appropriate means of managing this significance, not just or even necessarily the physical remains of a place itself. In some cases this may be achieved through permanent signage onsite (even where nothing physical remains of the place), or an arts project such as a photographic exhibition or oral histories, or a website. It may also include the physical protection of a place from development impact, sometimes best achieved by keeping its location hidden, or with limited access, from the general public. In this way, heritage management can be as much about celebration, remembrance and recognition as it is about physical protection.

In the Fairfield area, Aboriginal heritage places are associated with all of the periods of European occupation from initial settlement to the present day, but also represent occupation back many thousands of years before this. The types of heritage places and associated histories which are already documented within the area include:

- Pre-European occupation sites including campsites, scarred trees and other evidence of occupation and lifestyles.
- Early colonial era campsites with European materials, historical evidence of conflict and early colonial assimilation policies.

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- Later 19th and Early 20th century Aboriginal people continuing to live within the area, both with and apart from European residents.
- Mid to late 20th century individuals and families moving to the area for a range of reasons, and migration from country NSW and elsewhere in Sydney to government housing estates, the formation of Aboriginal service organisations, arts and cultural groups.

1.3 Study Methodology

The study involved several main components, which were undertaken concurrently as described below.

1.3.1 Aboriginal Community Consultation

In accordance with the study brief, limited Aboriginal community consultation was undertaken for the study. As discussed in **Section 2.2**, this initially involved discussions with the Gandangara Local Aboriginal Land Council and an Aboriginal heritage study working group set up by Council, and attempted discussions with the Deerubbin Local Aboriginal Land Council. From these initial meetings, further discussions were held with individuals and local Elders groups to identify places of significance to the local Aboriginal community.

1.3.2 Archival Research

Archival research was undertaken to review heritage and museum records as context for the study, as well as provide primary research for the study history and to research specific Aboriginal heritage places.

Research was undertaken at the State Library of NSW (SLNSW), State Records NSW (SRNSW), Fairfield Local Studies Collection, OEH Aboriginal Heritage Information Management System Aboriginal Site Register and Report Archive (the AHIMS Register) and State Heritage Register and Inventory and of specialist reports held privately. In addition, published and unpublished material from past studies by MDCA historian Dr Paul Irish was utilised. Research was also undertaken of online resources such as the National Library TROVE website and various catalogues and listings. Information was also sought from the Australian Museum and local historical societies and museums about Aboriginal artefacts potentially from the study area in their collections.

Sources examined include primary archival material such as government documents, newspaper reports, maps, images, register recordings, unpublished specialist heritage and other reports and a range of printed sources. This research did not aim to systematically search all sources but to broaden the scope of past histories, start to fill some important chronological gaps and to investigate what further records may exist.

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1.3.3 Assessment and Management

The information gathered during archival research and contributed by the Aboriginal community was compiled into a list of places identified as having significance to the Aboriginal community. The most appropriate means of managing these places was then considered, leading to the development of a recommended Aboriginal heritage management system.

1.4 Study Outline

This report is designed to be read in order as each proceeding section provides the context to the next. The sections are as follows:

- Section 2 profiles the Aboriginal people of the Fairfield area and details the Aboriginal
 community consultation undertaken for the study.
- Section 3 provides relevant contextual information for the study in order to demonstrate how
 the particular environment and historical impacts within the study area have shaped the history
 of Aboriginal connections and determined what has physically survived of that history.
- Section 4 of the report provides an outline Aboriginal history of the study area. It does not
 seek to be definitive or conclusive, but rather to be broad in scope to capture the wide range of
 ways Aboriginal people have connected to the study area over thousands of years and up to
 the present day, many of which have only been poorly or partly written about before.
- Section 5 looks at the heritage of the history discussed in the previous section. That is, what
 remains in the landscape as places, associations and landscapes which can help to tell the
 story of Fairfield's Aboriginal past. It begins by reviewing existing sources and registrations
 before describing the heritage places associated with the various periods of Fairfield's
 Aboriginal history.
- Section 6 discusses how Fairfield's Aboriginal heritage can be managed. It begins by
 reviewing the role of local government in heritage management, and the various ways in which
 Aboriginal heritage can be managed. It then reviews the heritage places identified by the study
 and presents a recommended management strategy.
- Section 7 provides a specific set of short, medium, long term or ongoing management recommendations to enact the recommended Aboriginal heritage management system and other suggestions outlined in the previous section.

Appendix A contains a summary of the specific Aboriginal community consultations undertaken during the study, including documentation provided as responses to the draft version of the current report.

Appendix B contains details of existing heritage listings and museum collection holdings.

Appendix C contains relevant policy and procedure documentation referred to in the report.

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1.5 Authorship and Acknowledgements

The current report was written primarily by Dr Paul Irish. Dan Tuck and Paul Irish wrote the Aboriginal history section. Archival research was undertaken by Dan Tuck and Paul Irish with contributions by Tamika Goward, and final GIS mapping was produced by Nathan Spooner. Aboriginal community consultation was primarily undertaken by Paul Irish and Tamika Goward.

MDCA wish to thank Andrew Mooney, Harumi Watanabe and Edward Saulig for their management of the project and to heritage advisor Zoran Popovic and other Council staff who contributed knowledge and expertise and reviewed portions of this report and planning procedures. MDCA also with to thank Des Smith for organising and participating in many of the Aboriginal community meetings undertaken for the study; Brad Maybury for assisting with community contacts for the study; Barry Gunther (RMS) for discussing his local expertise and providing historical and heritage materials pertinent to the study; Helen Johnson for investigating Aboriginal objects in the Fairfield City Museum and Gallery collections; Marilyn Gallo for valuable assistance in locating making available historical materials in the Fairfield local studies collection; and the staff of a range of other local and state museums and repositories for their assistance and advice in searching their collections for relevant records.

The authors also especially acknowledge the support and information provided by the Aboriginal people of the Fairfield City area individually and via a number of Aboriginal community organisations including the Gandangara and Deerubbin Local Aboriginal Land Councils, the Guntawang Aboriginal Women's Group, the Lil Possums playgroup at Bonnyrigg Public School and the Miller Elders Group.

1.6 Note on the Use of Sources

Please note that specific permission to publish graphic materials obtained from previous publications or archival records has not been obtained for the current study. Should it be proposed to publish the current study, such permission would need to be sought from copyright holders and/or custodians. In addition, where possible, permission should be sought from people depicted in photographs within the report in the event of publication of the current study, or proposed use of this material for other purposes.

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1.7 Summary of Study Recommendations

Based on the research and Aboriginal community consultation undertaken for the study, and in particular the discussions in **Section 6.0** and with reference to current legislative and policy requirements, the following recommendations are made. They are grouped according to assessed urgency as immediate, medium (1-3 years) and long (3-5 years) term proposed actions. These actions are to be undertaken by Council's Strategic Planning Branch unless otherwise specified.

1.7.1 Immediate Actions

- Adopt the Aboriginal heritage management system described in Section 6.0, and specifically, incorporate the procedures detailed in Sections 6.2.3 and 6.2.4 into Council's operations.
- Incorporate the supplied GIS map layers and attribute data into the Council GIS system with appropriate linkages to other relevant layers (e.g. Local Aboriginal Land Council boundaries).
- Provide Council staff working within the system with a checklist/manual of how to use the Aboriginal heritage management system, and provide them with adequate training in its use.
- Obtain the first AHIMS Site information data under the Aboriginal Heritage Information Licence Agreement with OEH (once submitted and processed).
- Ensure that the Standard Conditions outlined in Section 6.2.5 are incorporated into all future development consents.

1.7.2 Medium Term Actions (1-3 years)

- Undertake relevant amendments to the Fairfield City Wide DCP.
- · Develop a fact sheet for applicants, outlining Council's Aboriginal heritage requirements.
- Develop a procedure to ensure that all relevant future staff are trained in the use of the Aboriginal heritage management strategy.
- Obtain AHIMS Register data updates every 12 months as per the Aboriginal Heritage Information Licensing Agreement and renew the agreement as required.
- Council's Place and Community Development section to develop an Aboriginal oral history recording program specifically focussed on the identification of places of Aboriginal historical and heritage significance as discussed in Section 6.2.5 as part of future Operational Plans.
- Council's Place and Community Development section to discuss the potential for Aboriginal site
 tours with the Gandangara and Deerubbin Local Aboriginal Land Councils and Fairfield City
 Council Aboriginal Advisory Committee as discussed in Section 6.2.5. If the idea is supported,
 consider the role Council may play in funding and/or facilitating the development of these tours.

1.7.3 Long Term Actions (3-5 years)

Within five years, review the current study and Aboriginal heritage management system to
ensure its continuing usefulness and ensure its compliance with any amended state legislative
or policy requirements. Make any amendments as required, and incorporate any further
information about Aboriginal heritage places obtained through oral history or other research
which has not yet been added into the Aboriginal heritage management system.

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2.0

Aboriginal Community Consultation

This section summarises the Aboriginal community consultation undertaken as part of the Aboriginal heritage study. Further records of consultation including written responses to the draft version of the current report can be found in **Appendix A**.

2.1 Aboriginal People in Fairfield LGA

When Europeans arrived in Sydney in the late 18th century, the Fairfield area was home to a clan of Aboriginal people known as the Cabrogal, whose name derived from the cobra 'worm' (actually a mollusc) which grows in submerged timber and was eaten by the Cabrogal (see Gapps 2010:33-40 and further discussion in **Section 4.0**). We do not know the precise extent of the lands over which the Cabrogal were custodians, but their estate possibly extended south to the Georges River and north to around the Prospect area. Linguistic boundaries are equally uncertain, and many groups were multilingual. The Cabrogal most likely affiliated more closely with the language of the Cumberland Plain (known today as Darug) to the north, and probably also spoke the Dharawal language from the Georges River area and further south. Descendants of the Cabrogal, perhaps mixed with the survivors of other neighbouring groups after the devastating smallpox epidemic of 1789, continued to identify with the broader Fairfield and Liverpool areas until at least the 1840s. After this time, local identities and affiliations become more difficult to trace.

As far as we know, there are no descendants of the Cabrogal alive today whose families have continuously identified with the Fairfield/Liverpool area since before the arrival of Europeans. Instead, people today primarily identify with the much broader area in which the Darug language was spoken. Today there are several hundred people actively identifying as descendants of Daruglanguage speaking Aboriginal people. Most identify as descendants of Aboriginal woman Maria Lock (nee Luttrell) who grew up on the northern Cumberland Plain, and many more who have been notified of their descent but choose not to actively acknowledge their Aboriginal ancestry. Some of these people also trace their genealogy back to an Aboriginal woman named Sarah Castles, who lived along Cabramatta Creek in the 1840s (Sarah is discussed further in **Section 4.0**). She was probably a local woman, though we have no definite evidence of her ancestry.

Most (if not all) of the approximately 1,200 people living within the Fairfield LGA who identified as Aboriginal in the 2011 census trace their Aboriginal ancestry back to areas outside of the Fairfield LGA (and commonly outside of the Sydney region). They or their families have resettled in the area from other parts of New South Wales and occasionally further afield, mostly since the Second World War. Many of these Aboriginal people arrived as part of government housing and resettlement schemes from the 1950s, and some families have now lived in the area for several generations, whilst others have arrived more recently or stayed relatively briefly. Very little research has been undertaken into the experiences and histories of the resettlement community as a whole

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Gapps provides a detailed review of the complex and often confusing arguments about clan and language (see pp 30-44).

² In the 2011 census, 1,202 people identified as Aboriginal within the LGA. Another 23 identified as having both Aboriginal and Torres Strait Islander ancestry, and a further 98 identified as Torres Strait Islander.



in Fairfield. We know of their experiences largely through several oral histories undertaken of individuals in recent years (see Fairfield City Museum & Gallery 2007, Fairfield Oral History website³, and others featured in the recent *Talk the Change/Change the Talk* Aboriginal history exhibition at the Fairfield City Museum and Gallery). The broader context of Aboriginal migration has begun to be sketched out in other studies (see for example Morgan 2006 and Cowlishaw 2009), though each area is likely to have its own unique historical background and characteristics.

2.2 Study Consultation

Consultation for the heritage study was undertaken in accordance with the study brief, which initially involved consultation with the following groups (see summary in **Appendix A1**):

- Fairfield City Council's Aboriginal Advisory Committee. Council organised the formation of an Aboriginal heritage study working group, comprising some members of the Advisory Committee and others interested in the project. MDCA presented to the working group on 11/2/16 at Fairfield City Council and discussed past research, places of significance and Aboriginal community members that the working group considered relevant to consult in relation to the project. MDCA also presented to the Advisory Committee at Council on 14/3/16 and had a similar discussion. Advisory Committee members were supplied with copies of the draft study report in November 2016 for their review and intended discussion with MDCA at their meeting of 12/12/16. That meeting was cancelled due to lack of a quorum. As the next meeting was not scheduled until after the study was to be finalised, members were sent a follow up request asking them to provide any comments to MDCA or Committee Coordinator Des Smith by end of January 2017. Des Smith also contacted committee members to seek comments, but none were provided.
- Gandangara Local Aboriginal Land Council. Local Aboriginal Land Councils (LALCs) operate across NSW under the Land Rights Act 1983. Membership of LALCs is open to Aboriginal people residing within the administrative boundaries of the LALC. Fairfield LGA is within the boundaries of both the Gandangara LALC and Deerubbin LALC as shown in Figure 2.1. The functions of Local Aboriginal Land Council are described in Section 52 of the Act, Part 4 of which states:
 - A Local Aboriginal Land Council has the following functions in relation to Aboriginal culture and heritage:
 - (a) to take action to protect the culture and heritage of Aboriginal persons in the Council's area, subject to any other law,
 - (b) to promote awareness in the community of the culture and heritage of Aboriginal persons in the Council's area.

Initial discussions were held with Land Council Aboriginal heritage officer Brad Maybury on 18/1/16 and again as a member of the Aboriginal heritage study working group on 11/2/16. Brad suggested contacting former Gandangara LALC Aboriginal heritage officer Barry Gunther. In addition discussions were held with then LALC Chair Len Malone at the Gandangara LALC office in Liverpool on 9/3/16, as well as a presentation to the local Aboriginal Land care group.

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³ http://fairfieldcity.oralhistory.com.au/



Mr Malone is also a former Fairfield City Council Aboriginal community worker and has a great depth of local knowledge. It was agreed that a study workshop would be held at the Gandangara LALC office for interested LALC members and Len also arranged for MDCA to present to the LALC meeting of 16/3/16 at Liverpool TAFE to promote the workshop. The workshop was held on 21/3/16. There were few attendees but those present included Cecilia Campbell, who ran the Koori Youth Program (an important community service organisation based for a time at Canley Vale). The LALC was subsequently contacted in April 2016 to discuss their potential support for an Aboriginal Heritage Information Licence Agreement between Council and the OEH, to allow Council to hold Aboriginal site data and in November 2016 was provided with a draft copy of the study report for their review and comment. In January 2016 the Land Council endorsed the recommendations of the study and the Licence Agreement as per the letter in **Appendix A2**.

• Deerubbin Local Aboriginal Land Council. Past experience with Deerubbin LALC on similar projects suggested that they were unlikely to participate in the Aboriginal heritage study. Initially CEO Kevin Cavanagh was contacted via email on 19/1/16 to introduce the study. A number of attempts were then made over the following two months to speak with Mr Cavanagh, but they were unsuccessful. The LALC was subsequently contacted in April 2016 to discuss their potential support for an Aboriginal Heritage Information Licence Agreement between Council and the OEH, to allow Council to hold Aboriginal site data and in November 2016 was provided with a draft copy of the study report for their review and comment. In January 2016 the Land Council endorsed the recommendations of the study as per the letter in Appendix A2.

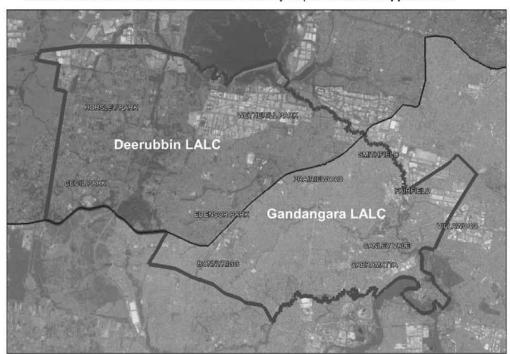


Figure 2.1. Local Aboriginal Land Council boundaries within the Fairfield LGA.

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Based on initial study meetings with the above groups, a number of individuals and Elders groups were also consulted across the LGA. MDCA were greatly assisted in these meetings by Council's Aboriginal community officer Des Smith, who used his extensive community networks to make contact with relevant people and facilitate meetings. In preparation for these further meetings, MDCA compiled a folder of newspaper articles and other historical materials from the initial study research to act as a catalyst for discussions. The articles often included information about the activities of people present at the meetings or their families and were very well received, with multiple requests for more copies. Some of these materials are reproduced or referred to in Section 4.0.

The following additional people and groups were consulted about the study:

- Guntawang Aboriginal Women's Group. MDCA met with the Guntawang group at their fortnightly meeting on 23/02/16 at the Bonnyrigg Community Centre. The group was formed by Wendy Morgan and Cathy Banton three years ago to provide a place for Aboriginal women in the local Fairfield area to meet and socialise while working on a range of different craft projects. MDCA presented to the group and had a discussion about the experiences of group members with the Fairfield LGA. Some members had been in the area for over 50 years, while others moved to the area more recently. Further discussions were held with the group on 13/12/16 at the Gandangara LALC to discuss the draft report and its major findings, and any further information that could be provided on the Aboriginal heritage places identified during the study.
- Barry Gunther. Barry was formerly Gandangara LALC Aboriginal and heritage officer and has worked in a similar capacity for the RMS (former RTA) for the past eight years. Barry also grew up locally (in Green Valley). Paul Irish of MDCA met with Barry on 25/02/2016 at his RMS office in Parramatta. Barry was able to provide some further community contacts and his perspectives and knowledge about Aboriginal sites and places of Aboriginal historical significance within the LGA. He also assisted the study by providing some historical contextual materials and information about the RMS Aboriginal community consultation process in relation to heritage projects.
- Lil Possums Playgroup. MDCA met with the group at their weekly meeting at Bonnyrigg Public School on 30/03/16, along with Des Smith and Harumi Watanabe from Council. The playgroup was started about 15 years ago to bring school parents together and also to familiarise young children with the school before they attend. A general discussion followed MDCA's presentation of the study and its initial findings. In particular, the group was able to provide valuable information on the Aboriginal community that developed at Bonnyrigg in the 1980s and 1990s and the organisations that were established to service that community. Further discussions were held with the group on 30/11/16 to discuss the draft report and its major findings, and any further information that could be provided on the Aboriginal heritage places identified during the study. Several important clarifications were made and a further Aboriginal heritage place identified in relation to this meeting.
- Miller Elders Group. MDCA met with the Elders group on 2/05/2016 at the Budyari Aboriginal
 Community Health Centre at Miller along with Des Smith from Council. Some of the dozen
 people present were also part of the Guntawang Aboriginal Women's Group and were already
 familiar with the study. After a presentation by MDCA, folders of historical materials were
 passed around and a general discussion over lunch ensued. Members of the group include

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discussed their varied reasons for moving to the area at different times over the past 50 years, and did not identify any additional places to those already noted in the study (see **Section 5.0**). Further discussions were held with the group on 5/12/16 to discuss the draft report and its major findings, and any further information that could be provided on the Aboriginal heritage places identified during the study.

In total MDCA discussed the study with 30-40 Aboriginal different community members (some were present at multiple meetings). Those consulted included a good cross section of the experiences of Aboriginal people within the LGA over the past 50 years. They include long and short-term residents, organisers of current and past service organisations, and people living across a number of different parts of the LGA. Many are senior members of their families and their knowledge in part represents the broader experiences of these people. Although the consultation was targeted, it is considered sufficient for the purposes of the study, and in compliance with the study brief. For example, the same places of historical Aboriginal significance were often raised by different people at different meetings, which provided a valuable means of ensuring that places had collective meaning rather than just being significant to the personal history of a particular individual or group.

2.3 Aboriginal Community Comments on Draft Study Report

Written comments were received in relation to the draft Aboriginal heritage study from the Gandangara and Deerubbin LALCs, which together represent many of the Aboriginal people living within the Fairfield LGA. Both organisations endorsed the recommendations of the report. In addition, in all follow up meetings with community organisations and Elders groups in November and December relating to the draft report, no concerns were raised about the report or its recommendations and the findings of the study were broadly supported.

2.4 Conclusions

The Aboriginal community consultation undertaken for this study has demonstrated the widespread interested among Aboriginal people living in, or associated with, the Fairfield LGA in the identification and protection of Aboriginal heritage. The consultation has resulted in the identification of five places of Aboriginal historical significance to the contemporary Aboriginal community, and there is support for the protections that the proposed heritage management procedures recommended in this report will bring to Aboriginal heritage places within the LGA.

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3.0 The Local Setting of Fairfield LGA

3.1 The Landscape

It is important to consider the environmental setting upon which the activities of Aboriginal and other people have taken place. This is not just for thoroughness, but because the environment has actively shaped and determined these activities. Indeed even the boundaries of the LGA are partly defined by environmental features (creek lines). The geology and topography of the study area have influenced the availability of water and other resources which in turn have influenced both Aboriginal and European settlement in this area. The pattern of European settlement has then also affected the way Aboriginal people have moved into the area over the last century from outside of Sydney. All of this has affected the history and resultant heritage of the area.

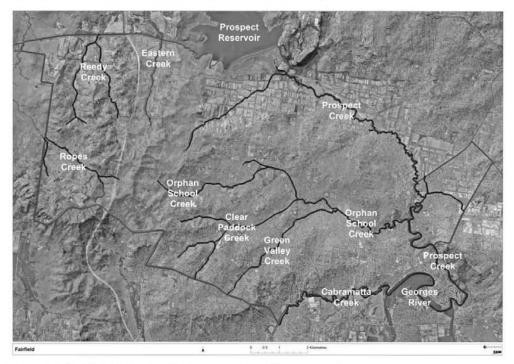


Figure 3.1. Fairfield LGA showing topography and major creeks.

[Adapted from map supplied by Fairfield Council. Green shaded area is the Western Sydney Parklands].

Fairfield LGA lies within a broader physiographic area known as the Cumberland Plain, which is characterised by low hills and gently sloping landforms and alluvial flats of the main rivers which drain the plain. This area is relative flat compared to the mountains to the west and geologically uplifted areas to the south and north. The LGA contains two major catchments which are divided by a major ridgeline known as Devils Back Ridge which runs south from the western end of Prospect Reservoir (Figure 3.1). To the west of this ridge are the upper reaches of Ropes Creek, Reedy Creek and Eastern Creek which flow north and west across the Cumberland Plain and eventually

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into the Hawkesbury River. To the east of the ridge the major stream systems of Cabramatta Creek, Prospect Creek and Orphan School Creek drain into the Georges River at the south-eastern corner of the LGA.

The study area is largely underlain by shale bedrock, which characteristically slowly erodes to form rounded hills and long creek lines in sharp contrast to more gullied landforms associated with sandstone country to the north and west. This shale (known as the Bringelly Shale within the study area) includes deposits of quartz, shale, laminate, claystone and fine grained sandstone. Along major creek lines this is overlain (buried) in parts by Quaternary-age alluvium materials consisting of sand, silt, clay and gravel deposits.

With regard to stone resources potentially available to Aboriginal people in the past for the purposes of manufacturing flaked stone artefacts, the Cranebrook Formation, the Rickabys Creek Formation and St Marys Formation are the three principal geological formations in the Sydney region. None of these deposits are located within the study area. The Cranebrook and Rickabys Creek Formations are generally exposed only at depth as buried units in deeply incised cuttings or creek profiles, or where gravels have been exposed and are visible on ridgelines. It is unclear at present therefore as to when these deposits may have been exposed in the past, and how frequently the potentially useful stone resources contained in these formations may have been exploited by Aboriginal people over time for the creation and/or maintenance of tools and other implements. St Marys Formation is Tertiary in age and is well represented across the Cumberland Plain and represents one of the principal sources of locally derived silcrete that is known to have been extensively used by people in the past for the creation of flaked stone artefacts. Exposures of the St Marys Formation are known to occur along Plumpton Ridge and at Marsden Park nearly 20km to the north of the Fairfield LGA.

Prior to European land clearance in the early 1800s and ensuing pastoral use of the land, the original vegetation of the study area consisted of open eucalypt woodland in which trees were widely spaced and the ground cover was dominated by a grassed understorey. A wide range of plant and animal resources would have been available to Aboriginal people in the pre-contact past and for some time after the arrival of Europeans, as land clearance took a considerable time (e.g. see Section 3.2.2). The use of these resources is discussed in Section 4.1.2.

3.2 Human Presence and Impacts

The following section provides a brief overview of the major impacts to the area now encompassed by Fairfield City. It is not a comprehensive history of the area, and more detail can be found in other sources (e.g. Gapps 2010, George 1991). It has two aims. The first is to provide a brief sketch of the major impacts which have shaped the landscape and created, destroyed or preserved Aboriginal heritage as context for later discussions on what has survived of that heritage. The second is to emphasise that change and *history* have always been part of Aboriginal culture. There is a tendency to view pre-European contact Aboriginal culture as unchanging and unchanged and therefore to view the arrival of Europeans as the first 'event' that occurred in the lives of western Sydney's Aboriginal people. Archaeology tends to reinforce this by providing evidence of the long term but little detail of the everyday. If we are to understand the history and heritage of Aboriginal people in both the pre- and post-contact periods we need to take a different view.

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3.2.1 First Occupation to 1800s

Over the thousands of years that Aboriginal people have lived in the Fairfield area, they created and curated the landscape first seen in the late 1700s by Europeans. It seems likely that the firing of the land recorded by early Europeans had taken place for some time, though the relationship of deliberate and natural burns and its antiquity is likely to be complicated and difficult to discern in the archaeological record (Mooney et al. 2007). Burning was carried out by Aboriginal people for a range of reasons, such as hunting of land and tree-dwelling mammals or the clearing undergrowth. Whether deliberate or not, the cumulative effect of natural and cultural burning was the park-like appearance of the Cumberland Plain recorded by early Europeans, with open eucalypt woodland "perfectly clear of bush, through which you might, generally speaking, drive a gig in all directions, without any impediment in the shape of rocks, scrubs, or close forest" (Cunningham 1827[1966]:47-48).

Burning would also have served to regularly destroy Aboriginal sites like trees from which Aboriginal people removed bark for a range of reasons or into which toe-holds were cut to climb trees. We now regard such sites as heritage and rightly wish to protect them especially as they are diminishing in number and no longer being created in the Sydney region. However this was not the case in the pre-contact past, where sites were re-used but also had a limited life span (e.g. trees eventually die or burn in fires along with any scars they contained). Although we understand little about the cultural and spiritual practices of Aboriginal people in western Sydney, there does not seem to be any evidence that scarred trees⁴ were actively preserved in the long term by Aboriginal people.

The absence of outcropping sandstone within the study area means that apart from scarred trees, almost all other archaeological evidence of the pre-contact Aboriginal use of the study area that has survived is in the form of stone artefacts on or below the current ground surface. Consequently it can be difficult to imagine how Aboriginal people actually lived. We know something of this from early historical records and images, and from the more diverse archaeology of rock art and middens found in other parts of Sydney, but there is little physical evidence to help us the remains of the past as the accumulated heritage of individuals. This is compounded by the fact that few sites can be accurately dated. There is no easy solution to this, but it is perhaps useful to bear the following in mind when considering 'Aboriginal sites' in the Fairfield LGA:

- Every stone artefact was made, and each piece of bark removed from a tree, on a particular day by a particular person for a particular purpose.
- Each of those people had a name and a family. They were primarily traditionally linked to a
 particular area but had links to other areas and people across and perhaps beyond the Sydney
 region through marriage and extended family. Their parents, their siblings, spouses and children
 all had a slightly different set of links due to the nature of their own blood and marriage ties. So
 the composition of groups who used the land ('bands') and those traditionally linked to particular
 areas ('clans') was constantly always subtly changing as new relationships formed and with

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⁴ A distinction is made here with the carved trees found in the southwest of Sydney (but not within the Fairfield LGA) which were culturally significant (for example marking the location of burials) and were most likely actively preserved by Aboriginal people.



births and deaths. This is often lost in attempts to reconstruct and map clan and language 'boundaries' as if these were permanently fixed. In reality there was a lot more change within and between generations in how people lived on a daily basis and the places individuals and families could and did visit.

For each activity or artefact represented archaeologically, each person was simultaneously using and doing many other things which have not physically survived. For example a stone spear point may be all that survives of a diverse range of equipment, most of which was organic (made from wood or plant material) and has long since disintegrated. Similarly the making of the stone artefact or the bark container was part of a broader range of activities such as food gathering, or perhaps travel to participate in ceremony. Each person had and experienced these other things. Figure 3.2 is one archaeologist's attempt to personalise the story of how an artefact ended up in a rockshelter on the Hawkesbury from a quarry near Blacktown (probably Plumpton Ridge). Although it is largely speculative, there is archaeological or historical evidence for many of the activities discussed and it is a good example of putting people back into the archaeological past.

A red silcrete bondi point (backed blade) was found in a rockshelter on the Hawkesbury River. It was just 2cm long and its tip was missing. Archaeologist Tessa Corkill imagines how it might have gotten there:

Years ago a man went to a hill to collect some stone to make spear barbs and other useful items for trade at a gettogether near the big river in a few weeks time. He needed the good yellow stone as he planned to have it heated up before he made the tools, and he knew from long experience that this was the best kind. The fact that his wife could make the yellow stone change to the colour of blood and get shiny inside, so it made a really sharp edge, was known far and wide, and his cousins who owned the hill were happy to let him take as much as he wanted. One day soon he was going to make some more of his famous implements for them too.

The man carried away as many big pieces as he could manage, to the place where his group was camped between two creeks, and gave them to his wife to cook-up in her special fire-pit. It took a few days but when she dug them up again they were just right, a bright red colour and nice and shiny inside.

He made plenty of spear barbs and other things to trade, some from the shiny red stone and some from other stones he'd collected. Luckily there were lots of good pieces left over, that would be useful for jobs around the camp, like scraping skins and roots. Lots of little bits remained too, mixed up in the sand and mud around his work-place.

Six weeks later he went to the big meeting, taking all the stone implements he'd made during the last few months for trading. He exchanged a few with a young man who'd travelled a long way to get to the meeting, from his home lands near the sea, where the sun rose. In return he accepted some lyre-bird feather ornaments and a new bone nose-piece. Some of the implements he gave to the young man were red spear barbs, made from the once yellow stone he'd collected six weeks before.

After the meeting the young man headed home with his friends. On the way he stopped off at a big rock shelter where he knew his uncle's family was camping for a while. He owed his uncle some favours so he helped catch yabbies for dinner and shinned up a tree to get some honey and some beeswax for them. When he left the next day he gave his uncle some of the stone implements he'd got at the meeting. His uncle especially liked one of them, a glossy red spear barb. He thought he'd keep it safe to take on a long trip after the summer - they were going north, across the big river and up the old track to the big valley beyond the hills. It might bring him luck, the colour and shine were like the petals of the waratah, a special flower for him, it was too good to use on a spear.

In the autumn they set off, keeping to the ridgeline all the way north until they came near the big river. Here they camped in a rockshelter they knew. Some friends were there too and they talked long after dark. In the morning "uncle" thought he'd show one of his friends his red spear barb - he came from a place where they only had white stone or shell to use on spears and the red stone was something special. But when "uncle" opened up his bag the stone was broken. To carry it like this might bring him bad luck, so he buried it in a corner of the shelter before they left on their way north.

The broken spear barb lay buried for many, many years, long after the people came no more, until it was thrown up by a wombat, digging a hole in the back of the shelter. Soon, an archaeologist came by

Figure 3.2. The story of a silcrete spear point (Corkill 1999:23-25).

[Reproduced with permission of the author]

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People's lives were not an endless cycle of movement between the same places. Although some sites were used repeatedly over many generations, we also know that 'new' sites were established at various times even if we don't know the reasons. Also, just as today, there were always 'things happening'. A rare archaeological example of this is the recent find of the 4,000 year old remains of an Aboriginal man at Narrabeen in north- eastern Sydney who had been speared to death (McDonald et al. 2007). Although we will never know his name or the reason he was killed, his death was the result of a particular action he took, an 'event' in his and other peoples' lives which would have been discussed and known for some time afterwards.

Unfortunately, the very time when individual Aboriginal people become much more visible through the historical record was also the single greatest moment of change in the many thousands of years of Aboriginal occupation in Sydney. Soon after the arrival of the first Europeans in 1788, introduced diseases like smallpox swept across the Cumberland Plain in advance of European settlement or even exploration of this area. Although diseases did not end Aboriginal existence in western Sydney, they claimed many lives and greatly affected the way surviving Aboriginal people lived. From a heritage point of view, this was a time when many places ceased to be used or looked after, and when new 'heritage' (like scarred trees) was being created at a much lesser rate than before. It did not cease, as finds of glass worked into artefacts show, but since that time Aboriginal sites have become limited and diminishing in number (Irish & Goward 2012).

3.2.2 1800s to 1950s

The first European settlements within the Fairfield LGA were established on the southern side of Prospect Creek at Smithfield in the 1790s. In 1803, around 50km² of land (around half the size of the LGA) between Cabramatta and Prospect Creeks was set aside by the governor to be leased out as farmland to support the colony's newly established orphan schools. Part of the grant, centred on Bonnyrigg House, became the Male Orphan School in the 1820s, while other parts of the grant were sold off around the same time. The purchaser of around 6.5km² of land in the Smithfield area in the 1830s was John Brennan, who had ambitions of creating a major Sydney agricultural market there. Though an economic downturn prevented the markets from thriving, the effect was to draw attention to the potential of the Fairfield area. Until that time, it had existed as an out of the way place, not on major transport routes and not on a major river as most of the major Sydney towns were in this period.

The construction of the Southern Railway line in the 1850s, passing through Fairfield and Cabramatta, spurred the development of timber cutting operations, market gardens, vineyards and orchards. In the second half of the nineteenth century and up to the 1950s, the townships steadily grew while forests were steadily cut down and the ground ploughed for agriculture. These activities would have felled many of the Aboriginal scarred trees within the LGA, while ploughing along creek flats would have disturbed the remains of Aboriginal campsites. It is probably during this period that some of the ground edged hatchets (stone axes) now within the Australian Museum collections were first discovered (though they were not handed to the museum until later).

The other major impact of this period was the construction of Prospect Reservoir to the immediate north of the LGA in the 1880s. Although construction of the dam wall and feeder canals grossly disturbed parts of the area, the flooding of upper Prospect Creek catchment has submerged (but probably not destroyed) archaeological evidence in this area.

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3.2.3 1950s to Today

Although residential subdivision of the LGA area had occurred prior to the Second World War, it was large scale government housing programs in the 1950s to 1960s, and again from the 1980s, as well as urban and industrial expansion continuing until the present day which has given Fairfield its current character. The eastern two thirds of the LGA are now densely covered with residential and industrial development, while upper creeklines have been channelised and flood mitigations works have impacted the major creeklines. By contrast, the western third of the LGA as returned a rural character, with some extractive industry in the north-western corner.

Prior to heritage and environmental planning laws in the 1970s, such developments would have resulted in total disturbance of any Aboriginal archaeological remains existing there and no investigations were carried out prior to destruction. Since that time, assessment of potential impacts to Aboriginal heritage has resulted in the identification of many sites and excavation of some of these which has provided much evidence about how Aboriginal people lived in the LGA, but not necessarily resulted in preservation of the sites. An important aspect of the post-war period and the creation of new housing areas has been the consequent migration of many Aboriginal people from within and outside of Sydney to the Fairfield LGA, which has its own unique history and heritage (see Sections 4 & 5).

3.3 Conclusions

From the review above it should be clear that Fairfield City's Aboriginal history and heritage has been shaped by natural as well as cultural forces. Focus in heritage investigations has tended to be on pre-contact Aboriginal archaeology and 'traditional' Aboriginal cultural practices. The arrival of Europeans has been seen as very, if not totally, destructive of both that culture and its heritage. Whilst there have been severe social and heritage impacts, it should also be clear that many of the 'European' activities which have impacted pre-contact Aboriginal heritage have themselves had an Aboriginal historical aspect, and have therefore involved the creation of new Aboriginal associations. Heritage studies have long recognised that heritage is not restricted to tangible, physical, made 'things', but also includes the associations people have with things and places, including both built and natural features. Bearing this in mind, the destructive processes of European 'development' can also be seen to have led to the creation of new layers of Aboriginal heritage. Recognising these layers requires a deeper understanding of the history of Aboriginal associations with the study area, which is the subject of the next section.

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4.0

Aboriginal History in the Fairfield LGA

This section outlines the types of associations Aboriginal people have had with the Fairfield area from earliest times to the present, and how these might relate to 'heritage'. It draws primarily on previously published accounts with some additional primary research. It is not a definitive Aboriginal history of the Fairfield LGA. The recent *Cabrogal to Fairfield City* book (Gapps 2010) already provides an excellent overview of the Aboriginal associations with the area up until the twentieth century, but does not discuss in detail the history of Aboriginal resettlement in the area since the 1950s. While much of that history is yet to be explored, this section aims to sketch out some major themes and developments, as they provide the context to why particular places are considered important to Aboriginal people today.

4.1 First Occupation to 1800s

4.1.1 Initial Occupation

It is clear that the long Aboriginal occupation and use of the Sydney region asserted by Aboriginal oral traditional is amply supported by archaeological evidence from the region. The oldest dated evidence extends back over 1,000 generations with two rockshelter sites in the Blue Mountains and its foothills dating to around 20,000 years ago (Stockton & Holland 1974, Nanson *et al.* 1987, Attenbrow 2010:Table 3.1). Even older sites have been dated in open contexts at Penrith (40,000 years, Nanson *et al.* 1987) and Parramatta (30,000 years, McDonald 2005), though at such sites the association between stone artefacts and the dated samples can be difficult to definitively prove (Attenbrow 2010:20).

Aboriginal people are therefore likely to have been in the Fairfield City area for many thousands of years. A single radiocarbon age determination has been obtained from the Fairfield LGA. It dates a piece of wood submerged in the same layer of sediment as a stone axe along Prospect Creek at Carramar (AHIMS Site #45-5-0740) to sometime between around 1,700 and 2,050 years ago. The axe was found 7.5m below the surface during excavations for a pipeline in 1980, and there are few details available to be sure that the wood and axe are likely to be directly related, but this age is in line with many other dates across the Cumberland Plain, which are from within the last 3,000 years.

Because of the lack of definite dates for archaeological sites within the LGA it is not currently possible to tell how many people used them, for how long at a time or how often. We also do not know which campsites were in use at exactly the same time (and therefore by the same or neighbouring groups). Given that stone artefacts are virtually the only evidence archaeologists have had to reconstruct how Aboriginal people lived, it is perhaps not surprising that models of Aboriginal occupation have tended to look at where sites generally are found in the landscape rather than consider the underlying behaviours which influenced site location. A recent overview of the results of more than 20 years of archaeological excavations in the Rouse Hill Development

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⁵ SUA-1473 1890 ± 90 BP. Richard Gillespie (Centre for Archaeological Science, University of Wollongong) via email 7/3/16.



Area provides the most comprehensive conclusions that can currently be drawn from the archaeological evidence (White & McDonald 2010). This concludes that Aboriginal people either most often or most intensively used⁶ the terraces or lower slopes above creeks with permanent water for camping. Also, campsites on larger streams showed a greater range of activities than those in the upper reaches of creek catchments. Unfortunately, there is little evidence that allows us a sense of how and why people moved around the landscape. In fact, almost all of the evidence for the daily lives of Aboriginal people in western Sydney comes from the early contact period.

4.1.2 Lifestyle and Resources

Observations of early European settlers in the late-18th and early-19th centuries have left a rich range of sources about how Aboriginal people lived in the western Sydney area. Unfortunately, very few of these observations are confirmed in the archaeological record, which means we must be careful about assuming that historically observed practices had always been undertaken. Saying that Aboriginal people have the oldest living culture in the world, or that the Dreaming is timeless are often mistakenly taken to mean that Aboriginal culture never changed or adapted prior to the arrival of Europeans in 1788. In fact, the archaeological record shows that new technologies were introduced at various times, and that Aboriginal people lived through major environmental changes such as rising sea levels at the end of the last ice age. Therefore it is likely that many of the activities recorded historically were undertaken in that way for several thousand years at most.

Several early colonial observers noted that there were distinct coastal and inland populations of Aboriginal people in the greater Sydney area at the time of first settlement. First fleet diarist and marine Watkin Tench referred to the latter, who lived west of Parramatta, as the 'woods tribes'. While there was clearly movement, trade and contact between the hinterland and coast, those people living semi-permanently or intermittently on the coast relied heavily on the resources that the ocean and its tributaries provided while those further inland lived off the land with an emphasis on its grasslands, woodland, swamps and creeks.

Clans, Languages and Boundaries

At the time Europeans arrived in Sydney the region was made up of the clan estates of over twenty different Aboriginal clan groups. These were likely to have numbered between 25-60 people and comprised several extended family groups that shared "patrilineal" descent (i.e. descent through the male line), common language and totemic association. Each clan had an 'estate' over which they had primary but often not exclusive access and use rights. The Fairfield LGA is likely to have been associated with clans such as the Cabrogal, and possibly others for which we have little reliable information.

Much effort has gone into establishing the 'boundaries' of these estates but there is little information on which to base this, especially in the western Sydney region. The most reliable conclusions are those drawn from the cautious and thorough analysis of Dr Val Attenbrow in her book Sydney's Aboriginal Past (2010:22-29). Other clans are mentioned in the historical record but there has been a lot of speculation and assumption used to determine their location and

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⁶ In other words, there are more artefacts found in these locations. As noted it is not possible to tell if this means more frequent use or more intensive but less regular use.



'boundaries' which are simply not sustained by the evidence, and Attenbrow describes some of the obvious errors associated with some of these renderings. The main reason we have little information about clan boundaries is the fact that these clan structures were badly and permanently damaged by the ravages of early smallpox epidemics. It is also because the groups described by early European observers were foraging bands, not clans, a distinction they were not aware of and which continues to be misunderstood (e.g. Kohen 1993:15).

On a daily basis Aboriginal people lived in bands that comprised at various times some or all of a particular clan plus the women married into that clan from other clans. These bands therefore were multi-lingual groups with direct and distant familial, custodial, and ceremonial connections that extended far beyond the 'boundaries' of an individual clan estate. We do not know how these bands referred to themselves but it is possible that some of the names assumed to be clan names were actually the names of foraging bands.

After the decimation of smallpox, it was rare for Aboriginal people to be described as being of a particular clan, and in the early to mid-1800s groups were commonly identified as a 'tribe' associated with a particular area. For example in the Fairfield city area were groups such as the Liverpool tribe and the Prospect (Weymaly) tribe. These groups are best understood as bands which, due to depopulation began to draw members from increasingly larger areas. They are an Aboriginal response to the European colony which incorporated traditional Aboriginal social patterns. Their relationship to the early recorded Cabrogal clan is not clear, as Gapps meticulously details in Cabrogal to Fairfield City (2010:33-44).

There is little evidence that Aboriginal people considered language to be a primary means of cultural identification in the pre-contact past. As noted above, clans were the primary territorial groupings, and in practical terms Aboriginal people travelled in multi-lingual bands and routinely encountered people of different languages. Relationships between clans appear to have been relatively independent of language, though there were cultural differences recognised by Aboriginal people in early colonial Sydney between the 'coast' and 'inland' or 'woods' groups and there has been much speculation as to whether this reflected a linguistic 'boundary'.

Language has assumed a much greater importance in recent decades across the region as a means of collective identification, given that clan structures have significantly altered. As Attenbrow has noted (2010:35) it is sometimes hard to separate how language functioned traditionally in Sydney from the ways in which descendants of these people now used these terms as a form of collective identity.

That a language known as Dharug⁷ was spoken in the western Sydney region was established by surveyor and anthropologist R.H. Mathews in the late 1800s. However even Mathews was unsure about the boundaries and location of that language. His field notebooks include reference to the language spoken in the Blacktown area in the late 1800s as "Jum'ma –Blacktown talk", but further information was not provided (Wood & Williams 2001:34). It is beyond the scope of the current study to review the complex arguments for language 'boundaries' except to note that much has been stated as definite and absolute that is now beginning to be questioned and new 'discoveries'

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⁷ A range of spellings are common, and the preferred use by descendants of the speakers of this language is *Darug*.



are being made (e.g. see Wilkins & Nash 2008, Steele 2005, Ford 2010, Wafer & Lissarague 2008) which themselves require further research.

More generally, in relation to a lot of the 'assumed' knowledge about clan and language boundaries, Powell & Hesline (2010) have called for a thorough rethink of the assumptions used to underpin these arguments. More attention should also be paid to the historical movements of Aboriginal people until the restrictions of the Aborigines Protection Board and its missions and reserves from the 1880s. This is likely to say much about the traditional connections and movements of Aboriginal people, not because these were unchanged from pre-contact times, but because Aboriginal people had connections outside of the Sydney region prior to the arrival of Europeans, which are not sufficiently recognised at present.

Foods

First fleet officer Watkin Tench noted in his writings (1961[1793]:230) that the woods tribes (which would include the Cabrogal):

Depend but little on fish as the river yields only mullets, and that their principal support is derived from small animals which they kill, and some roots (a species of wild yam chiefly) which they dig out of the earth.

The 'small animals' referred to by Tench are known to have included kangaroos, wallabies, bandicoots and possums and numerous varieties of birds (e.g. **Figure 4.1**). The 'roots' referred to include the wild yam as well as the edible tubers of various orchards, lilies and ferns. In addition to these protein and starch rich staples were numerous other foods of the plains and forests including (Kohen 1995, Attenbrow 2010):

edible fruits such as geebungs, lily pilies, currants, figs, kangaroo apples, mulberries and five corners

honey from the hives of small black native bees (which was used both as a foodstuff and as the base of an intoxicating drink)

fish such as mullet, bass, garfish, estuary perch as well as eels, freshwater crayfish, mussels, tortoises and toredo worms (cobra) from the creeks/rivers

birds such as ducks, hens and emus from the plains and swamps

reptiles such as snakes, lizards and goannas.

The Cabrogal are said to have regarded the cobra worm (a soft mollusc that lives in submerged timber) as a particular delicacy, and from which their clan name is said to derive (Gapps 2010:34). Cobra worms were found across a much broader area, and it is not clear if they were more frequent, more valued, or of a different type in the estate of the Cabrogal to be singled out in this way, but they were clearly important foods to the Cabrogal. French explorer Francis Barrallier observed Aboriginal people harvesting cobra worms from their holes in a submerged piece of wood in the mountains to the southwest of Sydney in 1802 (Barrallier in Gapps 2010:40). He described them using

... a switch about twelve inches long and the thickness of a fowl's feather ...One of the extremities of this stick is provided with a hook. ... and having widen[ed] the hole ... with their axe ... dip their switch into the hole, and, by means of the hook, draw it out, and eat it greedily.

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Figure 4.1. Aboriginal people hunting possums in Sydney.

[Source: NLA nla.pic-an8936122, M. Dubourg's 'Climbing Trees', from Clark, J. 1813 Field Sports of the Native Inhabitants. It shows Sydney Aboriginal men using a mogo (stone hatchet) to cut foot notches for the purpose of getting at possums and sugar gliders. Several trees with these notches have been found in the region, though they are rare (see Irish 2004)].

Weapons and Implements

Wood and Plants

Even though land clearing and development have removed many of the old growth trees within the Cumberland Plain, ethnohistorical records indicate that the forests and woodland were of great importance to the Aboriginal people of the region who made use of a variety of tree species for the sourcing of the aforementioned foods; the production of huts and canoes; and the manufacture of tools and implements. **Table 4.1** highlights some of the uses to which tree products were traditionally put. Trees retaining scars of this use are rare in the study area and becoming more so.

Table 4.1. Aboriginal uses of tree products in the greater Sydney Region.

[Table formatted from information in Attenbrow 2010 & Kohen 1995]

Timber	A variety of tree species were used for the manufacture of clubs, shields, spears & spear throwers (woomeras) (e.g. Figure 4.2)
Fibres	Bark fibres from the Hibiscus tree that grew along river & creek margins were woven to produce fishing nets. These were often cast over shoaling mullet. Other plant fibres were used for fishing lines, twine & bags
Bark	Bark shelters (gunyahs) were constructed of bark sheets placed over a framework of saplings Babies were wrapped in soft tea-tree bark & slung in woven fibre bags. Bark from eucalypts was used for the production of canoes & coolamons (water carriers)
Saps	Saps & gums were used as adhesives
Hollow logs	Hollow logs were used as river bed fish traps
Flowers, nectars, leaves & fruits	Flowers, nectars, leaves & fruits were collected for processing as food, drinks & medicaments. Select plants (e.g. Acacia) were used to make fish poisons

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Figure 4.2. Kangaroo hunt.

[Source: NLA nla.pic- an8936131, M. Dubourg's 'Hunting the Kangaroo', from Clark, J. 1813 Field Sports of the Native Inhabitants.]

Stone

While trees and forest products provided the fundamentals of the material culture of the Aboriginal people of the Cumberland Plain, other natural materials were also used. In particular within the Western Sydney area, archaeological and ethnographic evidence has shown us that stone was used to create tools and weapons such as ground-edge axes (mogos), blades and the barbs of spear points. Stone types are known to have included silcrete (**Figure 4.3**), silicified wood, quartz and volcanics (including basalt and tuff). As a consequence of their inherent hardness and durability we know more about stone artefacts from archaeological sites than we do about any other artefactual material. These less hardy organic items such as wood, fibres, skins, animal parts and hair decompose quite quickly in buried soil contexts in western Sydney and are rarely found in the region.



Figure 4.3. Piece of worked silcrete from Carramar (scale in cms).

['Unspectacular' examples have been deliberately chosen. Most artefacts that are found in archaeological surveys and excavations are, like this one, not obvious implements such as spear points, but it is possible to tell that artefacts like this were utilised by Aboriginal people by the way the smaller pieces have been removed. Microscopic analysis of artefacts like this could potentially tell if they have been used and even what they were used for by the plant or blood residues left on edges. Unfortunately this work is expensive and time consuming and has not been performed on many artefacts from the Cumberland Plain, though they have been excavated in their hundreds of thousands over the last three decades].

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Silcrete

If there is any one type of stone that characterises Aboriginal archaeological sites of Western Sydney it is silcrete. This hard, lustrous, silicious rock - often found as river bed cobbles and outcroppings - was worked into a variety of tool types and is frequently revealed in archaeological contexts as blades, points, cores and debitage (**Figure 4.3**).

Technically, silcrete is an indurated soil duricrust formed when silica is dissolved and re-solidifies as a crystalline cement. This chemically created sedimentary rock is widespread within Australia's regolith (rock mantle) and ranges from yellow-white to deep red in colour (with colour differences due to both natural variation and deliberate firing).

It has been suggested that 'rights' to the stone where it outcropped in ridges in the Plumpton area were traditionally held by a specific clan. The red stone that barbed the 'death spear' that killed Governor Phillip's game keeper John McIntyre (December 1790) was described as a red stone that is generally thought to have been silcrete.

Refer Attenbrow 2010; Kohen 1995: 6 & 55; http://australianmuseum.net.au

Animal Products

In inland locations, particularly during winter, animal skins were sewn together with awl-driven sinews to form cloaks which kept out the ravages of the cold. Early colonists noted that the cloaks were made of possum, kangaroo and flying fox (as well as bark). Although generally thought to have been smaller and perhaps less frequently used than in places like Victoria and on the Murray River, these cloaks were highly prized and in some instances decorated on the interior with patterns made from the 'edgy part of a bivalve shell' (Barrallier [1802] in Attenbrow 2010:107). Animals also provided sinews for rope and twine, bone for awls and spear points and teeth, talons, feathers and fur for decoration.

Transport

Several historians have accurately described the Aboriginal people of Sydney as being 'canoe cultures' due to the universal use of the bark canoe as a mode of rapid transport wherever there was a sufficiently large waterway (Gapps 2010:40-42). Canoes were generally constructed of eucalypt bark with lightweight thwart framing. They were usually bound at each end by plant fibres and some were also sealed with xanthorrhoea gum and lined with soft bark or cabbage tree palms. Serviceable but somewhat flimsy craft, these canoes were used to navigate waterways and rivers and also functioned as mobile fishing platforms. The characteristic canoe shaped scars or markings on old eucalypts that denote Aboriginal removal of bark for canoe construction are a significant feature of Australia's Aboriginal landscape though are very rare in the Sydney region. The presence of large creeks in the eastern part of the Fairfield LGA, and the Georges River to the south suggest that canoes would have been used extensively in these areas. Otherwise Aboriginal people travelled on foot via ridgelines and creek lines as suggested by the patterning of Aboriginal archaeological remains.

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Accommodation

Aboriginal people in the greater Sydney area lived in various styles of accommodation in a wide variety of occasional and semi-permanent settlements. As a general rule, shelter was routinely provided by rock shelters or outcrops, small structures, or large hollowed out trees (Attenbrow 2010:105). On the Cumberland Plain however, the absence of outcropping sandstone meant that options were limited to bark huts (gunyahs). R. Howitt in his book *Impressions of Australia Felix* (1845:284) described the construction of such huts as follows:

It is not uninteresting to watch them at the vocation of miam-making: stripping off from the trees large and thick sheets of bark, driving forked stakes into the ground to receive the cross tree, against which they rear the bark, and complete the whole with a covering of green boughs.

Captain John Hunter (cited in Attenbrow 2010:105) contrasted the dwellings of Aboriginal people on the coast with those inland - somewhat derisively - as follows:

... they generally shelter themselves in such cavities or hollows in the rocks upon the sea shore, as may be capable of defending them from rain ...

In the woods, where the country is not very rocky, we sometimes met with a piece of the bark of a tree, bent in the middle, and set upon the ends, with the piece set up against the end on which the wind blows. This hut serves them for habitation, and will contain a whole family; for when the weather is cold, as is the case in winter, they find it necessary to lie very close for the benefit of that warmth to which each mutually contributes a share. These bark huts (if they deserve even the name of huts) are intended, as we have discovered lately, for those who are employed in hunting the kangaroo, opossums, or in short, any other animals which are to be found in the woods.

Figure 4.4 and **Figure 4.5** show campsite gunyahs in the Sydney region. Both are variations on the traditional shelter - formed from a framework of saplings and covered with bark sheet.



Figure 4.4. Jacques Boisseau's 'famille de sauvages' (1825)

[Source: NLA nla.pic-an9032049].

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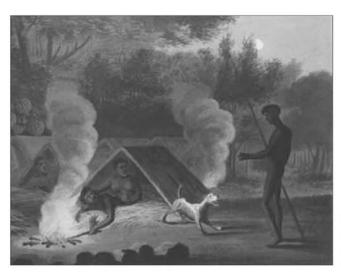


Figure 4.5. M. Dubourg's 'Repose' (1813)

[Source: NLA nla.pic-an8936131].

Cultural Beliefs & Ceremony

In traditional Aboriginal society most aspects of life were 'intimately associated with religious beliefs'. These were expressed through stories and ritual that belonged to the 'dreaming' or dreamtime – an Aboriginal concept that links the past to the present (Attenbrow 2010:127).

Spirituality

Unfortunately, our collective knowledge of specific beliefs and practices in the Sydney region is very limited. Aboriginal beliefs were often derided as mere superstitions by early colonists and detailed ethnographic recording did not commence (if at all in some regions) till the 1870s. In addition, Aboriginal elders were not always able to pass information on from one generation to the next once Europeans had arrived.

Generally however, it appears that the 'religious system' for south-eastern Australia (Victoria, NSW and southern Queensland) featured:

- · Universal belief in an 'all-father' supreme creative being; and
- Practical religion/spirituality based on rites of passage (Attenbrow 2010:126-129).

Creator

Commonly held Aboriginal beliefs in south-eastern Australia included the existence of a supreme being or creator spirit known by a variety of names but most commonly referred to as Baiame. Generally it was held that Baiame came from the sky to the land and created all the rivers, mountains, and forests. He was also responsible for the creation of all aspects of culture and gave the people their laws of life, traditions and songs, and their culture. It was also believed that he created the first initiation site - the bora.

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Baiame was closely associated with another ancestral being (often depicted as one legged or with a much exaggerated penis) referred to as Daramulan. The relationship and status of the two varied according to location, and in some instances they were one and the same.

Totems

In day-to-day life, it appears that the most immediate religious concerns related to what we commonly refer to as totems - connections between man and nature and ultimately to the ancestral beings. Totems (generally animals, plants or objects) influenced or regulated many aspects of individual and group life including marriage and movement. Totemic creatures from the broader Sydney area included the possum, emu, bandicoot, wallaby, kangaroo, wombat and black snake. Not surprisingly, totems were integral to ritual and ceremony.

Ceremony

In South-eastern Australia, bora (a Kamilaroi term) was the name given to both a male initiation ceremony and the site on which it was performed. As ethnologist R. H. Mathews wrote (1917:423), the bora was:

... an educational system for the initiation of youths into the privileges and obligations of manhood.

Initiation ceremonies differed between Aboriginal groups, but all involved ceremony associated with the creator figure Baiame, and ritual practice (including law, dance, scarification and other bodily modification).

Details of initiation ceremonies from the greater Sydney region are limited. Perhaps the best recorded example occurred in part at Farm Cove (Circular Quay) in 1795 (**Figure 4.6**). This was a well-attended event which included people from the coast as well as those from 'the woods'. This ceremony, which was described by First Fleet Lieutenant-Colonel David Collins, featured:

- · use of a cleared area as a ceremonial ground
- · presence of koradjis (clever men) who oversaw and undertook the significant rituals
- ritual dance, instruction, parading and offerings
- the 'man-making' of at least three young men (including Nanbaree and Caruey) who were subject to front tooth evulsion and other rites of passage.

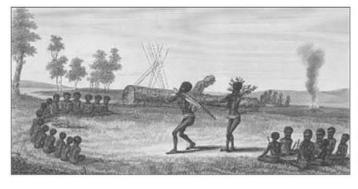


Figure 4.6. Initiation ceremony at Farm Cove in 1795.

[Source: SLNSW a1341015h. Engraving from Collin's 1802 An Account of the English colony in New South Wales].

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4.1.3 Early Contacts and Conflict

First Contacts

First contacts between Aboriginal people and Europeans in the Fairfield area happened soon after the arrival of the First Fleet in 1788. It is quite likely that local Aboriginal people had travelled east and seen Europeans prior to the first European explorations into the area, and at any rate would have had some advanced information from coastal peoples. The land around the lower reaches of Port Jackson was quickly found to be unsuitable for European style farming and as a consequence, exploration in search of arable lands commenced. Throughout the 1790s and early 1800s a number of exploratory parties crossed through parts of what is now the Fairfield LGA, and escaped convicts probably also passed through the area. Little is recorded from this period that can definitely be tied to the specific Fairfield city area.

Smallpox

In 1789, before any real or lasting contacts had been made with Aboriginal people in the Fairfield city area, a devastating smallpox epidemic swept around Sydney Harbour before spreading west with Aboriginal people fleeing the disaster. This disease, often in combination with other introduced contagious illnesses, wreaked havoc on the Sydney Aboriginal population and rapidly effected Aboriginal populations elsewhere. It is believed to have claimed the lives of up to half of the Aboriginal people in Sydney, though we will never know how it affected the Cabrogal and other local groups because it affected them before Europeans recorded anything about their prior numbers. Governor Phillip recorded that:

It is not possible to determine the number of natives who have been carried off by this fatal disorder. It must be great; and judging from the information of the native now living with us, and who had recovered from the disorder before he was taken, one half of those who inhabit this part of the country died.⁸

Smallpox

Smallpox is an infectious disease unique to humans that is caused by the airborne transmission of the variola virus. The disease is thought to have emerged in human populations around 10 000 years ago. The virus localises in the small blood vessels and manifests as a characteristic maculopapular rash, and later, raised fluid-filled blisters.

Defined as either major or minor, the former has a mortality rate of 1% while malignant and hemorrhagic versions of the latter account for a death rate closer to 35%. It is believed that the disease has been responsible for up to 500 million deaths in the 20th century alone.

After successful vaccination campaigns pioneered in the 19th century and expanded in the 20th, the World Health Organisation certified the eradication of smallpox in December 1979. It is one of only two significant diseases that have been eradicated by humans.

Other communicable diseases such as influenza, tuberculosis and sexually transmitted diseases such as syphilis are also likely to have had a profoundly negative affect on Sydney's Aboriginal people in the first decades after the arrival of Europeans in Sydney.

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⁸ Dispatch from Phillip to Sydney 13 February 1790 in HRA Series 1, Volume 1: 159



Conflict

The last decade of the 18th century and the first decade of the 19th century was characterised by a number of conflicts and wars between white settlers, soldiers and Aboriginal people. Not all instances of conflict were reported or recorded so the precise nature of conflicts within the study area is difficult to determine. As the colony grew, the spread of land tenure to emancipated convicts and soldier settlers resulted in armed clashes as Aboriginal people found themselves both harassed and cut off from traditional lands. This was particularly on the near-lawless margins or frontiers of white settlement to the north, south and west of Sydney (particularly in the Nepean, Georges, and Hawkesbury River districts) but also included areas closer to the Fairfield area.

The establishment of farms in the early 1890s around Prospect Hill, including several grants within the study area at present day Smithfield, led to a series of violent conflicts between Europeans and Aboriginal people. As historian Grace Karskens has demonstrated, this violence was rarely indiscriminate. Antagonists were often 'intimate enemies', who knew 'their attackers and their victims by name and face' from prior peaceful interactions (Karskens 2009:449 and Ch 13). At Prospect this scenario is suggested by a number of sites containing glass pieces worked in the same way as stone tools (see below and **Figure 4.7 & Figure 5.8**). They show that Aboriginal people were living close to the Prospect farms and most likely interacting with them to obtain raw materials for these artefacts.

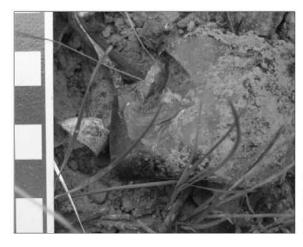


Figure 4.7. Glass artefact from campsite #45-5-0866 to the south of Prospect Reservoir.

[scale in cms]

There were also concerted campaigns led by Aboriginal warriors to resist the incursions of Europeans across Sydney, of which the best known is Pemulwuy. Pemulwuy appears to have been a Bidjigal man with seeming affiliations to the north and west of Parramatta and to the Georges River and Botany Bay (Tench 1793[1961]:89). An imposing and near-mythical figure he was distinguished by the fact that he had a left eye defect, variously described either as turned, specked or blemished (Tench 1793[1961]:89, Smith 2001:82). Pemulwuy's campaign ranged across western Sydney and the Georges River and by the turn of the 19th century European settler tolerance of his group's sporadic raids was at an all-time low. Governor King issued the following orders in May 1801:

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Item: 106



Fairfield City Council Aboriginal Heritage Study

From the wanton manner in which a large body of natives, resident in the Parramatta, Georges River, and Prospect Hill, have attacked and killed some of the Government sheep, and their threat of murdering all white men they meet, which they put into execution by murdering Daniel Conroy, stock-keeper, in a most savage and inhumane manner, and severely wounding Smith, settler; and as it is impossible to foresee to what extent their present hostile menaces may be carried, both with respect to the defenceless settlers and the stock, the Governor has directed that this as well as all other bodies of natives in the above district to be driven back from the settler's habitations by firing at them.⁹

This general order to drive Aboriginal people back from settlement areas heralded the commencement of over a decade of severe black and white conflict in these districts. However, the personal relationships which built between individuals meant that both sides usually knew who was 'friendly' and 'unfriendly'. For example, in 1814, while a frontier war was raging between Aboriginal people and soldiers and armed settlers nearby in south-western Sydney, Aboriginal people assisted other soldiers to capture bushrangers along the Devil's Back ridge within today's Western Sydney Parklands (Gapps 2010:122). In the same year to the south along the Georges River, settler John Wentworth felt quite safe fishing with 'friendly' local Aboriginal men despite the armed conflict nearby (Liston 1988:52).

Of course this does not mean that violence did not occur within the study area. An Aboriginal heritage study in the 1980s noted a second-hand and anecdotal reference to 'a massacre site somewhere along Orphan School Creek' (Matthews et. al. 1989:17). Whilst statements such as this should not automatically be assumed to be historical accurate, it is also possible that they are an historical echo of events that happened perhaps at that location or elsewhere in the early colonial period. They remind us how little we know about this period of Fairfield's colonial history.

Frontier conflict in Sydney continued into the 1810s and culminated in a war between displaced Aboriginal people, settlers and the Government to the south-west of the study area between 1814 and 1816. This war grew out of continued animosity exacerbated by extended drought conditions. At the height of the violence and at the behest of struggling landholders, Lachlan Macquarie (Governor from 1810 to 1821) ordered several punitive attacks on Aboriginal people to the west of Sydney. During one attack in April 1816, Macquarie's forces killed fourteen Aboriginal men, women and children at a site near Appin in Sydney's southwest. This event, during which soldiers hung the bodies of two dead Aboriginal people from trees as a warning to would be revenge attackers, became known as the 'Appin Massacre' (Liston 1988:54). After the massacre, hostilities largely ceased in the Sydney region and a new era of European-Aboriginal relations commenced. Devastated by dislocation and depopulation due to small pox, neglect and violence against them, and with reduced access to traditional food resources and reserves, Aboriginal people had to regroup and interact with Europeans in order to stay connected to their traditional lands.

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⁹ King to John King 21 August 1801, HRA, 1(3): 250



4.2 1800s to 1950s

4.2.1 Staying Connected

In the first half of the nineteenth century, the study area was only relatively sparsely occupied by Europeans. Large portions of the study area had been alienated for the Orphan School, and land grants such as the Abbotsbury and Horsley Estates. However, these and other homesteads remained cleared patches in a vast woodland, connected by a network of rudimentary roads and tracks. The study area was out of the main stream of development across Sydney, due to its distance from major rivers in particular, along which all of the early main towns in the region were established.

The area is likely to have been used by Aboriginal people regrouping after the devastating smallpox epidemic. Unfortunately it is hard to be specific about who these people were and exactly where they were living, as there are few historical records of the area from this time. We know however that a group of Aboriginal people associated generally with the Liverpool area continued to exist throughout the nineteenth century. These are likely to be the people described as the 'Liverpool tribe' in the 1830s and 1840s but we cannot be sure whether they represent Cabrogal people or a broader amalgam of different groups. They are mentioned most often at Liverpool because this was the local administrative hub where Aboriginal people interacted with Europeans. It was at St Lukes in Liverpool that some Aboriginal people baptised their children in the 1820s and 1830s, and it was where police magistrates handed out a government blanket annually to Aboriginal people. Where these people went when they left public view in Liverpool is not known, but it is likely that some at least resided within the study area.

The only definite trace we have from this time is of an Aboriginal woman known as Sarah Castles (c1819 – 1849), who was living along Cabramatta Creek in the 1840s with her European husband Benjamin Castles. ¹⁰ Sarah had a daughter Sarah Ann in 1847 before both she and her infant second daughter died in 1849. Sarah Ann later married a western Sydney Aboriginal man William Lock and there are some people today who can trace their ancestry back to Sarah Castles through Sarah Ann and William's children. We do not know Sarah Castle's maiden name or where she was 'from'. Some researchers have speculated that she was the daughter of an Aboriginal man from Prospect Creek named Charley Moran, but the blanket return evidence used to support this idea assumes a connection between a listed 'Sarah' and Charley Moran which does not match her known age (Kohen 1993:98-101). It is likely however that Sarah had an ancestral connection to the Cabramatta Creek area, as it was common in this period for Aboriginal people to continue living in broad areas of traditional affiliation.

Further north on the Cumberland Plain, to the southwest, and along the coast to the east we have records of Aboriginal people living and working on large estates throughout the nineteenth century (Irish 2010, Irish *in press*, Karskens 2009:537-9, Kohen 1993: Ch7). This kind of existence is captured in a painting by Augustus Earle around 1826 which depicts an Aboriginal family near either Erskine Park to the immediate northwest of the study area or at Casula to the southeast

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Death Record of Mary Castles 11 August 1849 and Sarah Castles, 28 August 1849 (Society of Australian Genealogists, Church of England in Australia - Parish registers, 1839-1970, SAG Reel 12, frame 285).



(Figure 4.8). We know of a large camp of Aboriginal people near Prospect in the 1830s (Hassall 1902:17-18) and also along the Georges River to the south (see Goodall & Cadzow 2009). Given this extensive evidence it seems highly likely that a similar situation existed on the large estates such as Abbotsbury and Horsley and others within the study area, but no details of these have yet emerged from the research for this or other studies.



Figure 4.8. An Aboriginal couple and their child outside a homestead in western Sydney.

[Source: Earle, A. c.1826. A native family of New South Wales sitting down on an English settlers farm (National Library of Australia PIC Solander Box A33 #T83 NK12/45). This painting may be from Casula, or as Karskens argues (2009:538) Erskine Park].

4.2.2 The Male Orphan School

The Male Orphan School operated at Bonnyrigg between 1824 and 1850 as a place for boys to attend school and learn farm work to set them up as future labourers (Figure 4.9 & Figure 5.10). During that period more than 800 children attended the school. Not all had no parents. Some were destitute and could not be looked after, and others were technically defined as orphans because they had no father (Starr & Wheller 2005:5-9). When the Male Orphan School opened, there was already a school for Aboriginal children established in 1814 by Governor Macquarie called the Parramatta Native Institution (see Brook & Kohen 1991). By 1823 this school had closed and the remaining students were shifted to the Blacktown Native Institution (Figure 4.10). Some of the students were said to be from Liverpool and may therefore have had connections to the study area.

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Figure 4.9. The Male Orphan School around 1840.

[Source: Orphan school, Charlie's birth place, 3 miles from Liverpool, New South Wales, sketched in April 1840. Charlie born on 5 April 1840 (State Library NSW V1B / Live / 2)]

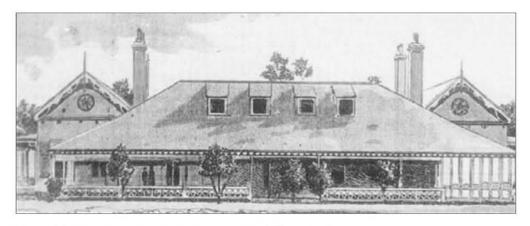


Figure 4.10. Blacktown Native Institution (late 19th century).

[Source: British Museum Collection - presented in Sharpe 2005:5. Image dates to the time when the building was the residence of Sydney Burdekin who was a member of the Aborigines Protection Board].

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In 1824 four boys were sent to the Male Orphan School at Bonnyrigg from the Blacktown Native Institution when it was temporarily abandoned. At least three of them (Billy, Wallace and Johnny) appear to have returned to Blacktown in 1826 when the Native Institution reopened under Christian Missionary Society member William Hall (Gapps 2010:149, Brook & Kohen 1991). By 1827 Hall was overseeing nine Aboriginal children from a range of areas as well as four New Zealand Maori. As had happened previously at Parramatta, illness plagued the institution and by 1829 most of the students had died. The Blacktown Native Institution and settlement lingered until 1833 when it was closed and the buildings auctioned off. During 1829, the students who had survived illness at the Blacktown Native Institution were transferred to Liverpool where they were put under the care of the head of the Male Orphan School's Reverend Robert Cartwright.

The Aboriginal associations with the Male Orphan School are important because they are stories of the treatment of Aboriginal children in the wake of the colonial frontier. The Male Orphan School is linked into the broader history of early colonial attempts at Aboriginal welfare, a story which takes in not just the Blacktown and Parramatta Native Institutions, but also Governor Macquarie's attempts to created settled Aboriginal fisher farmer communities around Sydney Harbour in the 1810s and 1820s. From a local Aboriginal historical point of view, it does not appear that further Aboriginal children were present after the early 1830s (though further research may reveal later connections). When the school closed in 1850 it does not appear to have had any ongoing significance to Aboriginal people. This contrasts the Blacktown Native Institution for example, where Aboriginal people continued to live in an adjacent settlement long after the Institution closed (see Brook & Kohen 1991).

4.2.3 Visiting and Moving In

From the 1850s, there are few records of Aboriginal people in the broader Fairfield/Liverpool area, and they rarely identify the details of individuals. We know from blanket distribution records and later Aborigines Protection Board annual census records that around 15 Aboriginal people continued to associate with Liverpool until the mid-1890s – but we do not know who they were or what they were doing. In the mid-1890s the numbers fall to just 2-3 people and continue at that level over the next decade. It is possible that people moved away, perhaps to La Perouse which by then was one of the largest Aboriginal settlements in the Sydney region. This broader context is interesting, but it does not tell us whether any Aboriginal people continued to live in the study area, particularly those with ancestral connections.

By the end of the 19th century, the government was becoming deeply involved in the affairs of Aboriginal people through the Aborigines Protection Board (established in 1883). More and more Aboriginal people were coming to live on reserves gazetted by the Board or on Aboriginal missions, at places like La Perouse, Blacktown (Richmond Road), Picton, Katoomba and along the Hawkesbury River at Sackville. Aboriginal people were increasingly monitored by government, and it does not appear that there were any major Aboriginal settlements, and certainly no missions or reserves within the study area. By the 1930s there are no records of a group of local Aboriginal people living in the area. For example, when the historic Lansdowne Bridge celebrated its

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¹¹ See Colonial Secretary's correspondence for the 1860s to 1880s and Aborigines Protection Board annual reports for the 1890s and 1900s.

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centenary in 1934, a group of Aboriginal people from La Perouse were involved. The local newspaper reported that the procession over the bridge was led by "a party of aboriginals from La Perouse in war-paint and loin-clothes [who] played tunes on gum leaves, and gave displays of boomerang throwing and corroborees' (Anon 1934). A century before, on the opening of the bridge, a similar procession was led by a 'cart in which were two emus, driven by a native boy' (Anon 1836). It is possible in 1836 that the boy was locally connected, though he may equally have been someone known to the organisers from somewhere else.

Not all Aboriginal people lived under the government's watchful eye however. Some chose to live more independently, such as at the well-documented Aboriginal settlement at Salt Pan Creek off the Georges River from the 1910s to the late-1930s (Goodall & Cadzow 2009). It is possible that some Aboriginal people lived in a similar manner within the study area. Several Aboriginal descendants have suggested that this occurred along Prospect and Cabramatta Creeks up until the 1950s (see Gapps 332-337), but these places require further investigation. Salt Pan Creek, and indeed almost all Aboriginal settlements in the preceding century across Sydney, are documented at some level in newspapers, Council records or government correspondence (see Irish *in press*). By contrast, the places within the study area appear only to be documented by individuals, who each give differing accounts of location and use. They do not appear to be recollected by non-Aboriginal residents, despite many of the same stretches of creek being popular as swimming holes for local residents. None of the Aboriginal people contacted in the current study, some of whom have lived in the area for over 50 years, could recollect these settlements either. It may be that they are more related to particular families or individuals rather than being communal settlements.

By the early 20th century, Aboriginal people were beginning to move into Sydney from country areas, looking for work and seeking respite from the oppressive monitoring of the Aborigines Protection Board. Some found work that utilised their rural skills, such as working at abattoirs at Homebush Bay or Riverstone (Irish 2005, Irish 2010). It is possible that some Aboriginal people moved into the study area too around this time, though no specific records have yet been found. Caution needs to be shown in asserting the Aboriginality of people who lived in the area in this period, particularly where they do not appear to have made this assertion themselves. For example Stanley Kohen (1907–1942) is said to have been an Aboriginal man who lived at Cabramatta in the 1930s, before serving in new Guinea during the Second World War, where he was killed in action in 1942 (Kohen 1993:108-9, 138). No newspaper records from the time, or his military service record or marriage certificate assert an Aboriginal identity (though this was not unusual in this period of intense discrimination and segregation). However, more telling, is that a detailed examination of the asserted Aboriginal ancestral connections of Stanley Kohen undertaken in response to a native title claim for western Sydney, show his genealogy to contain serious errors and assumptions that demonstrate that his supposed Aboriginal ancestor is in fact an immigrant (Flynn 2001:156-9).

That is not to say that Aboriginal people were not moving into the study area at this time. Henry (Harry) Finch (c.1915-1968) and his family lived from the 1940s in a house at Smithfield from the 1940s, while his father 'Old Man Finch' lived in bush at the western end of the suburb (Gapps 2010:338, Anon 1968). Harry drove one of the local bus routes and was well-regarded in the neighbourhood, as was his wife Pat, who was the Smithfield postmaster. At this stage, families like

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the Finch's were fairly isolated, but from the 1960s, Aboriginal began to move into the Fairfield area in much greater numbers.

4.3 1950s to Today

4.3.1 Making New Lives

The vast majority of Aboriginal families now living in the Fairfield area arrived from country areas after the Second World War as part of large scale Housing Commission resettlement programs, and more recently independent of such programs. The reasons for the moves were complex and varied and the best illustrations are the recollections of the Aboriginal people who made the move, often via the inner city as a first stop. Lynn Larson, who studied the phenomenon of mass Aboriginal migration into Sydney in the 1970s, summarised it this way.

Increasing Aboriginal population figures, decreasing employment opportunities and the rigidity of social relations in the rural areas served as 'push factors' in the Aboriginal rural-urban migration process...Many migrated to urban areas, pulled by the perceived opportunities for better living conditions, better employment and education facilities and a raise in social status. Although by 1966 over twenty-five per cent of Aborigines lived in urban areas, the majority lived in urban places outside the major city centres. By 1971, the urban component of the Aboriginal population had nearly doubled, with fifteen per cent...living in the major urban areas. (Larsen 1973:35)

From the early 1960s, the Housing Commission began to construct large number of houses in areas such as Mt Pritchard, Smithfield, Canley Vale and Green Valley (George 1991:198). Two women consulted during the current study arrived at this time and found themselves as some of the only Aboriginal people in the area. At this time, Aboriginal people were just starting to create their own organisations to help the continuous stream of Aboriginal migrants into Sydney find their feet. The first of these was the city based Foundation for Aboriginal Affairs, which was only just beginning to make contact with Aboriginal people across the Sydney area by the mid-1960s. ¹²

Aboriginal families had to make-do as best as they could in an environment that was still quite racist. When Freda Simpson moved into Smithfield in the late 1960s for example, unbeknownst to her, the neighbourhood families 'put a petition around the street to ask if they could actually move an Aboriginal family in there, coming from the inner city.' One of her neighbours, whom she later became good friends with, later told Freda that 'we signed it and said we didn't want an Aboriginal family living here?' 13

Until the 1980s, there were no Aboriginal service organisations in the Fairfield LGA. That development coincided with the construction of the Housing Commission suburb of Bonnyrigg in the early 1980s, which included housing for nearly 4,000 people in houses and units in what was formerly bush and cleared paddocks (George 1991:198). Aboriginal people were among the many

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¹² See http://www.sydneybarani.com.au/sites/foundation-for-aboriginal-affairs/

¹³ Transcript of oral history interview with Freda Simpson http://fairfieldcity.oralhistory.com.au/interviews/simpson_freda/simpsonf_fullstory.htm



who moved there and this is reflected by a doubling in the Aboriginal population of the Fairfield LGA from 423 in 1981 to 849 in 1986 (Anon 1989).

Among the first Aboriginal residents of Bonnyrigg in the early 1980s were Mavis Mae Robinson and the late Yvonne Clayton. Yvonne and Mae were both taken from their families as children to the Cootamundra Girls Home, a place run by the Aborigines Protection Board to train Aboriginal girls for domestic service. They met each other at Cootamundra, and both later lived in different parts of Sydney before obtaining houses at Bonnyrigg. Yvonne had been living in Leichhardt and found it a big change moving to Bonnyrigg. She said that

when I first moved out there, I know, I went to the Department, I went to the Department of Housing, because I felt lost, I felt like I was at the back of the world, I thought oh my god, I'm in the scrub, god look at all the trees around me oh my god I'm out in the bush. I did I felt like I was out in the bush and I was, I hated it. I hated it. The kids loved it of course, all these things to explore especially the creeks and the snakes being around them. There was snakes around there. ¹⁴

Both Mavis and Yvonne came to like living at Bonnyrigg and were deeply involved in helping to create a sense of community for the Aboriginal people who had come from many different areas around the state.

4.3.2 Rights and Services

As the Aboriginal population within the Fairfield and Liverpool areas grew in the 1960s and 1970s, it became evident that there was a need for culturally appropriate, Aboriginal run services to help Aboriginal people and bring them together as a community. In the early 1980s, the long-running push for Aboriginal land rights in New South Wales led the government to enact the *Land Rights Act* in 1983. The Act allowed for the formation of Local Aboriginal Land Councils, which had the ability to lodge claims over certain types of Crown Land. In areas like the study area where there were no Aboriginal social or service organisations already in existence, Land Councils also filled this gap.

When the Gandangara Local Aboriginal Land Council was formed soon after the passing of the Act in 1983, it had no premises. At first members met at different places within the Land Council's boundaries, but after privately saving money for several years, some members were able to purchase a house at 15 Delamere Street in Canley Vale. Funding was later obtained but the Land Council used necessary maintenance as a means of training and employing local Aboriginal people through the CDEP (Cook & Goodall 2013:251-2). Throughout the 1980s the property was a social and administrative hub for the Aboriginal community of Fairfield and Liverpool, and was remembered in this way by several people consulted during this study (Figure 5.12). It housed the Koori Youth program in the 1980s which assisted children and young adults with education and training. The Land Council moved to its current premises in Liverpool in the early 1990s but still leases out the Delamere Street building as a residential house.

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¹⁴ Transcript of oral history interview with Yvonne Clayton http://fairfieldcity.oralhistory.com.au/interviews/clayton_yvonne/claytony_fullstory.htm



The Land Council building was sited at Canley Vale due to the availability of a suitable house, rather than it being a geographic centre of the local Aboriginal community. For the most part Aboriginal families were relatively spread out across the Fairfield LGA. The exception was Bonnyrigg, and this led to the concentration of a number of activities and services there. The most significant of these was the Urimbirra Aboriginal and Torres Strait Islander Corporation, which was established in a leased house near the central shopping area and Bonnyrigg Public School in the late 1980s. It operated education, training and childcare programs for over 15 years before closing in the late 1990s. By this time, the Aboriginal population was decreasing as the Housing Commission began to move people to other areas such as Campbelltown, while others left as Bonnyrigg developed a bad reputation. Despite this move away, Bonnyrigg Public School has remained a focal point for Aboriginal families in the area, as well as ex-students with their own children who now live in other areas. It was designed to be shaped like a lizard (though one 'leg' was later damaged in a fire) and has retained a close involvement with the local Aboriginal community through its school programs and the Lil Possums Aboriginal playgroup.

From 2007 the Department of Housing has run the locally christened 'New Leaf' program to renew and rebuild public housing in Bonnyrigg. Just down the road from Bonnyrigg Public School is the former Cabrogal Cottage, which served as the community meeting place for the New Leaf program, including art workshops and Aboriginal community gatherings and had Aboriginal artwork on its walls. In the last two years the New Leaf program has been taken over by the not-for-profit organisation St George Community Housing and the community hub has moved to a more central location within the broader housing estate area. ¹⁵ New Leaf is now actively encouraging Aboriginal families to move back into the area and has supported local services such as the Lil Possums Playgroup and employs an Aboriginal work to assist in this process. A range of community activities are now supported by New Leaf, including annual NAIDOC celebrations and art projects. ¹⁶

Fairfield Council has also played an increasingly active role in supporting the local Aboriginal community, encouraged by local Aboriginal community members and organisations. In 1994, Council undertook an Aboriginal consultation project to determine the best means of engaging with the local Aboriginal community. In more recent years, Council has employed Aboriginal community liaison workers and formed an Aboriginal Advisory Committee. It has sponsored local Aboriginal organisations and public art projects, and has now engaged formally with its planning responsibilities for Aboriginal heritage through the current study.

4.3.3 Continuing Connections

Today there are more than 1,200 Aboriginal people living across the Fairfield LGA, and many more have historical links back to the area because either they or their families have lived there in the past. Although the Fairfield LGA does not contain a definable, geographically confined 'Aboriginal community' in the way that areas such as La Perouse, Redfern, Campbelltown and Mt Druitt do, many Aboriginal people feel a sense of identity and affinity with the area. There are a number of

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¹⁵ Roma Omari (New Leaf Place Coordinator) pers. comm. 7/12/16.

¹⁶ See for example http://www.newleafcommunities.com.au/news.asp?pid=25&id=106



ways this has been expressed. We can see it through the dedication of a number of Aboriginal community members to be part of the Fairfield City Council Aboriginal Advisory Committee, ensuring that there is a local Aboriginal voice to guide and advise Council. It is also expressed through the formation in recent years of local Elders groups and playgroups, and their contribution to creating public artworks and crafts and their engagement with the recent *Talk the Change/Change the Talk* Aboriginal history exhibition at the Fairfield City Museum and Gallery.

Perhaps the most visible way in which Aboriginal people in the Fairfield area have expressed both respect for the Aboriginal past and their own sense of connection is through public art. Some of the notable public art projects undertaken over the past decade include ¹⁷:

- The Warali Wali Aboriginal Heritage Trail along the Prospect Creek Cycleway this features a
 series of interpretive artworks and path markers installed in 2004 which tell traditional stories.
 Most striking are three concrete pillars arranged around a central rock, each covered in
 ceramic tiles which have been painted, carved, moulded and pressed (Figure 4.11).
- Plant Lines Banner Poles at Bonnyrigg Aboriginal artist Joe Hurst created the poles with a blacksmith using a design developed in conjunction with the Fairfield Council Aboriginal Advisory Committee and student (Figure 4.12).
- Aboriginal Artworks at Bonnyrigg Public School a number of Aboriginal artworks have been
 created over the last few decades at Bonnyrigg Public School by students, parents and Elders.
 They reflect the significance of the school to the local Aboriginal community and the cultural
 pride of students. See also as a means of see Figure 4.13 and Figure 5.15.

Artworks by local artists can also be found in the office of New Leaf at Bonnyrigg and in several public murals such as the recently unveiled Cabramatta History Wall in Dutton Lane.

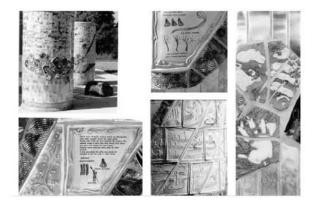


Figure 4.11. Features of the Warali Wali Aboriginal History Trail.

Image courtesy Fairfield City Council.

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¹⁷ Information provided by Fairfield City Council.

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Figure 4.12. Plantlines banner poles in use for NAIDOC 2008.

Image courtesy Fairfield City Council.



Figure 4.13. Mural at Bonnyrigg Public School.

As with most of Aboriginal Australia, the population is growing but it is a young population (around a third are children under the age of 14). They will add the next chapters to Fairfield's Aboriginal story.



5.0

Aboriginal Heritage in the Fairfield LGA

The history in the previous chapter outlined some of the main connections Aboriginal people have had with the Fairfield area over tens, hundreds and thousands of years. This section outlines the physical aspect of those associations – places, things and landscapes. Identifying this heritage aspect of Fairfield's Aboriginal history is a complex task. Existing records are dispersed and difficult to interpret and some information is held in the memories of Aboriginal people today and is not recorded in written form. It is important therefore to understand the accuracy and extent of existing information sources to appreciate what is known, has been lost, and what may yet be discovered. The discussion of sources in this section is followed by a review of the types of heritage items and places associated with the various periods of Fairfield's Aboriginal history (Section 5.2), which forms the basis for the proposed management framework discussion in Section 6.0.

5.1 Working Out What Remains

5.1.1 Existing Records and Registrations

The OEH AHIMS Register

The Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (the AHIMS Register) is the central New South Wales repository that compiles information on Aboriginal archaeological sites and other places of Aboriginal significance. Primarily, and particularly in the case of Fairfield LGA, it consists almost entirely of pre-contact archaeological sites rather than places of significance from after historical period. The AHIMS Register includes information on sites/places that has in some cases been gathered (and occasionally updated) over a considerable period of time (some recordings originally dating back to the mid-20th century), and derives from a variety of sources ranging from data provided by academic and professional archaeological practitioners, Aboriginal community stakeholders, to amateur listings and historical references contained in published documents and a variety of personal published and/or unpublished reminiscences.

As a consequence, the register can often contain considerable data errors and discrepancies about precise site location information, updated site descriptions and associated documentation that may be pertinent to any given site, and details about existing conditions of sites (whether for example they still survive and/or may have been destroyed in the past). Errors in registered site location information, along with other data inaccuracies often mean that reliance upon a simple 'search' of the AHIMS Register may occasionally be inherently flawed when preparing detailed Aboriginal cultural heritage management documents for the use as planning tools by local council's (and other statutory organisations) with the responsibility to protect and manage Aboriginal cultural heritage. For example in the current study several errors of site type were noted and corrected (e.g. sites with incorrect coordinates, placing them in the wrong position and sometimes the incorrect LGA).

The OEH requires agencies such as Councils who wish to hold Aboriginal site information for the purpose of management to be subject to an Aboriginal Heritage Information Licence Agreement

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(AHILA) between OEH and the applicant, preferably with the endorsement of relevant Local Aboriginal Land Councils. For the current study an AHILA was sought to allow the retention of relevant AHIMS Register data for management purposes.

The AHIMS Register was searched on 16/12/15 for an area around 1km larger than the LGA¹⁸ to include sites which may be erroneously listed outside of the LGA (see **Section 5.2.1**). These results were then refined through checking of AHIMS Register records and original site recordings to determine whether each site was within the Fairfield LGA, and which of those sites were within the Western Sydney Parklands. The result of this process revealed that 87 Aboriginal sites had been registered within the LGA (see **Appendix B1**). These sites were located during archaeological investigations associated with urban expansion which has resulted in over 40 studies partly or wholly within the LGA over the last 40 years. It is not currently possible to accurately determine how many sites have been destroyed subsequent to their registration on the AHIMS Register so it is not known how many, and which sites are still extant without a detailed review of each site recording and accompanying report and possibly ground-truthing each site (see **Section 5.1.4**).

The AHIMS Register also lists Aboriginal Places, determined under s84 of the NPW Act to have "special significance" to Aboriginal people (e.g. historical settlements or mythological sites). No such places are currently declared within the Fairfield LGA¹⁹.

The Australian Heritage Database

A search of the Australian Heritage Database (incorporating the Register of the National Estate)²⁰ was undertaken for Aboriginal heritage items within the Fairfield Local Government Area²¹. There are seven items listed that fall wholly or partly within the study area, none of which appear to be listed for their Aboriginal heritage values.

The State Heritage Register and Inventory

A search of the *Heritage Office State Heritage Register* revealed that there are currently 8 listed places within the Fairfield Local Government Area²². None are listed for their Aboriginal heritage values and at least one (Bonnyrigg House) has historical Aboriginal associations which are not currently acknowledged on the State Heritage Register (see **Section 5.2**). A search of the *Heritage Office State Heritage Inventory* revealed that there are currently 131 listed places within the Fairfield Local Government Area²³. None are listed for their Aboriginal heritage values.

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¹⁸ Two overlapping searches were undertaken using the GDA Datum. Search 1: Eastings 302000 - 315000, Northings 6244000 - 6256000. Search 2 Eastings 296500 - 302500, Northings 6247000 - 6256000.

¹⁹ Online search 11/2/16 (http://www.environment.nsw.gov.au/conservation/AboriginalPlacesNSW.htm) of Aboriginal Place declarations prior to 2001, search of NSW Government Gazette for more recent listings.

Note: on 11/2/2016 statutory references to the Register of the National Estate in the Environment Protection and Biodiversity Conservations Act 1999 and the Australia Heritage Council Act 2003 were repealed. The Register of the National Estate is therefore no longer a statutory heritage list, although it will continue to exist as an inventory of Australian heritage places that were registered between 1976 and 2007.

²¹ Online search 10/2/16.

²² Online search 10/2/16.

²³ Online search 10/2/16.



Museum Collections

Enquiries were made at the Australian Museum and Fairfield Museum to determine whether any Aboriginal objects from the Fairfield LGA were held in their collections. The Australian museum holds records for 4 stone axes from 'Fairfield' but no more specific information is held about their provenance (see **Appendix B4**). The records suggest that these axes are currently on loan to Fairfield Museum, however images of the axes held by Fairfield Museum suggest that only three of the four are held there, and a fourth axe in the Fairfield Museum collection is not from the Australian Museum. Fairfield Museum does not hold any additional Aboriginal artefacts from the Fairfield area.

The Australian Museum also holds a number of flaked stone artefacts collected by archaeologist Michael Guider in the 1980s and 1990s from several locations around the LGA. The catalogue descriptions contain little information, but it can be determined that some of the artefacts were collected from registered Aboriginal sites, while others may represent additional site locations that are not currently registered on AHIMS. Resolving this issue would require a detailed examination of the collected artefacts and accompanying documentation which was considered outside the scope of the current study.²⁴

5.1.2 Previous Research

Knowledge of Aboriginal heritage and history within the Fairfield LGA has largely come to light through archaeological/heritage and historical/genealogical research since the 1970s.

Archaeological Research

Locating up-to-date documentation detailing the results of past Aboriginal archaeological and cultural heritage research and investigations in many parts of NSW is often difficult. There is currently no systematic way to accurately locate and access records of all Aboriginal cultural heritage studies that may have been completed and reported in recent times for any given study area.

The OEH AHIMS Register holds a catalogue of archaeological survey and excavation reports that have been lodged with this organisation over time, but this is presently incomplete and can best be searched a combination of geographical and keywords searching, as the study area of some reports has not been digitised. Survey and assessment reports which did not result in the registration of a new site and/or the re-recording of a previously known Aboriginal site and do not have an obvious suburb/place name in its title cannot readily be found on the AHIMS Register. Resolving this issue therefore generally requires searching through other available catalogued reports in the hope of identifying references that may be included for other studies that may have undertaken in any given area. For the current project, the OEH AHIMS Register *Docminder System* was searched for reports with keywords including all suburb names in the LGA.

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²⁴ A similar exercise was undertaken by MDCA for an area east of the Fairfield LGA in 2014 and was a lengthy and sometimes inconclusive process.

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Archaeological studies have been undertaken in the Fairfield area for over 30 years, closely related to the enactment of policy and legislative requirements for Aboriginal heritage investigations in planning contexts (see **Section 6.1.2**). They can be summarised as follows:

- In the 1980s, there were few archaeological investigations conducted in the Fairfield area for
 infrastructure projects and residential developments. They resulted in the identification of
 several open campsites and isolated stone artefacts, often associated with waterways
 (Hanrahan 1981; McDonald and Rola-Wojciechowski 1985; Dallas and Hanckel 1985; Byrne
 and Du Cros 1985). Most sites were found to be in disturbed areas such as exposed tracks and
 often deposited in secondary contexts.
- Two studies were undertaken at Council's request in the late-1980s. Both were undertaken by a team of Aboriginal students under the guidance of archaeologist David Bell as part of The Gandangara Eel Dreaming Project. This project was an Aboriginal initiative run out of the Gandangara Local Aboriginal Land Council at Canley Vale and funded by the Liverpool College of TAFE. It was an educational program that aimed to give participants a background on the Aboriginal heritage of the Western Sydney area as well as basic skills in Aboriginal site identification and recording. The first study (Cole et. al 1988) involved a survey of Orphan School Creek that resulted in the identification of three open campsites, two scarred trees and one site comprising both an open campsite and scarred tree. The second study (Mathews et. al 1989) a year later focused on the Horsley Park rural lands area at the western end of the LGA. During the survey two open campsites, one scarred tree and two isolated finds were recorded. Most of these were found on the flood plain and it was considered likely that sparse but consistent evidence of Aboriginal occupation would be present across the rural lands, particularly along the margins of Ropes Creek and several areas of potential were identified. It was recommended that Council consider heritage impact assessment prior to development proposals in areas which are known to have such potential. The Gandangara Eel Dreaming Project appears to have finished after this, as archaeologist David Bell moved to another job.
- A number of investigations during the 1990s and 2000s were initiated by the on-going construction of the Western Sydney Portal, the M7 Motorway and the Liverpool-Parramatta Busway (Brayshaw and Rich 1995, 1996; Mills 1998, 1999; Central West Archaeological and Heritage Services 2001; Haglund and Associates 2007). These large infrastructure projects have provided a window into the distribution of sites across the Fairfield LGA although producing results akin to previous studies. Test excavations commonly resulted in low-density assemblages of stone artefacts, occasionally with areas of artefact concentrations which led to salvage excavation (AMBS 2002a & b; Haglund and Associates 2007).
- A number of other studies during the 1990s and 2000s were associated with infrastructure such as quarries, as well as residential and industrial subdivisions and produced similar findings (Dallas and Navin 1991; Navin 1993; Curran 1994; Dallas 1994; Curran 1997, Navin Officer 2002; Central West Archaeological and Heritage Services 2003; Hyder Consulting 2005; Godden MacKay Logan 2007; Kelleher and Nightingale 2015). Open campsites and isolated stone artefacts again dominate the types of sites found and again. Sites were often found to be associated with the course of Hinchinbrook, Ropes, Reedy and Orphan School Creeks and their tributaries (Appleton 2002; Australia Museum Business Consulting 2004;

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Godden MacKay Logan 2007; Therin 2007; Australia Museum Consulting 2013). Test and salvage excavations during this time have also led to the identification of more complex sites such as the large artefact scatters at the Sydney International Equestrian Centre (ERM 1997; Richards 2014) and at Oakdale Central Industrial Estate (GML 2013).

• Archaeological evidence of the use of the Sydney area by Aboriginal people after the arrival of Europeans remains under-reported as many archaeologists specialise either in pre-contact Aboriginal archaeology or European historical archaeology and overlook historical Aboriginal archaeology. An interesting exception to this trend occurs as a cluster of post-contact archaeological sites to the south of Prospect Reservoir at the northern edge of the Fairfield LGA, within Sydney Water Land (Smith 1989; Donlon and Comber 1991; Ngara Consulting 2003; Goward 2011). This cluster of sites is fairly unique in the larger Sydney context as post contact sites are rare and often isolated (Irish and Goward 2012). This particular area is also significant as it is less than 1km southwest of Prospect Hill, the site of a notable Aboriginal resistance event. The post-contact sites at Prospect comprise both stone tools as well as glass which has been modified and used in a similar way to stone. As glass was only introduced into the Aboriginal economy post European settlement, it gives us a unique insight into how Aboriginal people adapted to changing circumstance. Although many of the recordings are ambiguous (e.g. Smith 1989), making it difficult to determine the actual number of sites here, it is a significant phenomenon in the broader Sydney context.

The vast majority of these studies have been related to relatively small scale development projects and provide little information about the broader context of the Aboriginal use of the region. The difficulty of integrating these small scale results into a larger model is due to the fact there has been no comprehensive review of the results of the last three decades of archaeological research in the Cumberland Plain region. The closest and most applicable is a recent review of the results of a number of excavations in the Rouse Hill development area (White & McDonald 2010), the findings of which are reviewed in **Section 5.2.1** and provide an applicable guide to what precontact archaeology is likely to occur in the Fairfield area. A regional Aboriginal heritage review was commissioned in the early 2000s by the OEH (then DECC) and RTA in relation to the construction of the M7 Motorway. The report was never completed, and the preliminary draft sighted by the authors requires much further work and is in any case now very outdated.

Historical Research

There have been three major past areas of historical research that are of relevance to the current study, and have either identified Aboriginal heritage sites or provided valuable context in which these can be understood. These are:

• The recent commissioned history of Fairfield undertaken by Dr Stephen Gapps (Gapps 2010). The theme of this book is the many cultures that have contributed to the history of the Fairfield area from the earliest Aboriginal occupation until the present day. The book contains a thorough account of the Aboriginal use of the area up until the mid-19th century, identifying places of significance and the cultural context of the Aboriginal groups who used the local area. From the 1850s to 1950s, there is little information about the Aboriginal use of the area, which reflects the fragmented archival record as much as it does the actual presence or absence of

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Aboriginal people. Gapps also discusses a number of historical campsites of Aboriginal people used in the mid-20th century, but as he notes, the accounts of these often come from one individual and are seemingly at odds with the recollections of non-Aboriginal residents. This is discussed further in **Section 5.2.3**. Earlier historical works about the Fairfield area (e.g. George 1991, Pittard 1990) also contain valuable historical context, though do not identify specific Aboriginal places.

- A substantial amount of archival research has been undertaken over the last thirty years in relation to the history of the descendants of Aboriginal woman Maria Lock and other early colonial Aboriginal identities and their descendants. The research was been undertaken largely as a voluntary exercise by local historical researchers (most notably Dr James Kohen) first as a matter of personal interest and from the 1990s as part of research in support of a Native Title claim over much of the Sydney region, and focusses mainly further north on the Cumberland Plain than the Fairfield LGA. It provides a broader context for the Fairfield area, though some serious errors of historical and genealogical interpretation have been identified as part of reviews of this work in an academic and Native Title context (Flynn 2001, Ward 2001, Waters 2002, Wood & Williams 2001:34; see also Wilkins & Nash 2008).²⁵
- There have been a couple of studies into the massive post-war Aboriginal migration into western Sydney (e.g. Morgan 2006, Cowlishaw 2009, and see also Goodall & Cadzow 2009). These provide a valuable regional context and contain personal accounts of Aboriginal people (see also Langford 1988), though they contain no information specifically about the Fairfield LGA. Some information is available through oral histories undertaken over the past decade (e.g. Fairfield City Museum and Gallery 2007 and the Fairfield Oral History project²⁶). The focus of these histories is generally social history rather than the identification of significant places, but they have proven a valuable starting point for discussions with Aboriginal community members during the current study.

5.1.3 Research for the Current Study

There are gaps in our understanding of the Aboriginal history and heritage of the Fairfield area. These gaps are not easily nor quickly filled and much is beyond the scope of the current study, particular in relation to the fragmentary archival record of the late-19th and early-20th century use of the area by Aboriginal people. The focus of research for the current study was therefore on identifying the gaps through review and providing examples of sources and perspectives which need to be taken further in order to provide a comprehensive Aboriginal history of the area. Archaeological research for the project involved a review of current research and reporting as well as some field inspection to check the accuracy and condition of a sample of existing registered sites. Archival research for the study has sought to review the contents of local and other archives and identify potentially relevant information, and has also drawn on previous research by MDCA

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²⁵ With the exception of Wilkins & Nash 2008 this research is unpublished but has been sighted by the authors.

http://fairfieldcity.oralhistory.com.au/ (accessed 15/2/2016).



associates into Aboriginal historical and archaeological associations into the study area (e.g. Irish 2010, Irish 2011, Irish & Goward 2012).

The following repositories have been consulted, though not all potentially relevant records were examined at each:

- · NSW State Library (Mitchell Library and State Reference Library)
- State Records NSW
- Fairfield Local Studies Collection at the Whitlam Library in Cabramatta (including images, unpublished reports, Council minutes, vertical files and published books)
- · Australian Museum Aboriginal and Torres Strait Islander Collection
- Fairfield City Museum & Gallery (including review of recent Talk the Change/Change the Talk Aboriginal history exhibition)
- · OEH AHIMS Register (including Archaeological Reports Catalogue)

The following internet or digitised resources were examined:

- Australian Heritage Database
- Mitchell Library InfoKoori Database
- · National Library of Australia Trove
- Royal Australian Historical Society Journal online catalogue
- State Heritage Inventory
- State Heritage Register
- Australian Institute of Aboriginal & Torres Strait Islander Studies Library and Audio-Visual Collection catalogue

5.1.4 What Has Been Lost

Before turning to consider what has been recorded about Aboriginal heritage in the LGA and what unrecorded heritage may also remain, it is important to consider the following points about what has been lost:

- The fact that the known Aboriginal archaeological sites within the LGA comprise almost exclusively deposits of stone artefacts is largely a factor of archaeological preservation. It does not at all reflect the activities of Aboriginal people in the past. It is simply that other remains of these activities (such as wooden tools, bones, seeds, bark shelters and most scars from bark removal on trees) have not survived either due to natural decay or historical impacts.
- More places await discovery but much has been lost to historical impacts.

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- Many of the Aboriginal associations which gave pre and post-contact Aboriginal places their significance to Aboriginal people have been lost. This knowledge was largely not recorded, and though some information has been passed down through generations, much as not survived.
- The loss of cultural knowledge about some places does not mean that they have no significance to contemporary Aboriginal communities, but the significance which may be attributed to these places today, which is important in its own right, is not necessarily the same as the significance that these places previously held. 'Re-connection' with places of past significance to Aboriginal ancestors is an ongoing and evolving process (e.g. Harrison 2003).
- The destruction or removal of the physical evidence of Aboriginal use of a place does not necessarily remove the Aboriginal social significance of that place.

It is then crucial that we act to preserve what remains, but also to *understand* its significance, and recognise that the values associated with particular places can change over time.

5.2 Aboriginal Heritage in Fairfield LGA

This section identifies some of the places of Aboriginal heritage significance within the Fairfield LGA. As noted in previous sections, there is more research, particularly the oral memory of contemporary Aboriginal communities, that could identity further places of Aboriginal significance, particularly from the mid to late twentieth century. The places described below are summarised in **Appendix B1** and their approximate locations are shown in **Figure 5.1**. Full records of these places, including map coordinates and/or cadastral information has been provided to Fairfield City Council as part of the management system outlined in **Section 6.0**.

5.2.1 First Occupation to early 1800s

Archaeological Sites

There are currently 87 registered Aboriginal sites in the AHIMS Register within Fairfield LGA. **Table 5.1** shows the relative frequency of site elements (as some sites can contain more than one element). This shows that almost all (93%) of the recorded and registered evidence of past Aboriginal occupation is in the form of surface scatters or subsurface deposits of stone artefacts, or areas in which the latter are suspected of occurring (Potential Archaeological Deposits) (**Figure 5.1**). Over 90% of sites contain less than 10 recorded artefacts, which reflects the relative frequency of 'surface scatters' of artefacts, but also masks the fact that many recorded sites have not been excavated and may contain many more artefacts beyond those currently exposed on ground surfaces. In addition, several stone axes have been located over the last century along the major creeks within the LGA (see **Figure 5.9**).

Less than 5% of sites are scarred trees, reflecting their limited survival as a result of natural attrition and historical land clearing. It should also be noted that many trees which have possibly been culturally modified are recorded and registered as a precaution, and the true number of such sites is probably even less than currently appears on the AHIMS Register. During the course of the study, several possible scarred trees were brought to our attention, but consideration of commonly used criteria showed that these are unlikely to have been scarred by Aboriginal people (e.g. Irish 2004).

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Figure 5.1. Registered Aboriginal Sites within the Fairfield LGA.

 ${\bf Note: Green \ shaded \ area \ represents \ Western \ Sydney \ Parklands \ and \ Sydney \ Water \ lands.}$

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Table 5.1. Relative frequencies of site elements from Fairfield LGA.

Site Type	Excluding WSP & Sydney Water Land	Whole of LGA
Open Campsite/ Isolated Find	38 (84%)	78 (90%)
Open Area of Potential Archaeological Deposit (PAD)	3 (7%)	3 (3%)
Scarred Tree	4 (9%)	6 (7%)
Total Number (%) of Elements	45 (100%)	87 (100%)

According to current information from the AHIMS register, only 2 of the 87 presently recorded sites have been destroyed. It appears this information is not up to date as it is known that a significant number of sites have been destroyed under a permit following projects such as the M7 Motorway and the Liverpool to Ashfield Pipeline. The result of this is that very few sites are left outside of creek reserves. The distribution of sites is shown in **Figure 5.1**. Although there is a broad correlation with watercourses (see discussion below), the distribution is just as much related to areas where sites have been looked for (urban and other development and infrastructure over the last 40 years) or not (developments prior to that time during which Aboriginal sites were not recorded). Some examples of surviving sites are shown in **Figure 5.2 to Figure 5.9**. As these show, Aboriginal sites, particularly stone artefacts, have survived even in highly disturbed locations such as the median strip of the Hume Highway, or along channelised creek courses. As all Aboriginal objects are protected under the *National Parks & Wildlife Act 1974*, irrespective of their condition, this suggests that a cautious approach to assuming the absence of Aboriginal sites in areas of historical disturbance.



Figure 5.2. Scarred tree along Orphan School Creek at Canley Vale (AHIMS #45-5-0729).

Stone artefacts were found near the tree when it was first recorded in 1988, grass cover has now obscured these.

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Figure 5.3. Location of AHIMS #45-5-1099 in the middle of the Hume Highway at Carramar.



Figure 5.4. Silcrete and quartz artefacts still present at AHIMS #45-5-1099 in the middle of the Hume Highway at Carramar.



Figure 5.5. Location of AHIMS #45-5-2811 along Orphan School Creek at Prairiewood.

Test excavations retrieved over 350 stone artefacts from this site and several other sites are located nearby. No artefacts are currently visible.

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Figure 5.6. Location of AHIMS #45-5-3697 along Orphan School Creek at Canley Vale.

The site was recorded by an amateur archaeologist in the 1990s.



Figure 5.7. Silcrete and quartz artefacts from AHIMS #45-5-3697.

Although artefacts were most likely collected from this site at the time of recording in the 1990s, others have since eroded to the surface, suggesting that further undocumented artefacts are also present.



Figure 5.8. Glass artefact from AHIMS #45-5-0866.

This artefact is part of a scatter or glass artefacts within Sydney Water lands near Prospect Reservoir. It represents relatively rare archaeological evidence ongoing occupation of the area in the early colonial period (see Goward 2011).

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Gallery 2016.



Figure 5.9. Stone axes in museum collections from the Fairfield area.

Photo courtesy Fairfield City Museum and

This information shows that sites within the study area overwhelmingly comprise stone artefacts in open contexts. This is consistent with the prevalence of this site type across the Cumberland Plain. Site types such as rock shelters, engravings and grinding grooves are not presence within the study area. This is due to the lack of geological features such as rock outcrops that would provide suitable structures and surfaces for the creation and use of these sites.

It is also clear that sites in the Fairfield LGA are commonly found along creeks and their tributaries. This is also a common trend in site distribution as areas within proximity to reliable water are known to have been more intensively used by Aboriginal people and are also more commonly preserved as environmental conservation zones and green spaces. Sites area also commonly recorded occur in areas subject to intensive archaeological investigation due to assessment prior to large-scale infrastructure and development, as is also consistent with general trends in the broader Sydney context.

In addition to archaeological sites, there are potentially other places which retain Aboriginal cultural significance from this period. No specific places were identified during the course of the current study, such a burials or ceremonial grounds. However, the Devils Back Ridge, extending through the Western Sydney Parklands south from Prospect Reservoir is likely to have been a major Aboriginal walking track through the area (Gapps 2010:86-87). As such it is likely to have had places of cultural significance along its course.

5.2.2 1800s to 1950s

The Aboriginal history of this period encompasses a range of places which reflect the effects of early colonial conflict, government policies towards Aboriginal people, inter-cultural relations, independent Aboriginal living, death and burial. For the most part, specific places identified with this history have mainly been recorded outside of, but close to, the Fairfield LGA. For example early sites of conflict at Prospect are located to the north-east of the LGA, a land grant lived on by western Sydney woman Maria Lock and her family from around 1833 to 1844 is located two kilometres to the south of the LGA, and a number of historical associations are documented in the Liverpool area to the immediate south-east.

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Aboriginal people are likely to have continued to live in settlements at specific places within the LGA, but these specific locations have yet to be identified. For example, we know from across western Sydney that Aboriginal people often lived on the large properties and often developed relationships with the European families who lived there (Irish 2010, Irish *in press*). Evidence of these relationships was sought in relation to several properties within the LGA which were owned by the same families throughout much of the nineteenth century (e.g. Abbotsbury and Horsley Park), but no specific information was found. We also know that Aboriginal people such as Sarah Castles in the 1840s were living along Cabramatta Creek in the 1840s, but we do not know exactly where. So whilst it is likely that places with Aboriginal associations from the 19th and early 20th centuries exist, they are only likely to be uncovered through careful research, noting the forensic detail needed to ensure that a person and their ancestry and genealogy is not mistakenly pieced together.

Male Orphan School at Bonnyrigg

The only definite place associated with this period of Fairfield's Aboriginal history is the Male Orphan School at Bonnyrigg. Aboriginal children were present at the school for some of the period of its use from the 1820s to 1850. Bonnyrigg House was the central home within the orphan school complex (**Figure 5.11**). Most of the paddocks of the associated farm are now part of the surrounding residential suburbs, however the house and around 0.5 hectares of land comprising Lots 21 DP791849 and Lot 210 DP794462 form part of a State Heritage Register listing of Bonnyrigg House (SHR #281).²⁷ A further 1.3 hectares comprising Lots 10-19 in DP1178857 (formerly Lot 1in DP845279) to the north and west of these lots is also listed for its historical archaeological values on the Fairfield LEP Heritage Schedule (Item #I01390). Neither of these local or state heritage listings reference the presence of Aboriginal people at the Male Orphan School, however these existing protections ensure that these associations are likely to be considered in the event that any proposed future impacts in these areas.



Figure 5.10. Bonnyrigg House, site of the former Male Orphan School.

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²⁷ see http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5045030 for listing.



Figure 5.11. Lansdowne Bridge at Lansvale.

Lansdowne Bridge

The only other European historical structure with definite Aboriginal associations from this period is the Lansdowne Bridge over Prospect Creek on the Hume Highway at Lansvale, where Aboriginal people were involved in both the opening in 1836 and its centenary in 1936 (**Figure 5.11**). The bridge is already provided with heritage protection on the State Heritage Register (SHR #1472) and LEP Heritage Schedule (Item #1570211) for its European historical and architectural values.²⁸ Although these listings do not note the Aboriginal presence at the opening and centenary, these associations can potentially be explored in relation to any assessments required in relation to future impacts to the bridge.

5.2.3 1950s to Today

The Aboriginal history of this period encompasses largely places associated with resettled Aboriginal people from other areas of region and state. They are largely places associated with the establishment of services as well as places of congregation for social and cultural purposes. There are many more places from this period which could potentially be considered as having Aboriginal heritage significance, but this will be dependent upon further information and input from the Aboriginal community. This also applies to asserted Aboriginal camps along Cabramatta and Prospect Creeks in the 1950s and 1960s, which are discussed above, and at more length in Gapps' book (2010:333-340). As discussed above, further information is needed to determine exactly where these camps where and how they functioned, and whether they can be considered specifically Aboriginal settlements or had a broader range of occupants.

As discussed in **Section 4.0**, with the exception of the Bonnyrigg area in the 1980s and 1990s, the Fairfield LGA has been a place to live rather than a geographic centre for the Aboriginal community. Instead, nearby areas such as Green Valley and Liverpool have tended to be where Aboriginal people gravitated towards, and hence the location of service and social organisations. The following places with Aboriginal associations from this period are listed in broad chronological order based on their time of use.

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²⁸ See http://www.environment.nsw.gov.au/heritageapp/ViewHeritageItemDetails.aspx?ID=5051374 for listing.



Gandangara Local Aboriginal Land Council Building, Canley Vale

A residential house at 15 Delamere Street in Canley Vale was the first home of the Gandangara Local Aboriginal Land Council from around 1984 (Figure 5.12). Throughout the 1980s the property was a social and administrative hub for the Aboriginal community of Fairfield and Liverpool, and was remembered in this way by several people consulted during this study. It housed an Aboriginal children's playgroup and the CDEP in the 1980s, and the Koori Youth program in the 1990s (Anon 1985, 1993). In the early 1990s the Land Council took over its current premises in Moore St, Liverpool, after the NSW Aboriginal Land Council moved from there to its current office at Parramatta. The Delamere Street building is still owned by the Land Council but is now a residential house. It is still regarded as a significant place in the local Aboriginal community.

Urimbirra Aboriginal and Torres Strait Islander Corporation building, Bonnyrigg

Urimbirra Aboriginal and Torres Strait Islander Corporation was set up in the late 1980s to meet the needs of the substantial number of indigenous people who had been moving into the new social housing area of Bonnyrigg since the early 1980s. It occupied a building near the school and shopping centre at 6 Bonnyrigg Avenue on a 99 year lease (see **Figure 5.13**). Urimbirra was a significant community hub throughout the 1990s and until the early 2000s, running education, training and childcare programs. During their tenure, Urimbirra was responsible for planting the trees in the current garden. When Urimbirra closed, the building was offered to other tenants and no longer houses any Aboriginal organisations.

Bonnyrigg Public School, Bonnyrigg

Since the 1980s, Bonnyrigg Public School has been a focal point for Aboriginal people in the local area. It has functioned as more than just a school, with an Aboriginal Education Officer and programs ensuring that Aboriginal children and their families are welcomed and supported at the school. The school grounds contain several Aboriginal artworks, and now hosts a cultural learning room for Aboriginal students (see **Figure 5.14** and **Figure 5.15**). For approximately six and a half years an Aboriginal playgroup called Lil Possums has operated within the school each week, which has served to bring parents together and familiarise young children with the school before they attend. Although many Aboriginal people have moved away from the Bonnyrigg area over the past 15-20 years, some ex-students bring their own children from far afield to Bonnyrigg Public School because of the established support networks in place there, and some current students are the third generation of their families to attend the school. The school is highly regarded by Aboriginal families past and present as a significant place to Aboriginal people currently in the area and to the history of Aboriginal people at Bonnyrigg over the past 35 years.

Yvonne Clayton's House, Bonnyrigg

Yvonne Clayton was a long term resident and community Elder in Bonnyrigg from 1981 until her passing in 2013. She was involved in many community activities and her house at 30 Bradfield Crescent was both a meeting place and refuge for Aboriginal people (see **Figure 5.16**). The house is remembered fondly by many Aboriginal people today as a local landmark.

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Yvonne Clayton's Tree, Bonnyrigg

In the 1990s, Council proposed to cut down a mature gum tree in a reserve several houses down from Yvonne Clayton's house (see **Figure 5.17**). Many community members recall Yvonne's vocal and active leadership of a campaign against this proposal, which was eventually successful. The fight to save the tree is remembered today as a testament to Yvonne's will and determination. ²⁹ Yvonne's actions have preserved the tree for current and future residents, and it serves as a kind of memorial to Yvonne in the local Aboriginal community.



Figure 5.12. The former Gandangara Local Aboriginal Land Council office at Canley Vale.



Figure 5.13. The Urimbirra building at Bonnyrigg.

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²⁹ See this recent example http://www.newleafcommunities.com.au/news.asp?pid=25&id=106. Further information about these events were sought through a search of local newspapers from the period but no additional details were located.

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Figure 5.14. Bonnyrigg Public School.

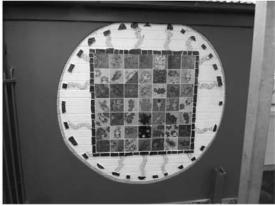


Figure 5.15. Aboriginal artwork in the Bonnyrigg School Playground.

The artwork was produced in 2013 by parents in the Little Possums Playgroup.



Figure 5.16. The late Yvonne Clayton's house at Bonnyrigg.

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Figure 5.17. The tree saved by Yvonne Clayton's campaigning along Bradfield Crescent at Bonnyrigg.

5.3 Summary of Identified Aboriginal Heritage Places

Based on the review of history and heritage in this and the previous section, the following places have been identified as Aboriginal heritage places within the Fairfield LGA, and are incorporated into the Aboriginal heritage management system outlined in **Section 6.2**.

Table 5.2. Identified Aboriginal heritage places within the Fairfield LGA.

Place Names	Type of Place	Current Heritage Listings
Cowpasture Road	Aboriginal site - Open Campsite	AHIMS #45-5-0273
Bosley Park	Aboriginal site - Open Campsite	AHIMS #45-5-0274
Orphan School Creek 6	Aboriginal site - Open Campsite,Scarred Tree	AHIMS #45-5-0729
Orphan School Creek 5	Aboriginal site - Open Campsite	AHIMS #45-5-0730
Orphan School Creek 4	Aboriginal site - Open Campsite	AHIMS #45-5-0731
Orphan School Creek 3	Aboriginal site - Scarred Tree	AHIMS #45-5-0732
Orphan School Creek 2	Aboriginal site - Open Campsite	AHIMS #45-5-0733
Orphan School Creek 1	Aboriginal site - Scarred Tree	AHIMS #45-5-0734
Carawood Park Caramar	Aboriginal site - Isolated Find	AHIMS #45-5-0740
GPR 1 (Prospect Reservoir)	Aboriginal site - Open Campsite	AHIMS #45-5-0765
PR 2 (Prospect Reservoir)	Aboriginal site - Open Campsite (glass artefacts)	AHIMS #45-5-0766
PR 3 (Prospect Reservoir)	Aboriginal site - Open Campsite (glass artefacts)	AHIMS #45-5-0767
PR 4 (Prospect Reservoir)	Aboriginal site - Open Campsite	AHIMS #45-5-0768

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Place Names	Type of Place	Current Heritage Listings
Scarred Tree Prospect Reservoir	Aboriginal site - Scarred Tree	AHIMS #45-5-0800
PB1 (Prospect Reservoir)	Aboriginal site - Open Campsite	AHIMS #45-5-0801
PB2 (Prospect Reservoir)	Aboriginal site - Open Campsite	AHIMS #45-5-0802
PB3 (Prospect Reservoir)	Aboriginal site - Open Campsite	AHIMS #45-5-0803
PB4 (Prospect Reservoir)	Aboriginal site - Open Campsite	AHIMS #45-5-0804
PA1;Prospect Reservoir;	Aboriginal site - Open Campsite	AHIMS #45-5-0805
PA2;Prospect Reservoir;	Aboriginal site - Open Campsite	AHIMS #45-5-0806
Prospect Tunnel;PT 1;	Aboriginal site - Open Campsite	AHIMS #45-5-0836
TPP 1;Prospect Reservoir;	Aboriginal site - Open Campsite	AHIMS #45-5-0866
TPP2;Prospect Reservoir;	Aboriginal site - Scarred Tree	AHIMS #45-5-0867
PP1;Prospect Reservoir;	Aboriginal site - Open Campsite	AHIMS #45-5-0868
Abbotsbury 1;	Aboriginal site - Open Campsite	AHIMS #45-5-0920
Abbotsbury 2;	Aboriginal site - Open Campsite	AHIMS #45-5-0921
Abbotsbury 3;	Aboriginal site - Open Campsite	AHIMS #45-5-0922
Abbotsbury 4;	Aboriginal site - Open Campsite	AHIMS #45-5-0948
Abbotsburry 4 - duplicate of 45- 5-0948	Aboriginal site - Open Campsite	AHIMS #45-5-0980
Hume Highway;	Aboriginal site - Open Campsite	AHIMS #45-5-1099
SCR Abbotsbury	Aboriginal site - Open Campsite	AHIMS #45-5-2021
Cowpasture Road;Bossley Park;	Aboriginal site - Open Campsite	AHIMS #45-5-2022
PGH2;Monier PHG;	Aboriginal site - Isolated Find	AHIMS #45-5-2046
PGH1;Monier PGH;	Aboriginal site - Isolated Find	AHIMS #45-5-2057
FCF1;	Aboriginal site - Open Campsite	AHIMS #45-5-2354
IF10	Aboriginal site - Isolated Find	AHIMS #45-5-2476
IF11	Aboriginal site - Isolated Find	AHIMS #45-5-2477
OSC-IF-1	Aboriginal site - Isolated Find	AHIMS #45-5-2523
OSC-IF-2	Aboriginal site - Isolated Find	AHIMS #45-5-2524
CPC-OCS-1	Aboriginal site - Open Campsite	AHIMS #45-5-2535
CPC-OCS-1	Aboriginal site - Open Campsite	AHIMS #45-5-2536
DLC2	Aboriginal site - Isolated Find	AHIMS #45-5-2563
DLC1	Aboriginal site - Open Campsite	AHIMS #45-5-2567
EC8,	Aboriginal site - Isolated Find	AHIMS #45-5-2582
OSC-OS-1/PAD 3	Aboriginal site - PAD	AHIMS #45-5-2650
PAD-OS-7	Aboriginal site - Open Campsite	AHIMS #45-5-2721
WSO-IF-1	Aboriginal site - Open Campsite	AHIMS #45-5-2795
WSO-IF-2	Aboriginal site - Open Campsite	AHIMS #45-5-2796
OSC-OS-1	Aboriginal site - Open Campsite	AHIMS #45-5-2811

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Place Names	Type of Place	Current Heritage Listings
Glen Elgin	Aboriginal site - Open Campsite	AHIMS #45-5-2819
Fairfield GC	Aboriginal site - Open Campsite	AHIMS #45-5-2820
HP1	Aboriginal site - Open Campsite	AHIMS #45-5-2857
DTAC 1	Aboriginal site - Open Campsite	AHIMS #45-5-2859
DTAC 2	Aboriginal site - Open Campsite	AHIMS #45-5-2860
DTAC 3	Aboriginal site - Open Campsite	AHIMS #45-5-2861
HP 2	Aboriginal site - Open Campsite	AHIMS #45-5-2862
A-IF-1	Aboriginal site - Open Campsite	AHIMS #45-5-2884
A-IF-2	Aboriginal site - Open Campsite	AHIMS #45-5-2885
A-OS-1	Aboriginal site - Isolated Find	AHIMS #45-5-2886
Clear Paddock Creek	Aboriginal site - Open Campsite	AHIMS #45-5-2911
Horsley Dr PAD	Aboriginal site - PAD	AHIMS #45-5-3082
PGH3	Aboriginal site - Open Campsite	AHIMS #45-5-3095
OSC 1	Aboriginal site - Open Campsite	AHIMS #45-5-3269
PC1	Aboriginal site - Open Campsite, PAD	AHIMS #45-5-3272
Oakdale IF 1	Aboriginal site - Isolated Find	AHIMS #45-5-3381
Oakdale Campsite 2	Aboriginal site - Open Campsite	AHIMS #45-5-3383
Oakdale Campsite 6	Aboriginal site - Open Campsite	AHIMS #45-5-3387
A-OS-2 (Liverpool)	Aboriginal site - Open Campsite	AHIMS #45-5-3631
WR1 (Prospect)	Aboriginal site - Open Campsite	AHIMS #45-5-3684
JP 1 (Canley Vale)	Aboriginal site - Open Campsite	AHIMS #45-5-3697
Prospect Pipehead (PP) 3	Aboriginal site - Open Campsite	AHIMS #45-5-3952
Carramar ST/ Marsden Park Artefact Scatter	Aboriginal site - Scarred Tree	AHIMS #45-5-4301
Oakdale Central 1	Aboriginal site - Isolated Find	AHIMS #45-5-4327
Oakdale Central 2	Aboriginal site - Isolated Find	AHIMS #45-5-4328
Oakdale Central 3	Aboriginal site - Isolated Find	AHIMS #45-5-4329
Oakdale Central 4	Aboriginal site - Isolated Find	AHIMS #45-5-4330
Site within Steeplechase Track	Aboriginal site - Open Campsite	AHIMS #45-5-4488
The Horsley Drive IF 1	Aboriginal site - Open Campsite	AHIMS #45-5-4677
The Horsley Drive IF 2	Aboriginal site - Open Campsite	AHIMS #45-5-4678
The Horsely Drive AFT 7	Aboriginal site - Open Campsite	AHIMS #45-5-4679
The Horsley Drive AFT 8	Aboriginal site - Open Campsite	AHIMS #45-5-4680
The Horsley Drive AFT 1	Aboriginal site - Open Campsite	AHIMS #45-5-4681
The Horsley Drive AFT 2	Aboriginal site - Open Campsite	AHIMS #45-5-4682
The Horsley Drive AFT 3	Aboriginal site - Open Campsite	AHIMS #45-5-4683
The Horsley Drive AFT 4	Aboriginal site - Open Campsite	AHIMS #45-5-4684

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Place Names	Type of Place	Current Heritage Listings
The Horsley Drive AFT 6	Aboriginal site - Open Campsite	AHIMS #45-5-4685
The Horsley Drive AFT 5	Aboriginal site - Open Campsite	AHIMS #45-5-4686
Gandangara LALC building	Aboriginal community and services	None
Urimbirra Aboriginal and Torres Strait Islander Corporation building	Aboriginal community and services	None
Bonnyrigg Public School	School and Aboriginal community hub	None
Yvonne Clayton's House	Private house	None
Yvonne Clayton's Tree	Marker of historical event	None
Male Orphan School house and surrounds	Government Institution	SHR #281, SHI #I01390

5.4 What Else May Remain?

The Aboriginal heritage management system outlined in **Section 6.0** is based on a review of what is known about the Aboriginal history and heritage of the Fairfield LGA and a consideration of what further as-yet undocumented places may also occur. In particular, as most of the physical evidence of past Aboriginal use in the LGA is likely to be in the form of pre-contact archaeological remains such as stone artefacts, it is important to outline the thinking behind the assessment of which areas may be considered to retain Aboriginal archaeological sensitivity.

5.4.1 Pre- and Early Contact Archaeological Sites

On the basis of over 30 years of archaeological survey and excavation across the Cumberland Plain, correlations have been noted in site distribution which may help determine both where campsites may occur and also the likely density and type of stone artefacts and hence range of past activities which may be represented in different locations (e.g. JMcDCHM 1999:19-21, White & McDonald 2010). This and other research suggests that:

- archaeological evidence in Fairfield LGA will mainly consist of stone artefacts on and/or below
 the current ground surface. Occasionally these will be associated with features such as
 hearths or stone heat treating pits. Scarred trees may also be found though these will be very
 rare and are often incorrectly recorded due to uncertainties about cultural origin and age (Irish
 2004).
- most sites will date to the last 3,000 years or so and possibly more recently than this.
- Aboriginal people utilised all elements of the landscape from ridgetops to minor creeks to major creek confluences but the type and density of stone artefacts at campsites varies with the permanence of available freshwater. For example the highest densities of artefacts have been found 50-100m from the banks of permanent streams whereas upper creek catchments and minor ridgetops have sparser and less continuous evidence. Represented activities also vary, with greater frequency of stone knapping more likely to take place at the former locations. In other words flat areas close to permanent water but above flood zones were,

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perhaps unsurprisingly, most frequently used. Most archaeological evidence within the Fairfield LGA is likely to occur within 200m of watercourses and major ridgelines.

5.4.2 Historical Aboriginal Places

In general predictive statements cannot be made about places likely to have historical Aboriginal associations as rapidly changing historical circumstances preclude the kind of modelling that is possible for the pre-contact period. Most places will come to light only through additional archival and oral historical research that may be undertaken in the future and which falls outside of the scope of the current study. However it is possible that there will be associations with the following places:

- Early colonial estates: further and more detailed archival research into the large 19th century
 estates within the LGA such as Abbotsbury and Horsley Park may recover records of ongoing
 Aboriginal associations with these areas. Primary documents such as family papers and
 correspondence with the Colonial Secretary.
- Major rural and other industries: Records already show Aboriginal associations with rural
 industries and factories within the region. Additional research within records of these places is
 likely to undercover further associations both with known and previously unknown places.
- Aboriginal Oral History: very little Aboriginal oral historical research has been undertaken
 within the Fairfield LGA, and none prior to the current study has focussed on the identification
 of places of significance to the Aboriginal community. Further information could be obtained
 about the places outlined above in the Bonnyrigg area, and others within the LGA through an
 oral history project. Further investigation through oral history and archival research is also
 needed to determine the location and historical use of several places asserted to be Aboriginal
 camps along Prospect and Orphan School Creeks in the 1950s and 1960s (see discussion
 above).

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6.0

Managing Aboriginal Heritage

This section starts by considering how Aboriginal heritage is managed within New South Wales and the role that Local Government plays in this process. It then discusses the proposed management strategy for Fairfield City Council, to provide a means of acting to protect, promote and celebrate local Aboriginal history and heritage. In addition to meeting legal and procedural requirements for the protection of Aboriginal heritage, Councils also has more general obligations to its Aboriginal residents, and so come additional recommendations are made in relation to ways that integrate a valuing of Aboriginal heritage and history into a wider context, considering the range of ways Aboriginal history and heritage can be recognised, valued and celebrated by Council and used to educate the broader public about the significant role Aboriginal people have played in the history of the Fairfield area.

6.1 Aboriginal Heritage Management In New South Wales

6.1.1 Principles of Aboriginal Heritage Management

Aboriginal heritage is currently largely managed through a system of NSW government legislation and policy which provides legal protection for items of Aboriginal heritage significance. Aboriginal heritage places are generally managed or looked after by the owner of the land on which they occur, in consultation with relevant Aboriginal individuals or organisations, and through advice and permits from the OEH. If heritage places are threatened by natural forces or are the subject of frequent visits [deliberate or incidental] they would require an active form of management. Many Aboriginal sites neither require nor receive active management. Although not often explicit in heritage policy and legislation, procedures are guided by heritage management principles established and explained in the Burra Charter (Marquis-Kyle & Walker 2004). It is important to outline these principles to provide the background to Council's role within the overall system and the recommended management procedures outlined in **Section 6.2**.

Aboriginal Involvement

- Aboriginal people have the right to be involved in decisions affecting their cultural heritage, and in the on-going management of their cultural heritage. Aboriginal involvement in management should be continuous and at the level they consider appropriate.
- 2. Identify which Aboriginal people or group have rights to speak for, and/or have interests in the place under consideration by wide and inclusive consultation. All Aboriginal groups, organisations and individual owners or custodians with a possible interest in the place should be involved but their level of involvement may vary according to their rights and interests. This should be supported by good technical planning and effective negotiation and mediation processes. In general terms this should include Local Aboriginal Land Councils, Registered

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Native Title claimants and Aboriginal Owners, but may also involve other Aboriginal individuals or organisations with historical or cultural links to the area under consideration.³⁰

Local level planning should be integrated with regional planning and acknowledge that Aboriginal connections and significance are not restricted to current bureaucratic boundaries.

All interests to be considered

4. The concerns of all relevant interest groups to be taken into account. Some places have cultural values for both Aboriginal people and other groups in the community. All relevant groups should be consulted to allow agreement to be reached on the future of the place.

Cultural significance

5. The aim of cultural heritage place management is to look after the cultural significance of a place. The "Cultural Significance" of a place describes the value or importance the place has to a community and includes the "social, aesthetic, historic, or scientific value of the place for present, past or future generations". The term "social value" includes spiritual values. The Cultural Significance of a place can change over time and is not necessarily linked to, or determined by, the presence or intactness of physical remains.

Process and actions

6. Decisions about cultural heritage places are to be made as a result of a conscious and logical planning process. This process, guided by and maintaining the cultural significance of the place, takes into account all the management issues affecting the place and identifies the objectives for the management of the place.

Actions affecting places should be considered only after the cultural significance of the place has been established, and in consultation with relevant Aboriginal people or groups.

Physical intervention or other management actions are taken to support cultural significance and should be the minimum required to achieve this aim. Actions which preserve cultural significance have top priority. Management of cultural significance need not always involve physical preservation of structures or heritage items.

Making and keeping records

7. Records of places, records of decisions made about them and records of actions taken at heritage places should be made, kept, stored and accessed in a culturally appropriate way. Ownership of, storage and use of, and access to information be openly agreed at the outset of a project with the people who own, provide or have rights to the information. Availability of information supports the cultural significance of the place.

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³⁰ Registered Native Title Claimants and Aboriginal Owners are specific terms under the Commonwealth Native Title Act (1993) and Land Rights Act (1983) respectively. There has been a tendency in recent years to use terms such as 'Traditional Owners' or 'Native Title Claimants' without reference to these specific legislative contexts, and usually without definition. In this report the legal definitions are used.



6.1.2 Legislation and Policy

Although some Federal legislation deals with Aboriginal heritage, in practical terms this will rarely be invoked in Aboriginal heritage matters concerning Council. Two pieces of state legislation provide protection for Aboriginal heritage management and a third governs the way these protections are managed in the planning system.

National Parks & Wildlife Act (1974)

The National Parks & Wildlife Act (1974) provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) under Section 90 of the Act, and for 'Aboriginal Places' (areas of cultural significance to the Aboriginal community) under Section 84. It is an offence to harm either an Aboriginal object or Aboriginal Place in NSW. The Act defines an Aboriginal 'object' as:

'any deposit, object or material evidence (not being a handicraft for sale) relating to indigenous and non-European habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons of non-Aboriginal European extraction, and includes Aboriginal remains'.

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture. As noted above, there are no such places gazetted or proposed for gazettal within the Fairfield LGA.

The Act is administered by the Office of Environment & Heritage (OEH.³¹ Amendments to the NPW Act in 2010 have retained an offence to knowingly *harm* an Aboriginal object [s86(1)] but greatly increased penalties for such offences. The amendments have also introduced a strict liability offence for any *harm* (i.e. knowingly or unknowingly) to Aboriginal objects [s86(2)] or Aboriginal places [s86(4)] without a valid and applicable Aboriginal Heritage Impact Permit under Section 90 of the Act. *Harm* is defined as:

"any act or omission that:

- (a) destroys, defaces or damages the object or place, or
- (b) in relation to an object—moves the object from the land on which it had been situated, or
- (c) is specified by the regulations, or
- (d) causes or permits the object or place to be harmed in a manner referred to in paragraph(a), (b) or (c)" [Section 5(1)]

It is a defence to the strict liability offence of harm to an Aboriginal object under s86(2) if a process of Due Diligence was followed which reasonably determined that the proposed activity would not

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³¹ From the long standing title of National Parks & Wildlife Service (NPWS) to the Department of Environment and Conservation (DEC), Department of Environment and Climate Change (DECC) and most recently the Department of Environment, Climate Change and Water (DECCW). It is useful to know these names and initials as they are commonly found in older documents.



harm an Aboriginal object [s87(2)]. Due Diligence assessment can take a number of forms, including a generic process developed by the OEH (DECCW 2010a – see **Appendix C1**)³² or one of an equivalent standard. An exemption is also provided [s87(4)] for 'low impact activities' in 'disturbed land' which result in unknowing damage to an Aboriginal object, including a range of common farm and track maintenance activities (see **Appendix C1**). These may be of particular relevance to some Council maintenance activities, as discussed further in **Section 6.2.2**. It is noted that although the definition of 'disturbed' land under the NPW Act appears to preclude the presence of Aboriginal heritage, this is not the case, as Aboriginal objects and substantial intact Aboriginal archaeological deposits can, and are known to, survive below and between such areas of disturbance. A cautious approach should therefore be taken as recommended below.

Impacts to Aboriginal objects require an Aboriginal Heritage Impact Permit (AHIP) under s90 of the Act which can be issued by the Director-General of the OEH (by delegation). All AHIP applications must be accompanied by an Aboriginal Cultural Heritage Assessment report and can only be submitted in conjunction with evidence of development approval. The Aboriginal Cultural Heritage Assessment report documents the archaeological assessment of the study area and proposed impacts, in accordance with OEH guidelines (DECCW 2010b)33. The assessment must include full documentation of a prescribed process of Aboriginal community consultation (DECCW 2010o)34, which requires placing a public advertisement to seek expressions of interest in the project (or more precisely the AHIP to be sought) as well as directly notifying Local Aboriginal Land Councils and government agencies dealing with Aboriginal communities in the area. People or organisations can register as "Registered Aboriginal Parties" which provides them with a right to review and comment on aspects of AHIP applications, and to provide advice on Aboriginal cultural and historical significance. Many Aboriginal groups or individuals became further involved in the process by paid consultation during the course of the assessment including archaeological survey. Many groups were set up precisely to provide this function. The guidelines explicitly do not provide an automatic right for paid or unpaid involvement in archaeological survey or other fieldwork and this is negotiated as a commercial arrangement directly between development proponents and Aboriginal people seeking such work.

AHIPs can be issued for specific objects or cadastral features (e.g. whole of lot) and can be staged by amendment to include provision for archaeological test excavations followed by salvage or impact. OEH policy provides for archaeological test excavations to be carried out without an AHIP as long as undertaken in full compliance with the 2010 Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010b). There are a number of restrictions on where and how such excavations can take place. Most notably they cannot be used for the investigation of places of suspected historical (i.e. post-contact) Aboriginal heritage. However, it is under this Code that most (if not all) archaeological test excavations within the Fairfield LGA will take place in coming years. This is important, as test excavations can (and should) take place prior to the lodgement of a Development Application, such that final management recommendations can be considered as part of the Development Application assessment.

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³² See http://www.environment.nsw.gov.au/licences/archinvestigations.htm

³³ See http://www.environment.nsw.gov.au/licences/archinvestigations.htm

³⁴ See http://www.environment.nsw.gov.au/licences/consultation.htm



In most cases Council will be dealing with the process outlined above but there are some exceptions. These include projects deemed to be of State Significance under Part 4 of the *Environmental Planning & Assessment Act*, and projects previously approved or currently being assessed under the now repealed Part 3A (Major Projects) provisions of the Act, as well as some activities which are undertaken "in-house" by state government authorities on land which they own. In addition to the fact that Councils are not the determining authority in these cases, major project developments in particular do not require Aboriginal heritage impact approvals under the NPW Act but do require a process of investigation broadly parallel to that under the act. An updated policy has however not been produced by the Department of Planning & Infrastructure to accommodate the 2010 changes to the NPW Act described above.

NSW Heritage Act 1977

The NSW Heritage Act 1977 is the principle document governing the management of heritage items (relics and places containing relics) in NSW. The Act is administered by the Heritage Branch of the OEH³⁵, though its operations are largely separate to those sections of the OEH administering the *NPW Act*. The Heritage Branch is governed by the Heritage Council of NSW, whose members are appointed by the Minister responsible for heritage in NSW.

Aboriginal heritage sites or objects are not specifically protected under the 'relics' protection provisions of the NSW Heritage Act 1977, where a relic is defined as:

any deposit, artefact, object or material evidence that:

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, &
- (b) is of state or local heritage significance.

However the Act also regulates the establishment of heritage registers, under which places of Aboriginal heritage significance (both pre- and post-European contact) can be listed. The Heritage Branch maintains the State Heritage Register (SHR) which lists items which are deemed to be of State significance. Any development proposal that is likely to impact on items on the SHR generally requires NSW Heritage Council approval under s60 of the Heritage Act.

In addition the Heritage Branch maintains the State Heritage Inventory (SHI) which includes items of local significance listed by local Councils and other state government agencies. Where such items also have state significance they may also be listed on the SHR. For example in the Fairfield LGA the Male Orphan School, which has both European and Aboriginal heritage significance, is listed on both the SHR and SHI.

Items are generally listed on the SHI after their recognition through local government heritage studies, which in the case of Fairfield LGA was completed in 1993 (Perumal Murphy Wu Pty Ltd 1993). These are then listed on a Heritage Schedule attached to Local Environmental Plans which requires the potential impact of proposed developments to be assessed. Proposed impact on items on the SHI may require NSW Heritage Council approval under s140 of the Heritage Act. It should be noted however that local government heritage studies have rarely considered Aboriginal

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³⁵ Formerly known as the Heritage Office, and most recently the Heritage Branch of the Department of Planning.



heritage and particularly not post-contact Aboriginal heritage places, and consequently few have been listed by any Councils in NSW.

Environmental Planning & Assessment Act (1979)

The way in which Aboriginal heritage is managed with respect to proposed development impacts is set out in the provisions of the Environmental Planning & Assessment Act 1979 (the 'EP&A Act'). The EP&A Act has three main parts of direct relevance to Aboriginal cultural heritage. Namely, Part III which governs the preparation of planning instruments, Part IV which relates to development assessment process for local government (consent) authorities and Part V which relates to activity approvals by governing (determining) authorities (and is of less relevance to the current study). Councils can be determining authorities in relation to their own works and often do not require the same assessment rigour as other proponents (although under the recently amended NPW Act with its strict liability provisions, Councils are still required to exercise Due Diligence and require AHIP approvals for site impacts).

Part III deals primarily with the production of state and local environmental planning instruments which can and do involve provisions for Aboriginal heritage. For example State Environmental Planning Policies (Division 2) such as governing Growth Centre precinct developments, Local Environmental Plans (Division 4) and Development Control Plans (Division 6). Recent amendments to the EP&A Act have allowed for the production of standardised Local Environmental Plans (LEPs) using a common template. This template also allows for the listing of places of Aboriginal heritage significance on LEP heritage schedules (which previously in practice contained almost exclusively places of non-Aboriginal heritage significance). This issue is addressed below in relation to Council (Section 6.1.3).

Part IV deals with the process of obtaining development consent from local government authorities, including the requirement for documentation of an assessment of potential development impacts in certain cases. It also describes the process for *integrated development* (Division 5) which are those development proposals requiring a permit or consent from a state government authority (for example the OEH in relation to Aboriginal heritage).

6.1.3 The Role of Local Government in Heritage Management

Local government in its responsibility for the amenity of cities, towns and suburbs and rural areas, prepares and implements plans which determine future land use. Local government also assesses and approves most development applications other than those of state or regional significance or which have a particular environmental significance. Local government also has other powers in relation to the environment including the enforcement of building standards and importantly is also a 'developer' itself through its activities on Council lands.

The responsibilities and requirements of the EP&A Act mean that local government plays a key role in heritage conservation. It is their responsibility to use development control mechanisms to protect items of Aboriginal heritage. The responsibilities of Local Government include:

 implementing heritage legislation at local level by ensuring local planning and development control is sensitive to cultural heritage,

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- conserving places of heritage significance which are located on land owned or managed by local government,
- providing opportunities for public involvement in the conservation of cultural heritage, encouraging public awareness and sensitivity to heritage and initiating heritage education programs.

Local Environmental Plans

The main systematic way that Council can act to protect and manage Aboriginal heritage is through provisions within its Local Environmental Plan. In 2006 the NSW Government enacted a template (known as the *Standard Instrument*) to standardise the form and content of local environmental plans across the state, through which local government controls development within their respective local government areas. The current Fairfield LEP 2013 has been prepared using this template.

The Standard Instrument initially contained provisions for heritage management that generally required the same documentation for Aboriginal and non-Aboriginal heritage items and places. However, in February 2011, an amendment to the 2006 Standard Instrument was announced in response to feedback from public consultation. In relation to Aboriginal heritage, aspects of Aboriginal heritage management have now been separated from non-Aboriginal heritage. As such the revised and current Standard Instrument template contains the following provisions of relevance to Council and its role in protecting and managing Aboriginal heritage:

- Under standard Dictionary definitions two types of Aboriginal heritage are defined and recognised:
 - 1. Aboriginal object: has the same definition as the National Parks & Wildlife Act.
 - 2. Aboriginal place of heritage significance: is an area of land identified through an Aboriginal heritage study such as the current study, which includes pre-contact physical evidence and natural or built places of long-standing cultural significance or contemporary cultural significance. Essentially this is a very broad definition, and may include Aboriginal Places as defined by the National Parks & Wildlife Act.

There is also provision to define "Environmentally Sensitive Areas" (Part 3.3, Clause 2(g)) on the basis that they contain "high Aboriginal cultural significance" though no definition is provided and there is no detail about how this significance might be established.

- Aboriginal heritage places can be listed and mapped on Schedule 5 (Environmental Heritage) of
 the Local Environmental Plan if "agreement is reached with the Aboriginal community". It is
 noted that neither the "Aboriginal community" or the process for reaching or defining "agreement"
 is outlined within the 2011 revisions or attendant practice notes. Importantly, these items need
 not be listed (publically available) and this does not affect their protection. Furthermore,
 Aboriginal heritage places can be listed on Schedule 5 but need not be mapped on the
 accompanying Heritage Map (unlike items of non-Aboriginal heritage significance where this is
 required).
- Under Clause 5.10 local government development consent is required in the case of proposed impacts to Aboriginal heritage items or areas containing these items (Section 2), unless the applicant advises that the proposed works will not adversely affect the heritage significance of

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the item or area, or is being done to conserve the item or area. This, however, does not preclude requirements to obtain Aboriginal Heritage Impact Permits under the *National Parks & Wildlife Act 1974*.

 As a consequence of the above, development proposals which may impact areas or items of Aboriginal heritage significance will require some form of "heritage management document" to consider these potential impacts and appropriate mitigative measures.

Development Control Plans

Development Control Plans (DCPs) provide another means of ensuring that there is adequate assessment of potential impacts to Aboriginal heritage, and local enforcement of heritage protection legislation. DCPs provide more specific guidance on how local development can occur within a specific part of the LGA or across the whole LGA by specifying General Controls in relation to a specific issue such as Aboriginal heritage protection. For example a DCP can spell out when an Aboriginal heritage assessment is required (e.g. in what areas/circumstances) and what such assessments must include for development applications to be assessed. Fairfield City Council currently has a Citywide Development Control Plan (2013) which addresses heritage requirements generally but provides no specific requirements or procedures for Aboriginal heritage.

Review of Environmental Factors

Council development activities are guided by a process of environmental assessment known as a Review of Environmental Factors (REF). The amount of detail required in an REF is related to the nature and location of the proposed activity. Council is currently guided in these matters by the 2009 Fairfield City Council Works Projects Environmental Assessment and Approvals Procedures Manual. Section 4.5 of the Manual requires Aboriginal heritage impacts to be considered, but no specific procedures or requirements are outlined. As a consequence, the level of detail in considering Aboriginal heritage impacts has been dependent on the existing levels of awareness of Council staff. Fortunately, as some samples provided to MDCA demonstrate, this awareness is relatively high and has led to both detailed in-house and occasional external consultant reports dealing with the potential Aboriginal heritage impact of Council works.

Western Sydney Parklands Plan of Management

The Western Sydney Parklands occupies around 15% (roughly 15km²) of the total area of the Fairfield LGA. These lands are not managed by Council, but by the Western Sydney Parklands Trust, guided by the Western Sydney Parklands Plan of Management 2020. The Plan does not contain any specific Aboriginal heritage management procedures, but does include some broader statements and directions that outline an intention to protect Aboriginal heritage within the parklands. These include:

- A Caring for Country statement which acknowledges Traditional Aboriginal custodians, and commits to working 'in a respectful manner with the Indigenous Australians in Caring for Country and aim to treat Indigenous people, their cultural heritage, customs and beliefs with respect'.
- Strategic Direction Objective 6 which is to 'Protect and enhance the Parklands' Indigenous and Non-Indigenous cultural heritage' through 'partnerships with local Indigenous individuals and groups to understand, protect and celebrate the Indigenous heritage and

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cultural values of the Parklands.' This includes active research to discover heritage sites and the development of a heritage register for the Parklands.

Other Relevant Local Government Policies, Plans and Activities

Although planning policies are treated separately and have specific requirements, the broad approach to heritage management advocated in this study suggests that Council should use these measures in tandem with other strategies for the protection and celebration of the Aboriginal history and heritage of Fairfield LGA to provide meaningful outcomes for Aboriginal people. There are several Council initiatives which can be mentioned here, including:

- The Fairfield City Council Statement of Commitment between Council, Gandangara Local Aboriginal Land Council and the local Aboriginal community in 2005, which acknowledges the Aboriginal history of Fairfield and commits to work cooperatively with the local Aboriginal community on a range of projects and services.³⁶
- The formation of an Aboriginal Advisory Committee and engagement of a dedicated Aboriginal community worker.
- Council support for Elders groups.
- Council's commissioning of the Gapps 2010 Cabrogal to Fairfield City history, with a specific brief to include consideration of Aboriginal heritage.
- Council's commissioning of the current Aboriginal heritage study.

6.2 A Strategy for Managing Fairfield's Aboriginal Heritage

This section outlines a proposed approach across a number of areas which are assessed as necessary for Council to better manage, protect and celebrate the Aboriginal heritage of the Fairfield LGA. The elements of this approach relate to the specific recommendations in **Section 7.0** and are based on the research and Aboriginal community consultation undertaken for the study as well as the heritage principles and legal and policy obligations outlined above. It is important to note that under this system Council is both a determining authority as well as a proponent (for developments on Council land).

The proposed strategy involves the following three elements:

- Planning and Assessment Procedures these are generally closely linked to the legal and policy obligations of Council and development proponents in relation to Aboriginal heritage.
- Staffing, Training and Resources both to implement formal planning requirements as well
 as the other elements of the strategy.
- Research and Celebrating Aboriginal History and Heritage recognising that much is still
 to be learned about Fairfield's history and heritage and that celebrating and promoting it is an
 important part of protecting heritage in parallel to formal planning processes.

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³⁶ See http://www.fairfieldcity.nsw.gov.au/homepage/84/aboriginal and amp torres strait islanders



6.2.1 Engaging with the Aboriginal Community

The active participation and endorsement of the Aboriginal community is essential for any or all of the elements of the proposed strategy for the management of Aboriginal heritage within the Fairfield LGA to succeed. The most appropriate means of doing so are:

- In matters relating to Aboriginal heritage assessment, engaging with the relevant Local Aboriginal Land Councils (Deerubbin and Gandangara) for the area under consideration. Local Aboriginal Land Councils have a statutory responsibility in relation to Aboriginal heritage and needs to be part of ongoing processes of Aboriginal heritage management, including by Council, in order to discharge its functions under the Aboriginal Land Rights Act (1983). In some cases, other Aboriginal individuals or organisations may be appropriate to consult in relation to heritage matters due to their specific historical or cultural connections to the area under consideration. In the event that Native Title Claimants or Aboriginal Owners are officially registered within the LGA, they should also be involved in the management of Aboriginal heritage within the LGA.
- In matters relating to places identified as having known historical significance to the Aboriginal community, it is appropriate in the first instance to seek the guidance of Council's Aboriginal Advisory Committee to determine who may need to be consulted in relation to each particular place.

6.2.2 Basis for Planning and Assessment Procedures

This study recommends the creation of an Aboriginal Heritage Management System to be applied to the assessment of proposed developments within the Fairfield LGA (including proposals by Council). It also considers Council's potential role in relation to complying development and other developments which do not require approval by Council under the formal development application process. It acknowledges the heritage requirements of the standard instrument (LEP) and current NSW legislative and policy requirements relating to Aboriginal heritage management.

Similar, but slightly different procedures are required for works on Council lands and private development applications to Council. Both are supported by the same mapping and same assumptions, but will be used by different staff within Council. The procedures outlined below are based on the following:

- Current best Aboriginal heritage practice;
- The legal requirements of the National Parks & Wildlife Act 1974 (including requirements for Due Diligence assessment), the National Parks & Wildlife Regulation 2009 and the Environmental Planning & Assessment Act 1979 (including s117 directions relating to Council's obligations in relation to the conservation of Aboriginal objects and places);

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- The current OEH Due Diligence Aboriginal Heritage Assessment flowchart³⁷ (adapted to take into account information available to Council through this study). It is noted that the OEH Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales allows for organisations such as Council to formulate their own Due Diligence procedures (see DECCW 2010a:8-9);
- A review of existing Council policy and practice (e.g. 2009 Environmental Assessment and Approvals Procedures Manual for Fairfield City Council Works Projects and examples of existing REF/Due Diligence assessments undertaken by Council, Fairfield Citywide Development Control Plan 2013);
- A review of the provisions of the 2014 Western Sydney Parklands Plan of Management 2020;
- The need for a system that allows proponents of activities to meet both Council requirements and legal obligations in one process, with no unnecessary duplication;
- A review of procedures currently implemented in adjacent Councils as whole of LGA policies or release area specific policies (e.g. growth centres precincts);
- The type of archaeological remains likely to occur in Potential Investigation Areas and the possible depth below ground surface of these remains; and
- The type of proposed activity to ensure that the requirements are commensurate with the level
 of potential impact. In particular, exceptions to some NPW Act provisions on the basis of minor
 activities and levels of ground disturbance have been noted (see further discussion below). It
 should be noted however that none of these exceptions allow for impacts to known
 Aboriginal sites.

The proposed Aboriginal Heritage Management System consists of two components:

- GIS Map Layers of 'Potential Investigation Areas' (supplied to Council)
- · An actions flowchart and accompanying notes that are outlined below.

It requires Council staff responsible for the environmental assessment of proposed Council works or planners reviewing external Development Applications to:

- Consult the Council GIS to determine if the proposed activity takes place within a Potential Investigation Area.
- 2. If the answer is yes, consult the Aboriginal Heritage Assessment Procedures flowchart and notes to determine what further enquiries or investigations are required.

As discussed below, these procedures could be formally enacted through an amendment to the Fairfield City Wide DCP.

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³⁷ As per 2010 OEH Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales.



Mapping of Potential Investigation Areas

NOTE: The term 'disturbed land' is specifically defined and used in the NPW Act and Regulation in relation to some assessment requirements (discussed further below). To avoid confusion with the more common and less specific usage of the term in Aboriginal heritage management to describe land that has been impacted historically, this report uses the term 'historical impact'.

Potential Aboriginal Heritage Investigation Areas were identified from an assessment of archaeological sensitivity based on landform and known historical impact. The basic units for determination were current lot boundaries and current LEP zonings. The following steps were taken to identify the Potential Investigation Areas:

- Registered Aboriginal site locations were obtained from the OEH AHIMS Aboriginal Sites Register and original records were consulted to refine known site locations, as well as groundtruthing of selected sites.
- Based on archaeological research and current heritage policy, lands within 200m of creeklines
 and major ridgelines are considered to be archaeologically sensitive. In other words, these are
 the landforms most likely to have been used intensively by Aboriginal people in the past.
- Each current LEP zone was given a default sensitivity based on the likely nature of historical impact. All but RE1 and E2 lands were assumed to be 'not sensitive' unless proven otherwise.
 RE1 and E2 zones were assumed to be 'sensitive' unless subject to significant historical impact. Rural lands were considered sensitive if within 200m of a ridgeline or creekline.
- A review of lands within 200m of creeklines and ridgelines in each land use zone was undertaken through a review of current aerial photography, historical aerials photographs (back to 2002, 1995, georeferenced 1983 topographic maps and where available 1943 aerial), topography, geology, landform and historical evidence. This resulted in the identification of a number of areas of relatively low historical impact within LEP zones initially considered to have no sensitivity, as well as a number of RE1 and E2 lands which were clearly historically impacted and did not retain sensitivity.
- Further information about historical impacts were obtained from Council staff about lands affected by the Unhealthy Building Land Policy and other information about past uses of specific allotments.
- Aboriginal community consultation to determine places of historical or cultural significance to the contemporary Aboriginal community. This resulted in the identification of several allotments with some historical and contemporary significance.
- A historical review of Aboriginal associations with the Fairfield LGA, which resulted in the identification of one place (the Male Orphan School) as having historical Aboriginal associations, and located additional information about other places identified through Aboriginal community consultation.

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Low Impact Activities and Disturbed Land

The OEH requirement to undertake Due Diligence Aboriginal heritage assessment for proposed activities has exemptions for 'low impact activities' in 'disturbed lands'. These are defined by the NPW Regulation and may be subject to change, but current definitions (as of November 2016) of both terms can be seen in **Appendix C1**. The list of 'low impact activities' in the Regulation is lengthy and includes many common open space maintenance activities that would routinely be undertaken by Council. The list of 'disturbed lands' in the Regulation is equally long and includes areas of past land clearing, road and track construction or building construction. As Aboriginal objects in the Fairfield LGA are most likely to occur within the top 0.5m of an original soil profile (except in deeper alluvial deposits along major creeks and rivers), it may seem that few activities undertaken by Council or external applicants would be subject to either Due Diligence Aboriginal Heritage Assessment or the closely aligned procedures of the Aboriginal Heritage Management System developed for Fairfield Council as part of this study. However, there are several important qualifications that need to be taken into account.

- The NPW Regulation exemption for 'low impact activities' in 'disturbed land' does not mean that no consideration of the potential Aboriginal heritage impacts of your activity needs to be undertaken. The exemption applies only to the strict liability offence for harm to Aboriginal objects under s86(2) of the NPW Act 1974 (as amended). It does not apply to the offence for knowingly harming Aboriginal objects under s86(1) of the NPW Act. The implications of this are as follows:
 - For <u>all proposed activities</u>, you need to first establish whether a known Aboriginal object may be impacted by your activity by searching the OEH AHIMS Register of Aboriginal Sites (this is a layer on the Council GIS). If the activity is close to a known site and may potentially impact that site, then Due Diligence Aboriginal Heritage Assessment would be required to determine whether impacts will in fact occur.
 - Even if your activity does not appear to potentially impact a known Aboriginal object, you could still be guilty of an offence under s86(1) if an Aboriginal object is exposed and subject to harm during construction. Lands can be 'disturbed' by the addition of introduced fill which can act to preserve underlying natural soil horizons containing Aboriginal objects. Along major creeklines, soil deposits with the potential to contain Aboriginal objects may be deeper than the horizon disturbed by ploughing or land clearance. If Aboriginal objects are uncovered during development activities, then they are protected under s86(1) and works would need to cease until appropriate management procedures (such as seeking an Aboriginal Heritage Impact Permit) can be determined. This can create lengthy delays. The strong preference for both heritage protection and project efficiency is to identify and manage potential impacts as much as possible prior to construction.
- The exemption for 'low impact activities' in 'disturbed land' does not apply to Aboriginal scarred trees whether or not they are 'known' through recording on the AHIMS Register.
- The exemption only applies to 'low impact activities' <u>in</u> 'disturbed land'. It does not apply to
 other activities in 'disturbed land'. For example, constructing a house on land defined under the
 Regulation as 'disturbed' is not an exempt activity.

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The Aboriginal Heritage Management System takes this into account by ensuring the following:

- Areas within 50m of the registered location of all Aboriginal sites within Fairfield LGA are
 designated Potential Investigation Areas and require some further consideration (though not
 necessarily Aboriginal Heritage Assessment). Updates of registered site information are
 provided every 12 months by licence from the OEH to ensure that this remains up to date. In
 other words, as new sites are documented, they will become new Potential Investigation Areas.
- Within Potential Investigation Areas, some lands may still be considered 'disturbed land' for the
 purpose of the NPW Regulation exemption, but this is best determined on a case by case
 basis. For example, some lands along major creeklines are historically impacted in their
 uppermost levels but may contain deeper buried archaeological remains. Whether this potential
 may to trigger Aboriginal Heritage Assessment will depend on the nature and depth of the
 proposed impact.

Types of Potential Investigation Areas

Based on the review outlined, a GIS Map layer of Potential Investigation Areas was created. It is a single layer, but there are three separate types of Potential Investigation Area. When a particular Potential Investigation Area is selected on the Council GIS, the attribute data will describe what type of Potential Investigation Area it is. This will be one of the following:

1. Areas of Relatively Low Historical Impact within 200m of Creeklines or Major Ridgelines

To the east of the Western Sydney Parklands these comprise land parcels identified through the review of land zonings and historical impacts. For the remainder of the LGA (the rural lands and Western Sydney Parklands), these comprise all lands within 200m of creeklines or major ridgelines.

2. Land within 50m of Known Aboriginal Sites

The 50m buffer is included as a precaution that takes into account the fact that sites are identified by single points but may extend over a greater area, and some site locations are only approximately known. The attributes table for each of these areas provides further information (where available) on the known extent of these sites e.g. if the site is known to be contained within a creek reserve and therefore does not extend onto adjacent private lands. As outlined below, further examination of original site recordings (these will be provided to Council) may be required in some cases.

At present, all registered Aboriginal sites are incorporated into the Potential Investigation Areas map layer. However, over time, new sites will be recorded and revisions may be made to existing recordings (e.g. revised coordinates may be determined through field inspection). An Aboriginal Heritage Information Licence Agreement is currently being drawn up between Council and the Office of Environment & Heritage, which manages the NSW Register of Aboriginal Sites (Aboriginal Heritage Information Management System). This will result in annual updates to this information. On receipt from OEH, this updated information (if not provided in a GIS format) will need to be converted into a GIS map layer and replace the existing 'Aboriginal Site Locations' layer, to ensure that the layer is kept up to date.

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3. Aboriginal Historical Places

These consist of five areas with contemporary or historical Aboriginal significance. Each are identified by allotments and trigger a different process of potential further investigation as identified in the attributes table and outlined below.

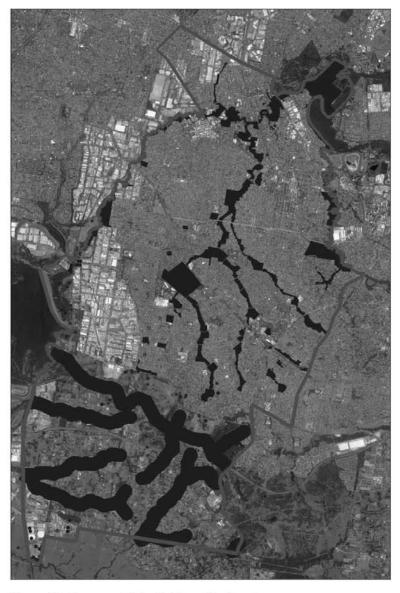


Figure 6.1. Proposed Potential Investigation Areas.

Note that this is a static rendering of GIS layers with explanatory attribute data that will sit on the Council GIS.

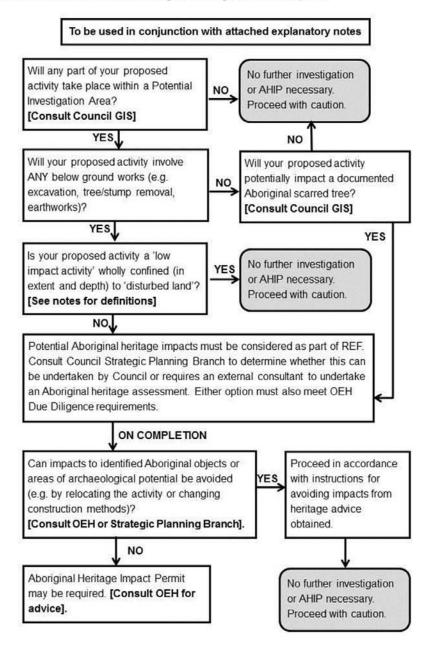
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6.2.3 Procedures for Council Land Managers

Council Land Managers undertaking ANY works within Council reserves should be required to follow the flow chart below (and explanatory notes) prior to finalising planning of their proposed activity, with advice from the Council Strategic Planning Branch as required.



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Explanatory notes

These procedures are designed to ensure that Council activities do not impact on any known or potential items of Aboriginal heritage. Whether an Aboriginal site was known to be there or not, any impacts can attract large fines under s86 of the *National Parks & Wildlife Act*. It is very important that the potential impacts of even minor activities is considered.

Using Potential Investigation Areas	When you click on a Potential Investigation Area, the attribute data will tell you why it has been assessed as a Potential Investigation Area (ie within 200m of creekline or ridgeline, within 50m of known Aboriginal site, area of historical Aboriginal significance). the extent of the Potential Investigation Area (e.g. it may tell you if it is considered to extend onto private land from creek reserves) the Aboriginal heritage management requirements. In most cases it will refer you to this flowchart and notes. If you unsure about how to proceed, consult Council's Strategic Planning Branch.
Scope of an Activity	It is important that you consider all aspects of your proposed activity that may impact Aboriginal heritage. This may include things beyond the immediate site of works, such as: • Where will you stockpile materials? • How will you access the worksite? E.g. will heavy vehicles be used which may disturb the ground surface?
Low Impact Activities	The term 'low impact activity' has a specific legal definition according to the <i>National Parks & Wildlife Regulation</i> 2009. This is the only definition that applies. These activities are exempted from some of the legal requirements of the Act but only if carried out on land that is considered 'disturbed' under the Regulation. 'Low impact activities' proposed in lands that are not 'disturbed' are not exempt and may require Aboriginal heritage assessment. See http://www.legislation.nsw.gov.au/ for up to date Regulations. Definitions current at November 2016 are provided in Appendix C1 .
Disturbed Land	The term 'disturbed land' has a specific legal definition according to the <i>National Parks</i> & <i>Wildlife Regulation</i> 2009. This is the only definition that applies. See http://www.legislation.nsw.gov.au/ for up to date Regulations. Definitions current at November 2016 are provided in Appendix C1 . Land is not classified as disturbed for the purpose of the Act if it contains a known Aboriginal site. The designation 'disturbed land' under the Regulation does not mean that Aboriginal objects may not survive. In the Fairfield LGA, Aboriginal objects are most likely to occur within the top 0.5m of an original soil profile in areas of weathering shale bedrock, and possibly considerably deeper in alluvial deposits along major creeks and rivers. It should be noted however that historical impact can also include the addition of introduced materials as fill, and can therefore have acted to preserve underlying natural soil horizons. Determining whether historical activities have impacted original soil profiles or not often requires expert assessment. For this reason, always act with caution and do not assume that 'disturbed land' will have removed all Aboriginal objects, and seek expert advice if necessary.

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	Aboriginal objects are still legally protected even it has been determined that they are unlikely to be present within the area of the activity. If any Aboriginal objects or bones suspected of being human are found during your activity, you must:					
	Not further disturb or move these remains. Immediately cease all work at the particular location.					
Proceeding with Caution	In the case of suspected human remains only, notify NSW Police.					
	 Notify The Office of Environment & Heritage Environment Line on 131 555 as soon as practicable and provide available details of the objects or remains and their location. 					
	Work cannot recommence in the vicinity of the find until appropriate management advice has been obtained. This may require authorisation in writing by the Office of Environment & Heritage or the seeking of an Aboriginal Heritage Impact Permit.					
Proceeding according to Heritage Advice	If impacts to a known or potential Aboriginal heritage site can be avoided by following certain procedures (e.g. defined vehicle access paths, cordoning off certain areas during site works), it is essential that these procedures be followed completely.					
	If your heritage advice indicates that impacts to a known or potential Aboriginal heritage site cannot be avoided, you will need to obtain further specialist Aboriginal heritage advice from an external Aboriginal heritage consultant. This may involve: • Archaeological test excavation					
Permits or	Seeking an Aboriginal Heritage Impact Permit to allow impacts to the site					
further Assessment	Both of these outcomes will involve a prescribed process of Aboriginal community consultation, and preparation of reports according to government regulation. These processes can take a number of months and have associated costs that must be factored in to project planning.					
	It is also possible that these further investigations will result in a decision that the proposed activity cannot occur, or will need to be modified to avoid impact.					

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Examples for Council Land Managers

EXAMPLE 1: Council proposes to construct a cycle path within a Council reserve

The area is searched on the Council GIS. Part of the activity is within a Potential Investigation Area because it is within the default radius of within 50m of a known Aboriginal site (a stone artefact scatter). It is not a 'low impact activity' under the NPW Regulation so the potential impacts must be documented in the REF for the proposal. The Strategic Planning Branch is consulted to determine whether an Aboriginal Heritage Assessment by an external consultant may be required or if assessment can be undertaken in-house. The site record for the registered Aboriginal site is consulted. This has a written description indicating that the site does not extend into the area of the proposed activity. It is determined that the proposal can proceed with caution and does not need to involve an Aboriginal Heritage Assessment. These steps are documented in the REF.

EXAMPLE 2: Council proposes to construct a toilet block within a Council reserve

The area is searched on the Council GIS. It is not within a Potential Investigation Area (because the heritage study determined a high level of historical impact and Aboriginal archaeological remains were unlikely to have survived). No further investigation necessary. Proceed with caution, noting stop work procedures defined in the Explanatory Notes if something is uncovered.

EXAMPLE 3: Council proposes to replace an existing fence within a Council reserve

The area is searched on the Council GIS. It is within a Potential Investigation Area because it is in an area of relatively low historical impact within 200m of a creekline. The proposal comes under the NPW Regulation definition of a 'low impact activity'. The area is classified as 'disturbed land' because of the previous construction of a fence. The new fence will not involve impacts below the existing level of impacted ground. Therefore no further investigation is necessary. Proceed with caution, noting stop work procedures defined in the Explanatory Notes if something is uncovered.

EXAMPLE 4: Council proposes to contour creek banks within a Council reserve

The area is searched on the Council GIS. It is within a Potential Investigation Area because it is in an area of relatively low historical impact within 200m of a creekline. It is a 'low impact activity' under the NPW Regulation and it is occurring within an area of creek bank that has been contoured in the past so is classified as 'disturbed land' under the NPW Regulation. However, the new contouring works will involve earthworks to a greater depth than the existing works and are therefore not 'wholly confined' (see flowchart) to the 'disturbed land'. Given the creekbank location, and the potential for buried archaeological deposits, the Strategic Planning Branch is consulted and determines that an Aboriginal Heritage Assessment by an external consultant is required. The Aboriginal Heritage Assessment involves a review of geomorphology, a detailed review of land use history and a field survey. It concludes that there is little likelihood that deep alluvial deposits exist within the area of proposed impact and that it is therefore unlikely that Aboriginal heritage will be impacted by the proposal. The report is appended to the REF and works can proceed with caution, noting stop work procedures defined in the Explanatory Notes if something is uncovered.

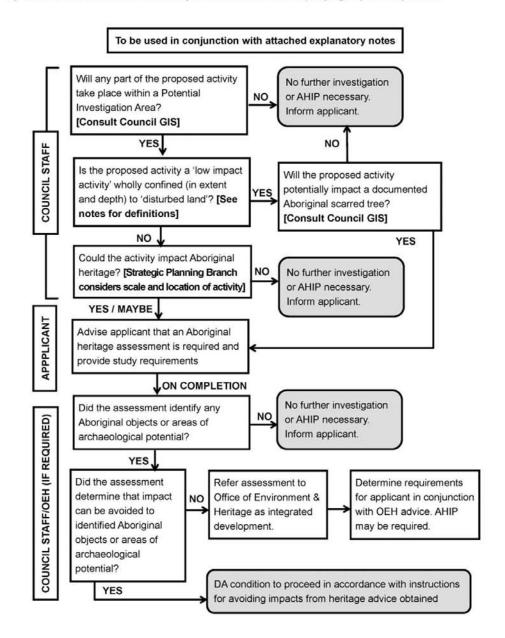
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6.2.4 Procedures for External Development Applications

The following procedures are designed to be applied to ALL development applications processed by Council and must be used in conjunction with the accompanying explanatory notes.



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Explanatory notes

	When you click on a Potential Investigation Area, the attribute data will tell you
Using Potential	 why it is has been assessed as a Potential Investigation Area (ie within 200m of creekline or ridgeline, within 50m of known Aboriginal site, area of historical Aboriginal significance).
Investigation Areas	 the extent of the Potential Investigation Area (e.g. it may tell you if it is considered to extend onto private land from creek reserves)
	 the Aboriginal heritage management requirements. In most cases it will refer you to this flowchart and notes.
	If you unsure about how to proceed, consult Council's Strategic Planning Branch.
Scope of an Activity	It is important that you consider all aspects of your proposed activity that may impact Aboriginal heritage. This may include things beyond the immediate site of works, such as: • Where will you stockpile materials?
	 How will you access the worksite? E.g. will heavy vehicles be used which may disturb the ground surface?
Low Impact Activities	The term 'low impact activity' has a specific legal definition according to the <i>National Parks & Wildlife Regulation</i> 2009. This is the only definition that applies. These activities are exempted from some of the legal requirements of the Act but only if carried out on land that is considered 'disturbed' under the Regulation. 'Low impact activities' proposed in lands that are not 'disturbed' are not exempt and may require Aboriginal heritage assessment. See http://www.legislation.nsw.gov.au/ for up to date Regulations. Definitions current at November 2016 are provided in Appendix C1 .
	The term 'disturbed land' has a specific legal definition according to the <i>National Parks</i> & <i>Wildlife Regulation</i> 2009. This is the only definition that applies. See http://www.legislation.nsw.gov.au/ for up to date Regulations. Definitions current at November 2016 are provided in Appendix C1 .
Disturbed	Land is not classified as disturbed for the purpose of the Act if it contains a known Aboriginal site.
Land	The designation 'disturbed land' under the Regulation does not mean that Aboriginal objects may not survive. In the Fairfield LGA, Aboriginal objects are most likely to occur within the top 0.5m of an original soil profile in areas of weathering shale bedrock, and possibly considerably deeper in alluvial deposits along major creeks and rivers. It should be noted however that historical impact can also include the addition of introduced materials as fill, and can therefore have acted to preserve underlying natural soil horizons. Determining whether historical activities have impacted original soil profiles or not often requires expert assessment. For this reason, always act with caution and do not assume that 'disturbed land' will have removed all Aboriginal objects, and seek expert advice if necessary.

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Proceeding with Caution	Aboriginal objects are still legally protected even it has been determined that they are unlikely to be present within the area of the activity. If any Aboriginal objects or bones suspected of being human are found during your activity, you must: 5. Not further disturb or move these remains. 6. Immediately cease all work at the particular location. 7. In the case of suspected human remains only, notify NSW Police. 8. Notify The Office of Environment & Heritage Environment Line on 131 555 as soon as practicable and provide available details of the objects or remains and their location. Work cannot recommence in the vicinity of the find until appropriate management advice has been obtained. This may require authorisation in writing by the Office of Environment & Heritage or the seeking of an Aboriginal Heritage Impact Permit.
Proceeding according to Heritage Advice	If impacts to a known or potential Aboriginal heritage site can be avoided by following certain procedures (e.g. defined vehicle access paths, cordoning off certain areas during site works), it is essential that these procedures be followed completely.
Permits or further Assessment	If your heritage advice indicates that impacts to a known or potential Aboriginal heritage site cannot be avoided, you will need to obtain further specialist Aboriginal heritage advice from an external Aboriginal heritage consultant. This may involve: • Archaeological test excavation • Seeking an Aboriginal Heritage Impact Permit to allow impacts to the site Both of these outcomes will involve a prescribed process of Aboriginal community consultation, and preparation of reports according to government regulation. These processes can take a number of months and have associated costs that must be factored in to project planning. It is also possible that these further investigations will result in a decision that the proposed activity cannot occur, or will need to be modified to avoid impact.

Examples for External Development Applicants

EXAMPLE 1: A DA proposes to demolish and rebuild an existing factory complex

The area is searched on the Council GIS. The proposal is not within a Potential Investigation Area. The proposal therefore does not require any further assessment. If approved, the DA should include the Standard Conditions outlined below.

EXAMPLE 2: A DA proposes conversion of existing residential property into 3 villas

The area is searched on the Council GIS. Part of the property is within a Potential Investigation Area because it is within the default radius of within 50m of a known Aboriginal site (a stone artefact scatter). The attribute data on the GIS states that the site is wholly confined to the adjacent creek reserve and does not extend into the property. The proposal therefore does not require any further assessment. If approved, the DA should include the Standard Conditions outlined below.

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EXAMPLE 3: A DA proposes construction of a new carport within an existing residential property.

The area is searched on the Council GIS. It is within a Potential Investigation Area because it is in an area of relatively low historical impact within 200m of a creekline. It is not a 'low impact activity' under the NPW Regulation, however the Strategic Planning Branch reviews the proposal and notes that the carport will be constructed within an area of existing disturbance associated with an existing driveway. The Strategic Planning Branch determines that impacts to Aboriginal heritage are unlikely. The proposal therefore does not require any further assessment. If approved, the DA should include the Standard Conditions outlined below.

EXAMPLE 4: A DA proposes subdivision of a 5 acre property in the rural lands.

The area is searched on the Council GIS. Part of the property is within a Potential Investigation Area because it is in an area of relatively low historical impact within 200m of a ridgeline. It is not a 'low impact activity' under the NPW Regulation, and will involve substantial impacts through bulk earthworks, service installation and road and house construction. Impacts to Aboriginal heritage are possible and the Strategic Planning Branch therefore advises the applicant that an Aboriginal Heritage Assessment is required. The Aboriginal Heritage Assessment involves a detailed review of land use history and a field survey. There are 3 likely outcomes from the Assessment:

- It concludes that no Aboriginal sites or areas of Aboriginal archaeological potential are present, and therefore no further investigations are required. The report is used in the determination of the DA. If approved, the DA should include the Standard Conditions outlined below.
- 2. It concludes that an area of Aboriginal archaeological potential is present within the property. Archaeological test excavations are undertaken prior to DA submission under the OEH Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010b), which does not require an Aboriginal Heritage Impact Permit. The excavations reveal that Aboriginal objects are not present within the property and therefore no further investigations are required. The report is used in the determination of the DA. If approved, the DA should include the Standard Conditions outlined below.
- 3. It concludes that an area of Aboriginal archaeological potential is present within the property. Archaeological test excavations are undertaken prior to DA submission under the OEH Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010b), which does not require an Aboriginal Heritage Impact Permit. The excavations reveal that a partly impacted Aboriginal site (stone artefact scatter) is present within the property, but concludes that it can be managed through archaeological salvage under an Aboriginal Heritage Impact Permit (AHIP) as a condition of development consent. The development becomes Integrated Development and Aboriginal Heritage report is referred to the OEH for comment as part of the development assessment process. If approved, the DA makes consent conditional on approval of an AHIP by the OEH.

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Requirements for Aboriginal Heritage Assessment

Where Council or external development applicants are required to provide an Aboriginal heritage assessment, the following standards should be met. This will ensure that the assessment meets OEH Due Diligence Assessment requirements and the obligations of Council. These requirements should ultimately be enshrined in a DCP, and potentially outlined in an information brochure available to applicants, but in the interim the following should apply. Any Aboriginal heritage assessment report submitted to Council should:

- · be undertaken by a suitably qualified Aboriginal heritage consultant;
- also meet the requirements for Due Diligence as per the OEH Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales;
- contain evidence of Aboriginal community consultation with the relevant Local Aboriginal Land Council;
- include evidence of a current (no more than 12 months old) search of the AHIMS Aboriginal Sites Register and consideration of relevant previous Aboriginal heritage investigations;
- involve a field inspection, or justification as to why an inspection was not considered necessary (for example if background research confirmed that the land has been comprehensively disturbed in the past);
- consider ways in which harm to known or potential Aboriginal objects can be avoided in relation
 to the proposed activity and outline the steps to be followed to ensure this (e.g. an alternative
 location or method of construction);
- identify further requirements in situations where harm cannot be avoided (e.g. archaeological test excavation, application for an Aboriginal Heritage Impact Permit).

Actions Resulting from Aboriginal Heritage Assessments

All Aboriginal heritage assessments received by Council are to be reviewed by the Council Strategic Planning Branch to determine:

- If the assessment and documentation is sufficient to support a determination in relation to the proposal;
- If the assessment report and proposal will require referral to the Office of Environment & Heritage as Integrated Development under Part 5 of the Environmental Planning & Assessment Act (1979);
- Whether the Potential Investigation Area status of the land in question can be revised where it is
 found to have no Aboriginal heritage potential [and either undertaking or directing GIS staff to
 undertake that revision for the applicable area].

It is noted that there are some options under current procedure which allow further investigation without referral to the Office of Environment & Heritage. Under the OEH Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW, in certain circumstances, archaeological test excavation can be undertaken without an Aboriginal Heritage Impact Permit. As part of the

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Aboriginal Heritage Assessment, a proponent may decide, on advice from their Aboriginal heritage consultant, that such test excavations will take place prior to obtaining development consent. The resulting report will be described as an Aboriginal Cultural Heritage Assessment report, and will require referral to the Office of Environment & Heritage unless no Aboriginal objects were uncovered during the excavations and it is assessed that no potential harm will arise from the proposed development activity.

6.2.5 Other Proposed Aboriginal Heritage Management Actions

Revisions to Fairfield City Wide DCP

The current Fairfield City Wide DCP contains no specific procedures for Aboriginal heritage. It is proposed that this be updated in line with the final adopted Aboriginal Heritage Management Procedures to ensure that these are fully incorporated into the development assessment process. This could be through additional of an Appendix to the current DCP, which contains a summary version of the procedures outlined in **Sections 6.2.2** and **6.2.4**. The requirements of Council for any Aboriginal heritage assessments that are required should also be outlined clearly in this document.

Information Brochure

If the DCP is amended, this is considered sufficient information to provide to development applicants. It may also be useful however to convey the Aboriginal Heritage Management Procedures to applicants via a downloadable. Examples from other Councils can be referred to with regards to content.

Revisions to LEP

It is not proposed that any amendments to made to the existing LEP. Specifically, it is not proposed to add the Aboriginal heritage places (see attached) to the LEP Heritage Schedule. The reason is that most are already listed on the AHIMS Register or State Heritage Register and dual listing will not increase protections if the Aboriginal Heritage Management Procedures outlined above are adopted. The remaining places are of Aboriginal community significance and will require community consultation in relation to proposed impacts, which will be sufficient if the Aboriginal Heritage Management Procedures outlined above are adopted.

Standard Conditions

It is recommended that a standard condition be inserted on development consents which states the legal obligations relating to the discovery and/or impact of unexpected Aboriginal archaeological finds (including human remains) and the legal requirement for Due Diligence. The following conditions are based on current wording used by the OEH on Aboriginal Heritage Impact Permits:

Under the *National Parks* & *Wildlife Act* (1974), it is an offence to harm Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) without a valid and applicable Aboriginal Heritage Impact Permit under Section 90 of the Act. This applies whether the harm occurs either knowingly [s86(1)] or unknowingly [s86(2)]. It is a defence to the strict liability offence of harm to an Aboriginal object under s86(2) if a process of Due Diligence was followed which reasonably determined that the proposed activity would not harm an Aboriginal object. Due

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Diligence assessment can take a number of forms, including a generic process developed by the Office of Environment & Heritage. There are also some activities which are exempt from the strict liability offence. It is recommended that anyone proposing to carry out a development activity finds out what provisions or exceptions applies to their activity. For more information see http://www.environment.nsw.gov.au/licences/achregulation.htm.

If any Aboriginal objects or bones suspected of being human are found during your activity, you must:

- · Not further disturb or move these remains.
- Immediately cease all work at the particular location.
- In the case of suspected human remains only, notify NSW Police.
- Notify The Office of Environment & Heritage Environment Line on 131 555 as soon as
 practicable and provide available details of the objects or remains and their location.
- Not recommence any work at the particular location unless authorised in writing by the Office of Environment & Heritage.

Exempt and Complying Development

It is acknowledged that the Aboriginal Heritage Management Procedures outlined in this document are unlikely to be able to be applied to exempt and complying developments which fall within Potential Investigation Areas. However, Council can act to ensure that applicants and private assessors are aware of the legal protections surrounding Aboriginal heritage, and the obligation to undertake some form of Due Diligence to ensure that there is unlikely to be any impact to Aboriginal heritage from their proposed activity. This could include one or more of the following actions:

- Indicate Potential Investigation Areas on all applicable s.149 certificates.
- Make certifiers operating in Fairfield LGA aware of the DCP Appendix relating to Aboriginal Heritage and/or provide them with the Information Brochure.
- Provide certifiers operating in Fairfield LGA with the same Standard Conditions wording as
 proposed above for DA applicants, which summarises the legal protections afforded to Aboriginal
 heritage and/or provide them with a copy of the OEH 2010 policy document *Due Diligence Code*of Practice for the Protection of Aboriginal Objects in New South Wales.

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6.2.6 Staffing, Training and Resources

An essential part of the overall Aboriginal heritage management system is to have adequate resources and expertise allocated to ensure that the Council system runs efficiently, competently, accurately and remains up to date. To ensure this, there needs to be an appropriate commitment of staff, training and other resources. Specifically, the following are noted:

- Responsibility for oversight of the Aboriginal heritage management system should reside with the
 Strategic Planning Branch of Council to ensure that the system is applied consistently and is
 appropriately updated (e.g. through annual AHIMS Data updates). It is currently proposed that
 the Strategic Planning Branch provide advice and guidance within the parameters outlined in
 Sections 6.2.3 and 6.2.4 above, with further technical advice from the OEH. The Strategic
 Planning Branch should also have responsibility for updating the Aboriginal heritage
 management system. Ideally this should be written into the responsibilities of a particular position
 within the Strategic Planning Branch.
- All Council planning and land management staff who will interact with the Aboriginal heritage
 management system should be provided with a training session to familiarise themselves with
 the procedures, and how to obtain further information. The procedures outlined in Sections 6.2.3
 and 6.2.4 could also be written into a procedures manual as appropriate.
- Council's Aboriginal Advisory Committee should be made aware of, and agree to, their proposed
 role as a referral body for Aboriginal community contacts in the event that impacts are proposed
 to any of the 5 historical Aboriginal places identified in Table 5.2 (as opposed to the Aboriginal
 sites).

6.2.7 Researching and Celebrating Aboriginal Heritage and History

The final component of the recommended Aboriginal heritage management strategy is a commitment to further research, and exploring other ways that Aboriginal heritage and history can be protected and celebrated beyond the technical requirements of the planning system. This recognises that there is much yet to be learnt, that heritage and history and constantly being redefined, and that long-term protection of Aboriginal heritage is better achieved through the entire community seeing its value, rather than by trying to actively protect every heritage place (an impossible task). As several study participants stated, Aboriginal heritage and history is about people and recognition of the role Aboriginal people have played in the creating and servicing their own communities, as well as the role Aboriginal people have played more broadly in Fairfield's history.

Council is already active in this area, particularly through the Fairfield City Museum & Gallery, as the recent *Talk The Change/ Change the Talk* exhibition demonstrates. The exhibition featured interviews, images and crafts from local Aboriginal people, woven into a broader Aboriginal history, and provides an excellent illustration of the way that Council can foster awareness and respect for Aboriginal culture and history, and for Aboriginal people.

This study has identified some places of significance to Aboriginal people connected presently or historically to the Fairfield LGA. However it was clear from the limited consultation undertaken for

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this study, that more places may be identified through an oral history recording program, and that the stories behind those places already identified could be more fully explored. This could be a study in its own right or could also be undertaken with the view to a future exhibition. The information though, will be of direct relevance to the management of Aboriginal heritage within the LGA.

Another way in which awareness and respect for Aboriginal heritage could be promoted is through culturally sensitive Aboriginal guided visits to Aboriginal sites within the LGA. There are particular sensitivities about revealing the location of Aboriginal sites, due to their vulnerability to malicious damage. It is not considered appropriate for example, to disclose the location of Aboriginal scarred trees. However, within the LGA are several recorded Aboriginal stone artefact scatters that are either now covered over (and therefore protected from further damage) and/or have had artefacts collected from them by the amateur archaeologist who recorded them in the 1980s and 1990s. These sites could be appropriate and safe locations to visit on tours whereby the past activities of Aboriginal people could be discussed at the location where they took place. They could be illustrated either with photos of the artefacts recorded at these locations or potentially, through agreement with the Australian Museum, some of the actual collected artefacts could be used for teaching purposes. Some sites which may be appropriate for such tours include:

- Open campsite #45-5-2811 at Prairiewood, from which over 350 stone artefacts were retrieved from excavations but is now covered with grass (see Figure 5.5).
- Open campsite #45-5-0731 at Canley Vale, which is now turfed and protected, but was recorded by the Aboriginal Gandangara Eel Dreaming project in 1988.
- Open campsite #45-5-2911 at St Johns Park, from which artefacts were collected by the original recorder and are currently at the Australian Museum. The site also provides a good example of the survival of Aboriginal sites along a channelised creek

This idea would need to be discussed with local Aboriginal people through the Local Aboriginal Land Council and Council Aboriginal Advisory Committee and should only be developed with their endorsement and active involvement.



7.0

Study Recommendations

Based on the research and Aboriginal community consultation undertaken for the study, and in particular the discussions in **Section 6.0** and with reference to current legislative and policy requirements, the following recommendations are made. They are grouped according to assessed urgency as immediate, medium (1-3 years) and long (3-5 years) term proposed actions. These actions are to be undertaken by Council's Strategic Planning Branch unless otherwise specified.

7.1 Immediate Actions

- Adopt the Aboriginal heritage management system described in Section 6.0, and specifically, incorporate the procedures detailed in Sections 6.2.3 and 6.2.4 into Council's operations.
- Incorporate the supplied GIS map layers and attribute data into the Council GIS system with appropriate linkages to other relevant layers (e.g. Local Aboriginal Land Council boundaries).
- Provide Council staff working within the system with a checklist/manual of how to use the Aboriginal heritage management system, and provide them with adequate training in its use.
- Obtain the first AHIMS Site information data under the Aboriginal Heritage Information Licence Agreement with OEH (once submitted and processed).
- Ensure that the Standard Conditions outlined in Section 6.2.5 are incorporated into all future development consents.

7.2 Medium Term Actions (1-3 years)

- · Undertake relevant amendments to the Fairfield City Wide DCP.
- Develop a fact sheet for applicants, outlining Council's Aboriginal heritage requirements.
- Develop a procedure to ensure that all relevant future staff are trained in the use of the Aboriginal heritage management strategy.
- Obtain AHIMS Register data updates every 12 months as per the Aboriginal Heritage Information Licensing Agreement and renew the agreement as required.
- Council's Place and Community Development section to develop an Aboriginal oral history recording program specifically focussed on the identification of places of Aboriginal historical and heritage significance as discussed in Section 6.2.5 as part of future Operational Plans.
- Council's Place and Community Development section to discuss the potential for Aboriginal site
 tours with the Gandangara and Deerubbin Local Aboriginal Land Councils and Fairfield City
 Council Aboriginal Advisory Committee as discussed in Section 6.2.5. If the idea is supported,
 consider the role Council may play in funding and/or facilitating the development of these tours.

7.3 Long Term Actions (3-5 years)

Within five years, review the current study and Aboriginal heritage management system to
ensure its continuing usefulness and ensure its compliance with any amended state legislative
or policy requirements. Make any amendments as required, and incorporate any further
information about Aboriginal heritage places obtained through oral history or other research
which has not yet been added into the Aboriginal heritage management system.

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Fairfield City Council Aboriginal Heritage Study

APPENDICES

Appendix A: Aboriginal Community Consultation Records

Appendix B: Aboriginal Site and Museum Records

Appendix C: Policy and Procedure Documents



APPENDIX A: Aboriginal Community Consultation Records

Appendix A1: Aboriginal community consultation summary

Person/Organisation	Date	Notes
Brad Maybury (Gandangara LALC Aboriginal Heritage Officer)	18/01/2016	Meeting and discussion
Fairfield Council Aboriginal Heritage Study working group	11/02/2016	Meeting and discussion
Guntawang Aboriginal Womens' Group	23/02/2016	Presentation and discussion
Barry Gunther (RMS – formerly Gandangara LALC)	25/02/2016	Meeting
Brad Maybury (Heritage Officer), Len Malone (Chairperson), Dan Rose (CEO) - Gandangara LALC	9/03/2016	Meeting
Fairfield Council Aboriginal Advisory Committee	14/03/2016	Presentation and discussion
Gandangara LALC members meeting	16/03/2016	Promotion of study and upcoming meeting
Gandangara LALC heritage study meeting	21/03/2016	Workshop/discussion
Lil Possums playgroup, Bonnyrigg Public School	30/03/2016	Presentation and discussion
Miller Elders Group	2/05/2016	Presentation and discussion
Brad Maybury (Gandangara LALC Aboriginal Heritage Officer)	23/11/16	Discussion of draft report
Steve Randall (Deerubbin LALC Aboriginal Heritage Officer)	24/11/16	Discussion of draft report
Fairfield Council Aboriginal Advisory Committee	November 2016 to 31/1/2017	Provided with draft report and request for comments, discussions with Committee members by Des Smith (Committee Coordinator)
Lil Possums playgroup, Bonnyrigg Public School	30/11/16	Discussion of draft report
Miller Elders Group	5/12/2016	Discussion of draft report
Fairfield Council Aboriginal Advisory Committee	12/12/16	Scheduled to address regular meeting but meeting cancelled
Guntawang Aboriginal Womens' Group	13/12/16	Discussion of draft report

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Appendix A2: Aboriginal Community responses to Draft Study Report

See Section 2.3 for other comments provided during study consultation



20/1/2017

Mary Dallas Consulting Archaeologists PO Box A281 Arncliffe, NSW 2205 PH: (02) 44652546 FAX: (02) 85202006 Email: mdca.archaeologists@gmail.com

Dear Mr Irish,

Re: Fairfield City Council Aboriginal Heritage Study

I am writing on behalf of the Gandangara Local Aboriginal Land Council (GLALC) Board to endorse the findings of the Fairfield Heritage Study report.

GLALC supports the request for the Aboriginal Heritage Information Licence Agreement. (Data Licencing Agreement) which allows Fairfield City Council to access and maintain a copy of records for Aboriginal sites within the Fairfield Local Government Area on the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System.

GLALC would like to thank Fairfield City Council and Mr Paul Irish from Mary Dallas Consulting Archaeologists for compiling an Aboriginal heritage study for the Fairfield Local Government area.

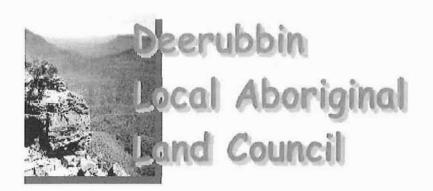
If you have any questions please do not hesitate to contact GLALC on (02)9602 5280. Yours sincerely,

Lennie Malone Chairperson Gandangara Local Aboriginal Land Council

103 Moore Street, Liverpool 2170 I PO Box 1038, Liverpool Business Centre 1871
Phone: (02) 9602 5280, Fax: (02) 9602 2741, Email: Reception@sasl.org.au,
Website: Gandangara.com.au, Facebook, Gandangara.

ABN 59 476 858 149
Page 1 of 1





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PO Box 40 Penrith BC NSW 2751 AUSTRALIA

ABN: 41 303 129 586 T: (02) 4724 5600 F: (02) 4722 9713 E: reception@deerubbin.org.au W: http://www.deerubbin.org.au

Fairfield City Council

C/- Mary Dallas Consulting Archaeologists

P O Box A281

ARNCLIFFE NSW 2205

18 January 2017

PROTECTION OF ABORIGINAL CULTURAL HERITAGE

Fairfield City Council Aboriginal Heritage Study

Attention: Paul Irish, Principle Consultant & Historian

Deerubbin Local Aboriginal Land supports the recommendations on page 96 of the revised draft report of the Aboriginal Heritage Study for the Local Government Area of Fairfield City Council.

Yours Faithfully,

(Steven Randall

Aboriginal Cultural Heritage Officer)



APPENDIX B: Current Register Records

Appendix B1: AHIMS Search Records

The following list is an abridged version of the site records from AHIMS obtained in the course of the study. Full records of most sites have been provided separately to Council, along with coordinates and location descriptions. For reasons of site protection, site coordinates are not provided in this table.

AHIMS#	Site Names	Site Type	# Stone Artefacts	Permit #	Site Recorder/s	AHIMS Report #
45-5-0740	Carawood Park Caramar	Isolated Find	1	None	R Lampert	102196
45-5-2523	OSC-IF-1	Isolated Find	1	None	Mrs.Robynne Mills	98743,102196
45-5-2524	OSC-IF-2	Isolated Find	1	None	Mrs.Robynne Mills	98743,102196
45-5-2046	PGH2;Monier PHG;	Isolated Find	1	None	Noeleen Curran	98435,103366
45-5-2057	PGH1;Monier PGH;	Isolated Find	1	None	Noeleen Curran	98435,103366
45-5-3381	Oakdale IF 1	Isolated Find	1	2836	Dominic Steele Archaeological Consulting	
45-5-4327	Oakdale Central 1	Isolated Find	1	None	GML Heritage Pty Ltd, Miss. Diana Cowie	
45-5-4328	Oakdale Central 2	Isolated Find	1	None	GML Heritage Pty Ltd, Miss. Diana Cowie	
45-5-4329	Oakdale Central 3	Isolated Find	1	None	GML Heritage Pty Ltd, Miss. Diana Cowie	
45-5-4330	Oakdale Central 4	Isolated Find	1	None	GML Heritage Pty Ltd, Miss. Diana Cowie	
45-5-0274	Bosley Park	Open Campsite	13	None	Jenny Hanrahan	260,1018,98435,103 366
45-5-0273	Cowpasture Road	Open Campsite	11	None	Jenny Hanrahan	260,1018,103366
45-5-0730	Orphan School Creek 5	Open Campsite	3	None	Gandangara Eel Dreamers	1506,102196
45-5-0731	Orphan School Creek 4	Open Campsite	10	None	Gandangara Eel Dreamers	1506,102196
45-5-0733	Orphan School Creek 2	Open Campsite	10	None	Gandangara Eel Dreamers	
45-5-2021	SCR Abbotsbury	Open Campsite	?	None	Michael Guider 98435,103366	
45-5-2022	Cowpasture Road;Bossley Park;	Open Campsite	?	None	Michael Guider	103366
45-5-2536	CPC-OCS-1	Open Campsite	4	None	Mrs.Robynne Mills	
45-5-2811	OSC-OS-1	Open Campsite	358	None	Megan Mebberson	98743,102196
45-5-2819	Glen Elgin	Open Campsite	3	None	Michael Guider	103366
45-5-2820	Fairfield GC	Open Campsite	?	None	Michael Guider	98743,102196
45-5-2911	Clear Paddock Creek	Open Campsite	6	None	Michael Guider	102196
45-5-3697	JP 1 (Canley Vale)	Open Campsite	>27	None	Michael Guider	
45-5-1099	Hume Highway;	Open Campsite	>8	None	Michael Guider	102196
45-5-2535	CPC-OCS-1	Open Campsite	?	None	ASRSYS	
45-5-2721	PAD-OS-7	Open Campsite	34	1396,187 2	Mrs.Robynne Mills	103366
45-5-2857	HP1	Open Campsite	?	None	Mr.John Appleton	
45-5-2859	DTAC 1	Open Campsite	?	1683	Colin Gale	
45-5-2860	DTAC 2	Open Campsite	?	1683	Colin Gale	

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AHIMS#	Site Names	Site Type	# Stone Artefacts	Permit #	Site Recorder/s	AHIMS Report #
45-5-2861	DTAC 3	Open Campsite	?	1683,283 6	Colin Gale	
45-5-2862	HP 2	Open Campsite	?	1683,213 3,2836	Mr.John Appleton	
45-5-3095	PGH3	Open Campsite	2	None	Noeleen Curran	103366
45-5-3269	OSC 1	Open Campsite	?	2571	Therin Archaeological Consulting	102196
45-5-3383	Oakdale Campsite 2	Open Campsite	6	None	Dominic Steele Archaeological Consulting	
45-5-3387	Oakdale Campsite 6	Open Campsite	3	None	Dominic Steele Archaeological Consulting	
45-5-3684	WR1 (Prospect)	Open Campsite	4	None	Australian Building Certification	103004
45-5-4680	The Horsley Drive AFT 8	Open Campsite	10	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Tyler Beebe	
45-5-3272	PC1	Open Campsite, PAD	?	2582,259 4,2696	Australian Museum Consulting (AM Consulting)	102196
45-5-0729	Orphan School Creek 6	Open Campsite,Scarre d Tree	2	None	Gandangara Eel Dreamers	1506,98743,102196
45-5-3082	Horsley Dr PAD	PAD		2328	Ms.Laila Haglund	100557,103366
45-5-2650	OSC-OS-1/PAD 3	PAD	?	1320,140 5	Mrs.Robynne Mills	98743,102196
45-5-0732	Orphan School Creek 3	Scarred Tree	0	None	Gandangara Eel Dreamers	1506,102196
45-5-0734	Orphan School Creek 1	Scarred Tree	0	None	Gandangara Eel Dreamers	102196
45-5-4301	Carramar ST/ Marsden Park Artefact Scatter	Scarred Tree	2	None	Sydney Water- Parramatta,Ms.Yvonne Kaiser	
45-5-2476	IF10	Isolated Find	1	None	Helen Brayshaw	103366
45-5-2477	IF11	Isolated Find	1	1398	Helen Brayshaw	103366
45-5-2563	DLC2	Isolated Find	1	None	Annie Nicholson	103366
45-5-2582	EC8,	Isolated Find	1	1444	Mr.Kelvin Officer	98435
45-5-2886	A-OS-1	Isolated Find	1	None	Jim Kelton	
45-5-2795	WSO-IF-1	Open Campsite	1	1398	Mrs.Robynne Mills	103366
45-5-2796	WSO-IF-2	Open Campsite	1	None	Mrs.Robynne Mills	
45-5-0920	Abbotsbury 1;	Open Campsite	5	461	Kerry Navin	103366
45-5-0921	Abbotsbury 2;	Open Campsite	3	None	Kerry Navin	98435,103366
45-5-0922	Abbotsbury 3;	Open Campsite	3	None	Kerry Navin	98435,103366
45-5-0948	Abbotsbury 4;	Open Campsite	2	None	Elizabeth Rich	2620,98435,103366
45-5-0980	Abbotsburry 4 - duplicate of 45-5- 0948	Open Campsite	2	None	Kerry Navin,Doctor.Susan McIntyre-Tamwoy	2950,98435,103366
45-5-3952	Prospect Pipehead (PP) 3	Open Campsite	?	3474	Ms.Jillian Comber,Comber Consultants Pty Limited	102085
45-5-0805	PA1;Prospect Reservoir;	Open Campsite	?	None	Ms.Jillian Comber	1919,98743
45-5-0806	PA2;Prospect Reservoir;	Open Campsite	?	None	Ms.Jillian Comber	1919,98743
45-5-0836	Prospect Tunnel;PT 1;	Open Campsite	?	None	Ms.Jillian Comber	2074,98743
45-5-0866	TPP 1;Prospect Reservoir;	Open Campsite	?	None	Denise Donlon	2246,98435
45-5-0868	PP1;Prospect Reservoir;	Open Campsite	?	340	Ms.Jillian Comber,L Grey	2225,98283,98743,1 02196

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AHIMS#	Site Names	Site Type	# Stone Artefacts	Permit #	Site Recorder/s	AHIMS Report #
45-5-2354	FCF1;	Open Campsite	?	None	Tony Kondek	
45-5-2567	DLC1	Open Campsite		None	Annie Nicholson	98435,103366
45-5-2884	A-IF-1	Open Campsite	1	None	Jim Kelton	
45-5-2885	A-IF-2	Open Campsite	1	None	Jim Kelton	
45-5-3631	A-OS-2 (Liverpool)	Open Campsite	4	None	Jim Kelton	
45-5-4488	Site within Steeplechase Track	Open Campsite	?	3776	Ms.Ngaire Richards	103366
45-5-4677	The Horsley Drive IF	Open Campsite	1	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Tyler Beebe	
45-5-4678	The Horsley Drive IF 2	Open Campsite	1	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Tyler Beebe	
45-5-4679	The Horsely Drive AFT 7	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Tyler Beebe	
45-5-4681	The Horsley Drive AFT 1	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson	
45-5-4682	The Horsley Drive AFT 2	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson	
45-5-4683	The Horsley Drive AFT 3	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson	
45-5-4684	The Horsley Drive AFT 4	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson	
45-5-4685	The Horsley Drive AFT 6	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd.Mr.Benjamin Anderson	
45-5-4686	The Horsley Drive AFT 5	Open Campsite	?	None	Kelleher Nightingale Consulting Pty Ltd,Mr.Benjamin Anderson	
45-5-0765	GPR 1 (Prospect Reservoir)	Open Campsite	3	None	Elizabeth Rich,Laura-Jane Smith,Miss.Lisa Smith	1723,1857,103366
45-5-0768	PR 4 (Prospect Reservoir)	Open Campsite	17	None	Elizabeth Rich	1723,1857,103366
45-5-0801	PB1 (Prospect Reservoir)	Open Campsite	9	None	Ms.Jillian Comber,Elizabeth Rich	1857,1919,2295,103 366
45-5-0802	PB2 (Prospect Reservoir)	Open Campsite	4	None	Ms.Jillian Comber,Elizabeth Rich	1857,98743
45-5-0803	PB3 (Prospect Reservoir)	Open Campsite	8	None	Ms.Jillian Comber,Elizabeth Rich	1857,98743
45-5-0804	PB4 (Prospect Reservoir)	Open Campsite	?	None	Ms.Jillian Comber,Elizabeth Rich	1857,1919,98283,98 743,102196
45-5-0766	PR 2 (Prospect Reservoir)	Open Campsite (glass artefacts	>1000	None	Elizabeth Rich	1723,1857,98283,10 3366
45-5-0767	PR 3 (Prospect Reservoir)	Open Campsite (glass artefacts	<2000	None	Elizabeth Rich	1723,1857,98283,10 3366
45-5-0867	TPP2;Prospect Reservoir;	Scarred Tree	1	None	Denise Donlon	2246,103366
45-5-0800	Scarred Tree Prospect Reservoir	Scarred Tree	1	None	Ms.Jillian Comber,Elizabeth Rich	1857,103366

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Appendix B2: Summary of Aboriginal Objects Held in Museum Collections

The Australian Museum is the only museum known to contain Aboriginal artefacts from within the Fairfield LGA in its collections. Some of the ground edge hatchets (stone axes) have been loaned to the Fairfield Museum & Gallery in the past, but all are from the Australian Museum collections. The Fairfield Museum & Gallery holds no local (Fairfield LGA) items in its own collections, with the possible exception of an unmarked stone axe which has no accompanying information.

Object/s	Item Number/s	Acquired 1924	
Stone axe from Fairfield	E028966 (currently on loan to Fairfield Museum & Gallery)		
Stone axe from Fairfield	E031055	1927	
Stone axe from Fairfield	E034160	1931	
Stone axe from Fairfield	E059293	1958	
4 stone artefacts found at Canley Heights (described as Duke & Adolphus Street)	MG Coll No. 550	1990s	
3 stone and 3 shell artefacts found at Canley Heights (described as Orphan School Creek, Near Sappho Street)	MG Coll No. 547 AHIMS #45-5-0729 to 0	1990s	
2 stone artefacts found at Canley Vale (described as Avenel Park 1, Canley Vale)	MG Coll No. 549	1990s	
2 stone artefacts found at Canley Vale (described as Avenel Park 2, Canley Vale)	MG Coll No. 596	1990s	
20 stone artefacts and 1 key found at Canley Vale (described as Canley Vale main)	MG Coll No. 867	1990s	
3 stone artefacts found at Canley Vale (described as Canley Vale other side)	MG Coll No. 709	1990s	
1 stone and 1 shell artefact found at Canley Vale (described as Canley Vale other side Big Gum)	MG Coll No. 866	1990s	
2 stone artefacts found at Canley Vale (described as Canley Vale other side Wattle)	MG Coll No. 708	1990s	
11 stone artefacts and a pottery fragment found at Canley Vale (described as Hume Highway Median Strip, Canley Vale)	MG Coll No.389	1990s	
1 stone artefact found at Canley Vale (described as Lansdown Bridge)	MG Coll No. 548	1990s	
21 stone artefacts found at Canley Vale (described as Orphan School Creek, Fourth Ave)	MG Coll No. 546 AHIMS #45-5-0729 to 0	1990s	

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Object/s	Item Number/s	Acquired
Unknown number of stone artefacts found at Lansvale (described as Lansdowne Bridge vicinity)	MG Coll No. 46	1990s
Unknown number of stone artefacts found at Lansvale (described as Lansvale)	MG Coll No. 54	1990s
Unknown number of stone artefacts and European material found at Lansvale (described as Lansvale)	MG Coll No. 55	1990s
5 stone artefacts found at Lansvale (described as Lansvale Big Tree)	MG Coll No. 47	1990s
2 stone artefacts found at Lansvale (described as Lansvale Big Tree)	MG Coll No. 580	1990s
1 stone artefact found at Lansvale (described as Lansvale Hume Highway? Main highway site)	MG Coll No. 579 AHIMS # 45-5-1088?	1990s
4 stone artefacts found at Lansvale (described as Lansvale Hume Highway (Sizzlers))	MG Coll No. 404 AHIMS #45-5-1088?	1990s
1 stone artefact found at Lansvale (described as Lansvale ISO)	MG Coll No. 31	1990s
Unknown number of stone and shell artefacts found at Lansvale (described as Lansvale ISO)	MG Coll No. 34	1990s
Unknown number of stone artefacts and European material found at Lansvale (described as Lansvale opposite highway)	MG Coll No. 33	1990s
43 stone, 1 shell, 1 bone and 1 European artefact found at Lansvale (described as Prospect Creek, Lansvale)	MG Coll No. 437	1990s
Unknown number of stone artefacts and European material found at Lansvale/ Warwick Farm (described as Remembrance Drive, Lansdale/Warwick Farm)	MG Coll No. 81	1990s
4 stone artefacts found at Canley Vale (described as Sizzlers (?=Sizzlers at Lansvale ID 404?))	MG Coll No. 605	1990s
13 stone artefacts found at Lansvale (described as Fourth Avenue Canley Vale)	MG Coll No. 1182	1990s
2 stone artefacts and 1 European item found at Lansvale (described as Remembrance Drive)	MG Coll No. 1183	1990s

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APPENDIX C: Policy and Procedure Documents

Appendix C1: OEH 2010 Due Diligence Code of Practice

See Section 7.5 for definitions of 'low impact activities' and 'disturbed land' as per the National Parks and Wildlife Regulations 2009, Reg 80B.

Important Note: These definitions are current as of November 2016 but may be subject to change. Please check before use.

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Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales

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13 September 2010

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Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au

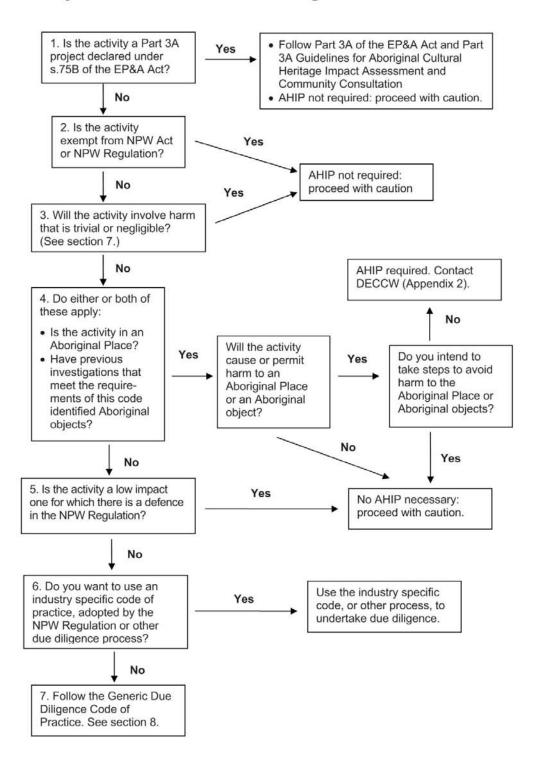
See also www.environment.nsw.gov.au/pollution

DECCW 2010/798 ISBN 978 1 74232 941 3 September 2010

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Apı	pendix 1: Examples of Aboriginal objects
App	pendix 2: Contact details for DECCW EPRG Regional Offices

1 Do you need to use this due diligence code?



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2 Purpose of this code of practice

This code of practice is to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP).

The National Parks and Wildlife Act 1974 (NPW Act) provides that a person who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP.

The NPW Act allows for a generic code of practice to explain what due diligence means. Carefully following this code of practice, which is adopted by the National Parks and Wildlife Regulation 2009 (NPW Regulation) made under the NPW Act, would be regarded as 'due diligence'. This code of practice can be used for all activities across all environments.

This code sets out the reasonable and practicable steps which individuals and organisations need to take in order to:

- 1 identify whether or not Aboriginal objects are, or are likely to be, present in an
- 2 determine whether or not their activities are likely to harm Aboriginal objects (if present)
- 3 determine whether an AHIP application is required.

If Aboriginal objects are present or likely to be present **and** an activity will harm those objects, then an AHIP application will be required. Information about the permits and how to apply for them can be obtained through the Department of Environment, Climate Change and Water (DECCW) website at www.environment.nsw.gov.au/licences/index.htm.

3 Who should use this code?

Section 1 explains if you need to follow the due diligence process described in this code. This code can be used by individuals or organisations who are contemplating undertaking activities which could harm Aboriginal objects. This code will provide a process whereby a reasonable determination can be made as to whether or not Aboriginal objects will be harmed by an activity, whether further investigation is warranted and whether the activity requires an AHIP application.

If through this or any other process that meets the standards of this code, such as an environmental impact assessment, you have already taken reasonable steps to identify Aboriginal objects in an area subject to a proposed activity and it is already known that Aboriginal objects will be harmed or are likely to be harmed by an activity, then an application should be made for an AHIP.

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4 How does the code link to other planning processes?

4.1 Development under Part 4 EP&A Act and activities under Part 5 EP&A Act

Consideration of the potential impacts of development on Aboriginal heritage is a key part of the environmental impact assessment process under the *Environmental Planning and Assessment Act 1979* (EP&A Act). The standards in this code can be used or adapted by proponents to inform the initial assessment of the environmental impacts of an activity on Aboriginal heritage. An environmental impact assessment which meets all of the requirements of this code will satisfy the due diligence test. Alternatively, you could adapt the requirements of this code, provided it still meets the ordinary meaning of exercising due diligence (see section 7.7).

If it is found through this initial assessment process that Aboriginal objects will or are likely to be harmed, then further investigation and impact assessment will be required to prepare information about the types of objects and the nature of the harm. This is further explained at step 5 in section 8. If you are going to harm a known Aboriginal object you will need to apply for an AHIP. In this situation, the need to obtain the AHIP is in addition to any approval under the EP&A Act (unless the project is subject to Part 3A EP&A Act).

4.2 Major projects under Part 3A EP&A Act

If your activity is a declared Part 3A project under s.75B of the EP&A Act you should refer to the 2005 (draft) Part 3A EP&A Act Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (as amended from time to time). These guidelines are available from the Department of Planning (see section 7).

4.3 Exempt and complying development under the EP&A Act

The due diligence process can still apply to an activity that is exempt or complying development within the meaning of the EP&A Act. However, if the exempt or complying development is a low impact activity as defined by the NPW Regulation then you may have a defence under the NPW Act and do not need to follow due diligence in carrying out the activity. Refer to section 7.

5 Do I need to consult?

Consultation with the Aboriginal community is not a formal requirement of the due diligence process. However, proponents may wish to consider undertaking consultation if it will assist in informing decision-making.

The following organisations can assist with identifying Aboriginal people who may hold cultural knowledge relevant to determining the significance of Aboriginal objects and or places:

- the relevant DECCW EPRG regional office (see Appendix 2)
- the relevant Local Aboriginal Land Council(s)¹
- the Registrar, Aboriginal Land Rights Act 1983, for a list of Aboriginal owners²
- the National Native Title Tribunal for a list of registered native title claimants, native title holders and registered Indigenous Land Use Agreements³

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www.alc.org.au

² www.oralra.nsw.gov.au

- NTSCorp Limited⁴
- the relevant local council(s)
- the relevant catchment management authorities for contact details of any established Aboriginal reference group.

If at any point an application is made for an AHIP then the consultation must be undertaken in accordance with the requirements in cl.80C of the NPW Regulation.

These requirements may also be followed where there is uncertainty about potential harm to Aboriginal objects and Aboriginal Places and you are undertaking an investigation and assessment of Aboriginal cultural heritage.

6 What are the advantages of due diligence?

In the context of protecting Aboriginal cultural heritage, due diligence involves taking reasonable and practicable measures to determine whether your actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm.

There are several advantages to having a due diligence process for assessing potential harm to Aboriginal objects in that it:

- · assists in avoiding unintended harm to Aboriginal objects
- provides certainty to land managers and developers about appropriate measures for them to take
- encourages a precautionary approach
- provides a defence against prosecution if the process is followed
- · results in more effective conservation outcomes for Aboriginal cultural heritage.

7 Do you need to use this due diligence code?

Section 1 provides guidance on questions to ask to determine whether you need to follow this due diligence process.

7.1 Is the activity a declared project under Part 3A of the EP&A Act?

Where a project is seeking approval under Part 3A you need to identify, in the project application or concept plan application and any accompanying Preliminary Environmental Assessment, if the project will harm Aboriginal objects. If your project is a declared Part 3A project under s.75B of the EP&A Act, and you have been issued the Director General's requirements in relation to Aboriginal objects, you do not need to apply for an AHIP to harm Aboriginal objects under the NPW Act provided you follow these Director General's requirements and any conditions of approval.

You should refer to the 2005 (draft) Part 3A EP&A Act Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (as amended from time to time). These guidelines are available from the Department of Planning.

The above does not apply:

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³ www.nntt.gov.au

⁴ www.ntscorp.com.au

- where a project was approved under Division 4 of Part 5 (now repealed) of the EP&A Act – in this situation an AHIP will be required if the activity proposes to harm Aboriginal objects
- where a project is approved under Part 3A of the EP&A Act but subsequent
 applications are sent back to the consent authority (usually a local council) to
 determine under Part 4 of the EP&A Act (for example, some staged development
 or concept plan approvals) in this situation any Aboriginal heritage matters not
 already covered by the Part 3A approval may still require an AHIP.

In these situations you should follow the steps in section 8 or some other due diligence process.

7.2 Is the activity an exempt activity listed in the National Parks and Wildlife Act or other legislation?

The NPW Act provides exemptions to the offences of harming Aboriginal objects and Aboriginal Places in certain circumstances. These are for:

- Aboriginal people and their dependants when carrying out non-commercial traditional cultural activities
- any emergency fire fighting or bush fire hazard reduction work within the meaning of the Rural Fires Act 1997 that is authorised or required to be carried out under that Act
- emergency activities carried out under the State Emergency and Rescue
 Management Act 1989 that are reasonably necessary in order to avoid an actual
 or imminent threat to life or property
- works by, or directed by, authorised DECCW officers to protect or conserve Aboriginal objects
- anything specifically required or permitted under the express terms of a conservation agreement entered into under Division 12 of Part 4 of the NPW Act.

7.3 Will the activity involve harm that is trivial or negligible?

Section 86 of the NPW Act sets out a number of offences about 'harm' to an Aboriginal object. Harm means any act or omission that:

- destroys, defaces, or damages the object
- moves the object from the land on which it had been situated
- causes or permits the object to be harmed.

Harm does not include something that is trivial or negligible. Examples of what might be a trivial or negligible act are picking up and replacing a small stone artefact, breaking a small Aboriginal object below the surface when you are gardening, crushing a small Aboriginal object when you walk on or off a track, picnicking, camping or other similar recreational activities.

7.4 Is the activity in an Aboriginal Place or are you already aware of Aboriginal objects on the land?

Aboriginal places

Aboriginal Places are declared by the Minister under s.84 of the NPW Act. The location of Aboriginal Places is made available to the public via the government gazette (available through the NSW Department of Services, Technology and

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Administration). The places are also listed on the DECCW website. The due diligence defence is not available for activities which harm Aboriginal places. If you wish to undertake an activity which may harm an Aboriginal place, you must apply for an AHIP.

Known Aboriginal objects

If as a result of previous investigations that meet the requirements of this code you already know that Aboriginal objects are in the area and that harm to these objects cannot be avoided, then you need to apply for an AHIP. If the previous investigation includes a search on the Aboriginal Heritage and Information Management System (AHIMS) database (maintained by DECCW's Country, Culture and Heritage Division) which is over 12 months old you must search AHIMS again to ensure that the information is still current.

7.5 Is the activity a low impact activity for which there is a defence in the Regulation?

The NPW Regulation removes the need to follow the due diligence process if you are carrying out a specifically defined low impact activity. As a result, you are not required to follow this code or any other due diligence process if your activity is listed below. It is important to note that this defence does not apply to situations where you already know there is an Aboriginal object. This defence does not authorise harm to known Aboriginal objects.

The following low impact activities are prescribed in the NPW Regulation as a defence against the strict liability s86 (2) offence.

Clause 80B Defence of carrying out certain low impact activities: section 87 (4)

- (1) It is a defence to a prosecution for an offence under section 86 (2) of the Act, if the defendant establishes that the act or omission concerned:
 - (a) was maintenance work of the following kind on land that has been disturbed:
 - (i) maintenance of existing roads, fire and other trails and tracks,
 - (ii) maintenance of existing utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines), or
 - (b) was farming and land management work of the following kind on land that has been disturbed:
 - (i) cropping and leaving paddocks fallow,
 - (ii) the construction of water storage works (such as farm dams or water tanks),
 - (iii) the construction of fences,
 - (v) the construction of irrigation infrastructure, ground water bores or flood mitigation works,
 - (vi) the construction of erosion control or soil conservation works (such as contour banks), or
 - (c) was farming and land management work that involved the maintenance of the following existing infrastructure:
 - (i) grain, fibre or fertiliser storage areas,
 - (ii) water storage works (such as farm dams or water tanks),
 - (iii) irrigation infrastructure, ground water bores or flood mitigation works,
 - (iv) fences,
 - (v) erosion control or soil conservation works (such as contour banks), or

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- (d) was the grazing of animals, or
- (e) was an activity on land that has been disturbed that comprises exempt development or was the subject of a complying development certificate issued under the Environmental Planning and Assessment Act 1979, or
- (f) was mining exploration work of the following kind on land that has been disturbed:
 - (i) costeaning,
 - (ii) bulk sampling,
 - (iii) drilling, or
- (g) was work of the following kind:
 - (i) geological mapping,
 - (ii) surface geophysical surveys (including gravity surveys, radiometric surveys, magnetic surveys and electrical surveys), but not including seismic surveys,
 - (iii) sub-surface geophysical surveys that involve downhole logging,
 - (iv) sampling and coring using hand-held equipment, except where carried out as part of an archaeological investigation, or

Note. Clause 3A of this Regulation provides that an act carried out in accordance with the Code of Practice for Archaeological Investigation in NSW is excluded from meaning of harm an objects or place for the purposes of the Act.

- (h) was the removal of isolated, dead or dying vegetation, but only if there is minimal disturbance to the surrounding ground surface, or
- (i) was work of the following kind on land that has been disturbed:
 - (i) seismic surveying,
 - (ii) the construction and maintenance of ground water monitoring bores, or
- (j) was environmental rehabilitation work including temporary silt fencing, tree planting, bush regeneration and weed removal, but not including erosion control or soil conservation works (such as contour banks).
- (2) Subclause (1) does not apply in relation to harm to an Aboriginal culturally modified tree.
- (3) In this clause, Aboriginal culturally modified tree means a tree that, before or concurrent with (or both) the occupation of the area in which the tree is located by persons of non-Aboriginal extraction, has been scarred, carved, or modified by an Aboriginal person by:
 - (a) the deliberate removal, by traditional methods, of bark or wood from the
 - (b) the deliberate modification, by traditional methods, of the wood of the tree.
- (4) For the purposes of this clause, land is disturbed if it has been the subject of human activity that has changed the land's surface, being changes that remain clear and observable.

Note: Examples of activities that may have disturbed land include the following:

- (a) soil ploughing,
- (b) construction of rural infrastructure (such as dams and fences),
- (c) construction of roads, trails and tracks (including fire trails and tracks and walking tracks),
- (d) clearing of vegetation,
- (e) construction of buildings and the erection of other structures,

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- (f) construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure),
- (g) substantial grazing involving the construction of rural infrastructure,
- (h) construction of earthworks associated with anything referred to in paragraphs (a)-(g).

If your activity is included in this list you are not required to go through the due diligence process. Proceed with caution, and if Aboriginal objects are later found when you are carrying out your activity, you must stop work, notify DECCW and apply for an AHIP if you intend to harm those known objects.

If your activity is not on this list go to 7.6.

7.6 Do you want to use an industry specific code of practice?

The NPW Act also provides that due diligence may be exercised by complying with a code of practice which is adopted under the NPW Regulation. These codes provide due diligence guidance tailored for specific types of activities or industries. Codes which have been adopted are the:

- Plantation and Reafforestation Code (being the Appendix to the Plantations and Reafforestation (Code) Regulation 2001) as in force on 15 June 2010
- Private Native Forestry Code of Practice approved by the Minister for Climate Change and the Environment and published in the Gazette on 8 February 2008⁵
- NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects published by the NSW Minerals Council Ltd and dated 13 September 2010
- Aboriginal Objects Due Diligence Code for Plantation Officers Administering the Plantations and Reafforestation (Code) Regulation 2001 published by the Department of Industry and Investment and dated 13 September 2010
- Operational Guidelines for Aboriginal Cultural Heritage Management published by Forests NSW and dated 13 September 2010.

If your activity is subject to an industry specific code that has been adopted by the NPW Regulation, you can follow that code instead of the requirements of this generic code.

Other industry associations may wish to develop codes of practice and DECCW will consider their adoption on a case by case basis.

If your activity is not subject to an industry specific code, go to section 8.

7.7 Do you wish to follow your own procedure?

You can follow your own due diligence process and manage your own risk.

Due diligence amounts to taking reasonable and practicable steps to protect Aboriginal objects. This generic code provides one process for satisfying the due diligence requirements of the NPW Act.

It is not mandatory to follow this code. An individual or corporation can take other measures, provided that such measures are objectively reasonable and practicable and meet the ordinary meaning of exercising due diligence.

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⁵ www.environment.nsw.gov.au/pnf/index.htm

For example, if your proposed activity requires environmental impact assessment under the EP&A Act which includes appropriate Aboriginal cultural heritage assessment, then due diligence could be exercised through that assessment rather than through a separate assessment that specifically follows the steps in this code. A Statement of Environmental Effects (SEE), a Review of Environmental Factors (REF) or an Environmental Impact Statement (EIS) under Part 4 or Part 5 of the EP&A Act can be used to satisfy the due diligence process if it adequately addresses Aboriginal cultural heritage issues.

It is important that your due diligence measures are documented clearly and that these records are kept.

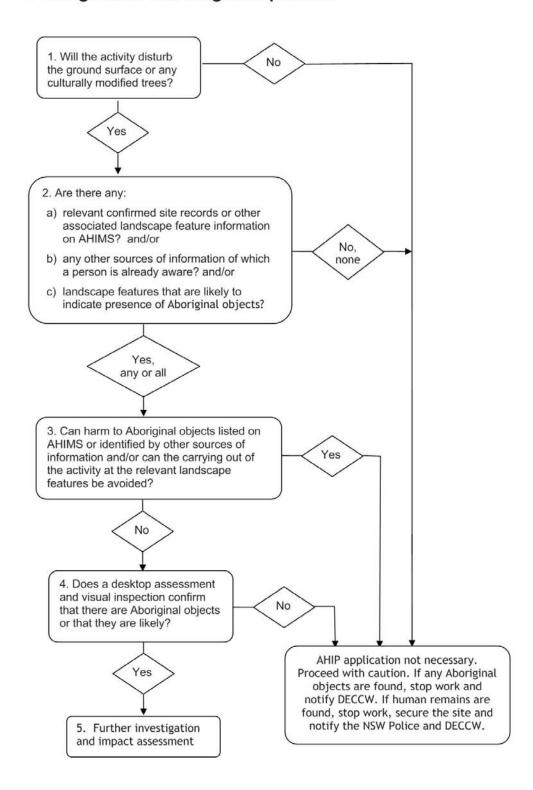
DECCW will not approve or certify a person's compliance with their due diligence requirements carried out under this or any other code. This is the responsibility of the company or individual doing the activity.

7.8 Follow the due diligence code of practice

If none of the above steps apply to your activity, to establish due diligence you must proceed through the generic due diligence process outlined in the flowchart in section 8 and explained further in that section.

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8 The generic due diligence process



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Step 1. Will the activity disturb the ground surface?

The first question to ask in the due diligence process is, Will the activity disturb the ground surface or any culturally modified trees? If an activity will disturb the ground surface there is a higher likelihood that Aboriginal objects will be harmed.

Disturbance of the ground surface is often significant when machinery is used to dig, grade, bulldoze, scrap, plough, or drill the ground surface for the purpose of, for example, building a structure or removing vegetation.

If your activity will not disturb the ground surface or any culturally modified trees then you can proceed with caution without applying for an AHIP.

If the activity will disturb the ground surface or any culturally modified trees then check the AHIMS database – step 2a.

Step 2a. Search the AHIMS database and use any other sources of information of which you are already aware

You should search the AHIMS database and check whether any Aboriginal sites have been recorded in the area where you are proposing to carry out your activity. There may also be additional landscape or other contextual information, relevant to the area of your proposed activity on AHIMS.

Information on AHIMS searches is available on DECCW's website.6

The initial web-based search of AHIMS is free and you will be able to print the results of your search for record keeping purposes. For the purposes of due diligence you may rely on the search results for 12 months. (See section 10 for record keeping recommendations for the due diligence process.)

If the results of the initial AHIMS search indicate that AHIMS contains information about recorded Aboriginal objects in the area of your proposed activity you must obtain copies of those records. Contact the AHIMS registrar by faxing the request form or submitting the request form over the internet. Costs may apply depending on the type of information you are asking for. There may also be restrictions in providing culturally sensitive information.

After obtaining records from AHIMS of any recorded Aboriginal objects you should confirm that these objects can be located in the area where your activity is proposed. If you think the information on AHIMS is not up to date or is inaccurate you should contact the AHIMS registrar on 02 9585 6471, 02 9585 6345 or 02 9585 6157 for further advice.

If you are aware of any other sources of information, you need to use these to identify whether or not Aboriginal objects are likely to be present in the area. Other sources of information can include previous studies, reports or surveys which you have commissioned or are otherwise aware of.

Go to step 2b.

Step 2b. Activities in areas where landscape features indicate the presence of Aboriginal objects

Regardless of whether your AHIMS search indicates known Aboriginal objects, you still need to consider whether Aboriginal objects are likely to be in the area of the proposed activity having regard to the following landscape features.

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 $^{^{6}\} www.environment.nsw.gov.au/licences/Aboriginal Heritage Information Management System.htm$

Aboriginal objects are often associated with particular landscape features as a result of Aboriginal people's use of those features in their everyday lives and for traditional cultural activities. Examples of such landscape features are rock shelters, sand dunes, waterways, waterholes and wetlands. Therefore it is essential to determine whether the site contains landscape features that indicate the likely existence of Aboriginal objects.

Consequently, if your proposed activity is:

- within 200m of waters⁷, or
- located within a sand dune system⁸, or
- · located on a ridge top, ridge line or headland, or
- located within 200m below or above a cliff face, or
- · within 20m of or in a cave, rock shelter, or a cave mouth

and is on land that is not disturbed land (see Definitions) then you must go to step 3.

If after completing steps 2a and 2b it is reasonable to conclude that there are no known Aboriginal objects or a low probability of objects occurring in the area of the proposed activity, you can proceed with caution without applying for an AHIP.

Step 3. Can you avoid harm to the object or disturbance of the landscape feature?

This step only applies if your activity is on land that is not disturbed land or contains known Aboriginal objects.

Where as a result of step 2a you think it is likely that there are Aboriginal objects present in the area of the proposed activity, you need to decide whether you can avoid the harm to those objects.

Where as a result of step 2b you have concluded that the landscape features listed are present, you need to decide whether you can move your activity away from the area with the landscape feature(s) so as to avoid disturbing any Aboriginal objects which may be present.

Possible solutions may include reducing the area of a building footprint, changing its orientation, re-positioning built elements, re-routing infrastructure trenching or incorporating a no-development area into the site design.

If you can't avoid harm to the object or disturbance of the landscape feature(s) you must go to step 4.

If you can avoid harm to the object and disturbance of the landscape feature(s) you can proceed with caution without applying for an AHIP.

Step 4: Desktop assessment and visual inspection

This step only applies if your activity is on land that is not disturbed land or contains known Aboriginal objects.

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^{7 &#}x27;Waters' means the whole or any part of: any river, stream, lake, lagoon, swamp, wetlands, natural watercourse, tidal waters (including the sea). Note: the boundary or tidal waters is defined as the high water mark.

⁸ Refers to sand ridges and sand hills formed by the wind, usually found in desert regions, near a lake or in coastal areas. In areas of western NSW, windblown dunes can occur along the eastern edges of ephemeral lakes (called lunettes dunes). They can also occur along the banks of rivers.

The assessment process is primarily a desktop exercise that involves examination and collation of the readily available information. The assessment must consider the area of the proposed activity as a whole, not just particular areas where any Aboriginal objects have been recorded on AHIMS or areas where landscape features are located.

At a minimum the information reviewed as part of the desktop assessment should include existing knowledge of Aboriginal cultural heritage gleaned from previous heritage studies or reports for the area, including any archaeological studies on AHIMS. There may be some restrictions in providing culturally sensitive information to you. Where this is the case DECCW will provide advice on how to proceed.

You must undertake a visual inspection of the area to see if Aboriginal objects can be identified or are likely to be present below the surface. This visual inspection must be done by a person with expertise in locating and identifying Aboriginal objects. This person with expertise could be an Aboriginal person or landholder with experience in locating and identifying Aboriginal objects or a consultant with appropriate qualifications or training in locating and identifying Aboriginal objects.

Where either the desktop assessment or visual inspection indicates that there are (or are likely to be) Aboriginal objects in the area of the proposed activity, more detailed investigation and impact assessment will be required. This will need to be done by a person with expertise in Aboriginal cultural heritage management. Go to step 5.

Where the desktop assessment or visual inspection does not indicate that there are (or are likely to be) Aboriginal objects, you can proceed with caution without an AHIP application.

Step 5. Further investigations and impact assessment

DECCW's website has further information about how to do a detailed investigation and impact assessment and the procedures for applying for an AHIP.

If after this detailed investigation and impact assessment you decide that harm will occur to Aboriginal objects then an AHIP application must be made.

For information that is required to support an application for an AHIP (including impact assessment and community consultation) and other relevant information see www.environment.nsw.gov.au/conservation/aboriginalculture.htm#whattodo.

All AHIP applicants must undertake consultation in accordance with clause 80C of the NPW Regulation. These requirements may also be followed where there is uncertainty about potential harm and you are undertaking a cultural heritage assessment.

If you decide an AHIP application is not necessary

If you have followed this code and at any point have reasonably decided that an AHIP application is not necessary either because Aboriginal objects are not present or, if they are present, harm to those objects can be avoided, you can proceed with caution.

If, however, while undertaking your activity you find an Aboriginal object you must stop work and notify DECCW and you may need to apply for an AHIP. Some works may not be able to resume until you have been granted an AHIP and you follow the

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conditions of the AHIP. Further investigation may be required depending on the type of Aboriginal object that is found.

If human skeletal remains are found during the activity, you must stop work immediately, secure the area to prevent unauthorised access and contact NSW Police and DECCW.

The NPW Act requires that, if a person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under s.89A of the NPW Act to notify DECCW as soon as possible of the object's location. This requirement applies to all people and to all situations, including when you are following this code.

If a person finds an Aboriginal object which is not recorded on AHIMS, they should contact DECCW as soon as practicable. Notification procedures can be found at: www.environment.nsw.gov.au/licences/AboriginalHeritageInformationManagementSy stem.htm

The due diligence process is shown diagrammatically at the beginning of this section.

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9 What do I do with the results of due diligence?

Once you have gone through the due diligence process and you want to go ahead with your activity, you have several options including:

- 1 proceeding with the activity without an AHIP if you have found no evidence of Aboriginal objects using this due diligence code
- 2 amending the proposed activity to avoid harming Aboriginal objects then proceed without applying for an AHIP
- 3 applying for an AHIP, and if an AHIP is granted, following the AHIP conditions as you proceed with the activity.

The decision about which option to choose is the responsibility of the proponent using the information obtained through exercising due diligence.

10 Record keeping

Under the NPW Act, a person has a defence to any prosecution alleging harm to an Aboriginal object if they show that they exercised due diligence to identify Aboriginal objects and reasonably decided that no Aboriginal objects would be harmed.

Consequently it is strongly recommended that a person keep a record of the actions they took and the decisions they made in following the due diligence process.

11 Some background and contextual information

11.1 Aboriginal people and their cultural heritage

Aboriginal people have occupied the NSW landscape for at least 40,000 years. The evidence and important cultural meanings relating to this occupation are present throughout the landscape, as well as in documents and in the memories, stories and associations of Aboriginal people. Therefore, activities that disturb the landscape may impact on Aboriginal cultural heritage.

Aboriginal cultural heritage consists of places and items that are of significance to Aboriginal people because of their traditions, observances, customs, beliefs and history. It is evidence of the lives of Aboriginal people right up to the present. Aboriginal cultural heritage is dynamic and may comprise tangible or intangible elements. As such, it includes things made and used in earlier times, such as stone tools, art sites and ceremonial or burial grounds, as well as more recent evidence such as old mission buildings, massacre sites and cemeteries. Aboriginal cultural heritage is also represented in documents and in the memories, stories and associations of Aboriginal people.

11.2 DECCW's responsibilities for protecting Aboriginal cultural heritage

Under the NPW Act DECCW is responsible for protecting Aboriginal objects and Aboriginal Places throughout NSW. The objects of the NPW Act must be given effect whenever the Minister, the Director General or any member of staff of DECCW carries out their functions under the NPW Act. The objects of the NPW Act include:

... the conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including, but not limited to: places, objects and features of significance to Aboriginal people...2A(1)(b)(i)

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The NPW Act also states that the objects of the Act are to be achieved by applying the principles of ecologically sustainable development 2A(2).

DECCW is responsible for protecting Aboriginal objects and Aboriginal Places by assessing the impacts of proposed activities on Aboriginal objects and Aboriginal Places and only allowing acceptable impacts to occur. DECCW assesses applications for AHIPs to harm Aboriginal objects and Places, and includes conditions in AHIPs to minimise damage to or disturbance of those objects and Places. DECCW is also responsible for assessing proposals for Aboriginal Places and making recommendations to the Minister to declare Aboriginal Places to protect both their tangible and intangible values.

DECCW works closely with Aboriginal communities on conservation works for Aboriginal cultural heritage, such as the protection and restoration of Aboriginal objects such as rock art, middens, burials and culturally modified trees, and is also involved in the repatriation of Aboriginal human remains.

11.3 What is an Aboriginal object?

This code applies only to Aboriginal objects as defined in the NPW Act (see Definitions). Appendix 1 provides some examples and guidance on objects. Examples of Aboriginal objects include, but are not limited to:

- · human skeletal remains
- Aboriginal culturally modified trees
- middens
- rock art (paintings and engravings)
- stone artefacts
- · raised earth rings
- · grinding grooves
- rock shelters
- earth mounds
- hearths
- stone arrangements.

12 Offences for harming Aboriginal objects

Section 86 of the NPW Act sets out a number of offences about 'harm' or desecration to an Aboriginal object. Harm means any act or omission that:

- · destroys, defaces or damages the object
- · moves the object from the land on which it had been situated, or
- causes or permits the object to be harmed.

Harm does not include something that is trivial or negligible. Examples of what might be a trivial or negligible act are picking up and replacing a small stone artefact, breaking a small Aboriginal object below the surface when you are gardening, or crushing a small Aboriginal object when you walk on a track.

There are now two types of offences for harming an Aboriginal object:

- 1 an offence of harming or desecrating an object which a person knows is an Aboriginal object (a 'knowing offence')
- 2 an offence of harming an object whether or not a person knows it is an Aboriginal object (a 'strict liability offence').

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The maximum penalty for the knowing offence is \$550,000 or \$275,000 (depending on whether there are aggravating circumstances) and 1 or 2 years' goal for an individual. For a corporation the maximum penalty for the knowing offence is \$1.1 million. The maximum penalty for the strict liability offence is \$110,000 or \$55,000 (depending whether there are aggravating circumstances) for an individual or \$220,000 for a corporation.

12.1 Defences or exemptions for harming Aboriginal objects

The NPW Act and NPW Regulation provide several defences and exemptions for both types of offence relating to harm to an Aboriginal object. Some of these defences and exemptions are explained in the diagram in section 1. The due diligence defence for the strict liability offence is explained in section 8. It is also a defence if a person holds a current AHIP and complies with the conditions of the AHIP.

In addition to the defences in the NPW Act and NPW Regulation the general defence of 'honest and reasonable mistake' would also apply to the strict liability offence.

13 Authorship and Certification of Code

The Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW has been prepared by the Department of Environment, Climate Change and Water NSW.

This code complies with all the requirements of the Minimum Standards for Codes of Practice for the Protection of Aboriginal Objects in NSW gazetted on 10 September 2010.

Lisa Corbyn
Director General
DECCW
13 September 2010

Protection of Aboriginal Objects in New South Wales

Definitions

Aboriginal Heritage Impact Permit a permit issued by the Director General of DECCW (or their delegate) allowing a person to desecrate or harm an Aboriginal Place or Aboriginal objects.

Aboriginal object (as defined in the NPW Act) any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises NSW, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal

Aboriginal Place (as defined in the NPW Act) a place declared under s.84 of the NPW Act that, in the opinion of the Minister, is or was of special significance to Aboriginal culture.

Information about the location of Aboriginal Places in NSW can be found on the DECCW website at www.environment.nsw.gov.au/nswcultureheritage/ PlacesOfSignificance.htm.

Aboriginal culturally modified tree (as defined in the NPW Regulation) a tree that, before or concurrent with (or both) the occupation of the area in which the tree is located by persons of non-Aboriginal extraction, has been scarred, carved or modified by an Aboriginal person by:

- the deliberate removal, by traditional methods, of bark or wood from the tree, or
- the deliberate modification, by traditional methods, of the wood of the tree.

disturbed land or land already disturbed by

previous activity

activity

meaning, and does not just refer to an activity as defined by Part 5 EP&A Act).

Land is disturbed if it has been the subject of a human activity that has

a project, development, activity or work (this term is used in its ordinary

changed the land's surface, being changes that remain clear and observable.

Examples include ploughing, construction of rural infrastructure (such as

dams and fences), construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks.

due diligence

taking reasonable and practical steps to determine whether a person's actions will harm an Aboriginal object and, if so, what measures can be taken to avoid that harm .

harm an Aboriginal object (as defined in the NPW Act)

- · destroy, deface, damage an object
- · move an object from the land on which it is situated

cause or permit an object to be harmed.

Minister Administering the NPW Act

Acronyms and abbreviations

AHIMS Aboriginal Heritage Information Management System

AHIP Aboriginal Heritage Impact Permit

DECCW Department of Environment, Climate Change and Water NSW

EP&A Act Environmental Planning and Assessment Act 1979

NPW Act National Parks and Wildlife Act 1974

NPW Regulation National Parks and Wildlife Regulation 2009

Due Diligence Code of Practice

Appendix 1: Examples of Aboriginal objects

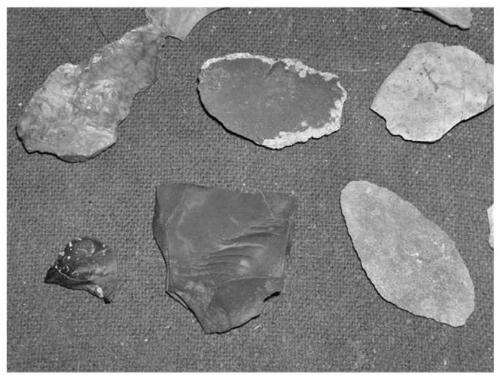
Stone artefacts are a common type of Aboriginal object, and include stone tools, spear points, surface scatters, grinding stones, ground-edge axes and other implements that were used for a variety of purposes, such as in the preparation of food or to make nets, baskets and other tools. Stone artefacts often have sharp edges, or are of a stone type that is different from the natural rock in the area.

Another type of stone artefact is a ground-edge axe, which can come in different shapes, but are usually round or oval. They are sometimes rounded and narrow at one end, and slightly broader and straighter at the cutting edge.

Because stone artefacts do not rot or rust they are often the primary physical evidence of Aboriginal occupation in a particular area. They can also provide important information about past Aboriginal people's settlement patterns, lifestyle and other connections, such as trade.

The presence of stone artefacts in an area may indicate that either a place was previously used by Aboriginal people, or that the area continues to be a place of significance, which may include sensitive sites, such as men's or women's areas which may require a buffer zone to maintain. In some cases it will be appropriate to consider removing stone artefacts from where they are found (salvage), following advice from DECCW and Aboriginal groups.

Stone artefacts are often small, so they can be difficult to protect. Erosion and weathering caused by activities such as ditch digging and ploughing can disturb stone artefacts. They can also be broken when trampled by animals, or when run over by vehicles.



Stone artefacts. Mark Flanders/DECCW

Protection of Aboriginal Objects in New South Wales

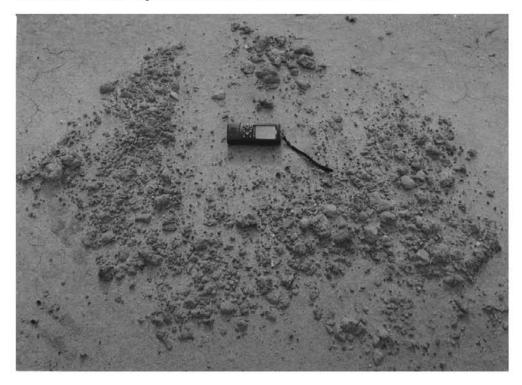
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Surface artefact scatters are the material remains of Aboriginal people's activities. Scatter sites usually contains stone artefacts, but other material such as charcoal, animal bone, shell and ochre may also be present. The size of scatters may vary from one square metre to larger areas, and may contain from a few to thousands of artefacts.

Stone artefacts can be found almost anywhere Aboriginal people camped or lived, particularly around occupation sites, in sand dunes, rock shelters, caves, on ridges and near watercourses. Ground-axe edges may also be found near axe-grinding grooves or quarries.

Oven or hearth sites are the remains of a domestic open fireplace. Domestic open fireplaces have been used in populated places throughout Australia to provide warmth and lighting. They are also used for cooking food and sometimes to signal from one group to another.

These hearths are roughly circular piles of burnt clay or heat fractured rock with associated charcoal fragments, burnt bone, shell and stone artefacts.



Hearth site. Stephen Meredith

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Due Diligence Code of Practice

Rock art includes paintings and drawings that generally occur in rock overhangs, caves and shelters. Stencils of hands, paintings or drawings of animal or people and animal tracks are common and have often been created using ochre, white pipeclay or charcoal.

Engravings commonly occur on open, flat surfaces of rock such as on sandstone outcrops, although some are found on vertical rock faces and in rock shelters. Examples of engravings include outlines of people or animals, but may also include patterns, tracks and lines.

Rock art is of high cultural significance to Aboriginal people, and many sites are still regarded as sacred or of ceremonial significance. Rock art sites are important links to the past for Aboriginal people today. They can also provide important information about the daily life and culture of Aboriginal people before European contact, and many sites are hundreds or thousands of years old.

Rock art sites can be easily damaged as they can be prone to erosion and vandalism. Touching rock art or disturbing a shelter floor in the immediate vicinity of the rock art can cause damage, as can movement on or over surfaces with rock art. Sites may also suffer from vegetation growth or removal. Effective management of rock art sites can include drainage, fencing, graffiti removal, and visitor control.



Mutawintji hand stencils. Pat Laughton/DECCW

Shell middens are commonly made up of the remains of edible shellfish, and could be the result of a single meal or many meals at the same location over many years. A midden may also contain fish and animal bones, stone tools, or charcoal. They can vary in size and depth. Middens are sometimes associated with burials.

Middens can be found on headlands, sandy beaches and dunes, around estuaries, swamps and tidal stretches of creeks and rivers, and along the banks of inland rivers, creeks and lands. Middens may also be found in the open or in rock shelters.

Middens can indicate that a place was, and may continue to be, a key meeting place of significance. Middens can also provide information about the environment that existed when Aboriginal people collected the shellfish, such as changes in species, and tools or raw materials that were used. Middens which contain burials are particularly significant.

Middens are amongst the most fragile cultural sites. They can be exposed by wind or degraded by human and animal activity. Effective management of midden sites may include stabilising the surface, such as by encouraging vegetation cover, or by restricting access to the site by erecting fencing.

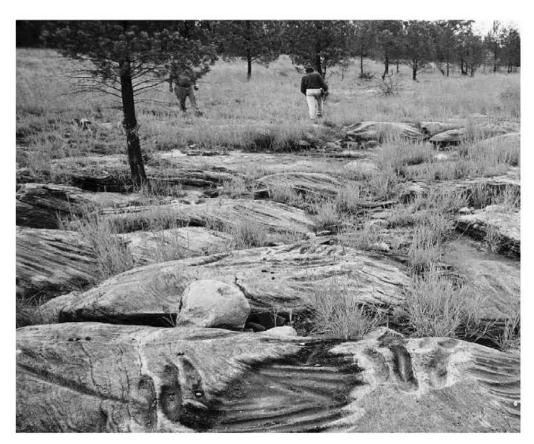


Shell midden. Warren Mayers/DECCW

Axe grinding grooves are oval shaped indentations generally on flat and soft rock surfaces, such as sandstone outcrops. Aboriginal people made the grooves when shaping and sharpening stone axes by grinding them against the rock. Grooves can vary in size, shape and number. Sites with 20 to 60 grooves are not uncommon and some sites have more than 200.

Axe grinding grooves are important because they provide information about Aboriginal stone tool technology. They are often found along the edges of creeks, lakes or swamps as water was needed to keep the stone clean and cool. In areas where suitable outcrops of rock were not available, transportable pieces of stone were used for sharpening or grinding tools. Axe-grinding grooves provide important information about how stone tools were made.

As sandstone is relatively soft, it is prone to weathering, erosion and trampling by animals. Human activities such as mining, road infrastructure, damming, clearing, ploughing and construction can also destroy these sites. Management options can include stock and erosion control.



Axe grinding stones. Hilton Naden/DECCW

Aboriginal culturally modified (scarred and carved) trees are trees that show the scars caused by the removal of bark or wood for the making of, for example, canoes, vessels, boomerangs, shelters and medicines. The shape and size of the scar may indicate the purpose for which the bark or wood was removed from the tree. In some regions of NSW, trees were carved with intricate patterns and designs for ceremonial purposes, or to mark country boundaries or burials.

Carved trees associated with burial sites are usually in groups of two or more trees. Carved trees associated with ceremonial grounds may have also been used for educational purposes. Scarred and carved trees occur in various locations across NSW.

Scarred and carved trees are significant to the descendants of the Aboriginal people living today. They are becoming rarer in NSW as the trees decay, are burnt or are destroyed.

It is important to note that the defence to a prosecution contained in Clause 80B of the NPW Regulation relating to certain low impact activities does not apply in relation to any harm to an Aboriginal culturally modified tree. Ensuring that Aboriginal culturally modified trees are not harmed will likely include ensuring that effective buffer zones are used, as their significance is often part of the broader landscape.



Carrington scarred tree. Warren Mayers/DECCW

Due Diligence Code of Practice

Quarry sites are sites where Aboriginal people manufactured stone tools or collected ochre for painting and decoration. Quarry sites may be found in areas of rock outcrops and can be identified by the presence of artefacts such as flaked stone. Quarry sites vary in size. They may be one or two flaked boulders or a single pit, but can also incorporate many large outcrops over large areas.

As stone was an important resource for Aboriginal people, quarries are often associated with other nearby Aboriginal sites and cultural material. In NSW a variety of stone types was quarried for particular purposes. Quarries also provide information about trade routes and other activities.

Human activities such as mining, road building, damming, clearing and construction can disturb or destroy Aboriginal quarries. Natural processes such as weathering and erosion can also cause the gradual breakdown of stone outcrops.

Aboriginal quarries can be protected by management actions such as by controlling stock and managing erosion.



Daruka axe quarry, Tamworth. Bruce Cohen/DECCW

Stone arrangements are found at places where Aboriginal people have positioned stones deliberately to form shapes or patterns, and can include large circular or linear arrangements, piles of stones, rock markers or more elaborate groupings that can depict animals or other designs. Aboriginal people also use stone arrangements for other purposes, such as for fish traps.

Stone arrangements have significant cultural heritage value because they are usually related to ceremonies, such as meetings or marriages. **Bora rings**, which are one or more raised earth rings, were used for male initiations. They are generally rare due to their vulnerability to disturbance. The stones are long lasting, but their arrangements can be damaged or destroyed. If stones are disturbed, the pattern and its significance may be lost. Ploughing, brush cutting, logging and large grazing animals can also cause disturbance.

Management options around Aboriginal stone arrangements can include stock, weed and erosion control.



Stone arrangement. M Sharp/DECCW

Burials include one of a variety of customs that Aboriginal people had for honouring the dead and laying them to rest; they were among the first people in the world to use cremation. However, Aboriginal burials may be found in a variety of landscapes throughout NSW, although most frequently they are found in middens, sand dunes, lunettes, bordering dunes and other sandy or soft sedimentary soils. Activities such as sand mining, stock grazing, ripping rabbit warrens, ploughing, trail bike riding and four-wheel car driving can devastate burial sites. Aboriginal ancestral remains are very sensitive and significant to Aboriginal people.

Due Diligence Code of Practice

Landscape features and natural sacred sites are regarded as highly sacred sites to Aboriginal people. Such features include mountains, waterholes, caves, and rock formations. In addition, the flora and fauna that inhabit these landscapes also carry Aboriginal cultural significance. In some cases, an inspection of the immediate area will show no physical evidence of prior occupation or usage by Aboriginal people.

Further information about Aboriginal sites in NSW

Aboriginal scarred trees in New South Wales, a field manual (DEC and Andrew Long 2005), www.environment.nsw.gov.au/conservation/AboriginalScarredTrees.htm.

Lost but not forgotten: a guide to methods of identifying Aboriginal unmarked graves (NPWS 2003, www.environment.nsw.gov.au/nswcultureheritage/LostButNotForgotten.htm

Cultural landscapes and park management: a literature snapshot. A report for the cultural landscapes: connecting history, heritage and reserve management research project (Department of Environment and Climate Change 2008), www.environment.nsw.gov.au/resources/cultureheritage/07137cultlandresearch.pdf

Aboriginal culturally significant landscapes in the Hunter-Central Rivers Region, Hunter-Central Rivers CMA guide 2009, www.hcr.cma.nsw.gov.au/uploads/res/Publications/acsl.pdf

Site Identification, Victorian Mini Poster Series, Department of Planning and Community Development 2008,

www.aboriginalaffairs.vic.gov.au/web7/aavmain.nsf/headingpagesdisplay/publications+forms+and+resourcesaav+mini-poster+series

Protection of Aboriginal Objects in New South Wales

Appendix 2: Contact details for DECCW EPRG Regional Offices

Metropolitan

Department of Environment, Climate Change and Water Planning and Aboriginal Heritage Section PO Box 668 Parramatta NSW 2124

Phone: (02) 9995 5000 Fax: (02) 9995 6900

North East

Department of Environment, Climate Change and Water Planning and Aboriginal Heritage Section Locked Bag 914 Coffs Harbour NSW 2450

Phone: (02) 6651 5946 Fax: (02) 6651 6187

North West

Department of Environment, Climate Change and Water Environment and Conservation Programs PO Box 2111 Dubbo NSW 2830

Phone: (02) 6883 5330 Fax: (02) 6884 9382

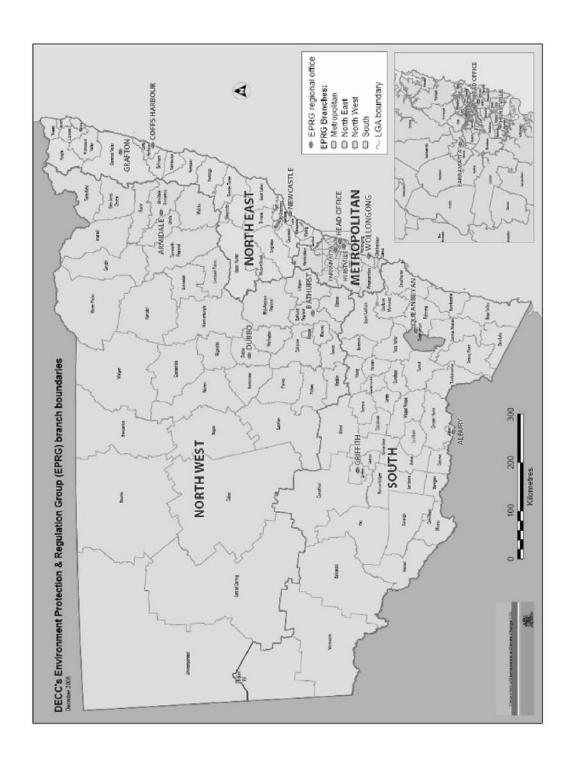
South

Department of Environment, Climate Change and Water Landscape and Aboriginal Heritage Protection Section PO Box 733 Queanbeyan NSW 2620

Phone: (02) 6229 7000 Fax: (02) 6229 7001

A map of DECCW EPRG branch boundaries is provided on the next page.

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Protection of Aboriginal Objects in New South Wales

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Fairfield City Council Aboriginal Heritage Study

Appendix C2: Excerpts of the National Parks & Wildlife Regulation 2009 providing definitions of 'low impact activities' and 'disturbed land'.

National Parks and Wildlife Regulation 2009, Reg 80B

Defence of carrying out certain low impact activities: section 87 (4)

Note: This clause creates a defence to the strict liability offence in section 86 (2) of the Act (being the offence of harming an Aboriginal object whether or not the person knows it is an Aboriginal object). The defence does not apply to the separate offence under section 86 (1) of the Act of harming or desecrating an object that a person knows is an Aboriginal object. If a person discovers an Aboriginal object in the course of undertaking any of the activities listed below, the person should not harm the object-as the person may be committing an offence under section 86 (1) of the Act (the offence of knowingly harming an Aboriginal object)-and should obtain an Aboriginal heritage impact permit, if needed.

- (1) It is a defence to a prosecution for an offence under section 86 (2) of the Act, if the defendant establishes that the act or omission concerned:
 - (a) was maintenance work of the following kind on land that has been disturbed:
 - (i) maintenance of existing roads, fire and other trails and tracks,
 - (ii) maintenance of existing utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines), or
 - (b) was farming and land management work of the following kind on land that has been disturbed:
 - (i) cropping and leaving paddocks fallow,
 - (ii) the construction of water storage works (such as farm dams or water tanks),
 - (iii) the construction of fences,
 - (v) the construction of irrigation infrastructure, ground water bores or flood mitigation works,
 - (vi) the construction of erosion control or soil conservation works (such as contour banks), or
 - (c) was farming and land management work that involved the maintenance of the following existing infrastructure:
 - (i) grain, fibre or fertiliser storage areas,
 - (ii) water storage works (such as farm dams or water tanks),
 - (iii) irrigation infrastructure, ground water bores or flood mitigation works,
 - (iv) fences,
 - (v) erosion control or soil conservation works (such as contour banks), or
 - (d) was the grazing of animals, or
 - (e) was an activity on land that has been disturbed that comprises exempt development or was the subject of a complying development certificate issued under the Environmental Planning and Assessment Act 1979, or
 - (f) was mining exploration work of the following kind on land that has been disturbed:
 - (i) costeaning,
 - (ii) bulk sampling,
 - (iii) drilling, or
 - (g) was work of the following kind:
 - (i) geological mapping,

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Fairfield City Council Aboriginal Heritage Study

- (ii) surface geophysical surveys (including gravity surveys, radiometric surveys, magnetic surveys and electrical surveys), but not including seismic surveys,
- (iii) sub-surface geophysical surveys that involve downhole logging.
- (iv) sampling and coring using hand-held equipment, except where carried out as part of an archaeological investigation, or

Note. Clause 3A of this Regulation provides that an act carried out in accordance with the Code of Practice for Archaeological Investigation in NSW is excluded from meaning of harm an objects or place for the purposes of the Act.

- (h) was the removal of isolated, dead or dying vegetation, but only if there is minimal disturbance to the surrounding ground surface, or
- (i) was work of the following kind on land that has been disturbed:
 - (i) seismic surveying,
 - (ii) the construction and maintenance of ground water monitoring bores, or
- (j) was environmental rehabilitation work including temporary silt fencing, tree planting, bush regeneration and weed removal, but not including erosion control or soil conservation works (such as contour banks).
- (2) Subclause (1) does not apply in relation to harm to an Aboriginal culturally modified tree.
- (3) In this clause, Aboriginal culturally modified tree means a tree that, before or concurrent with (or both) the occupation of the area in which the tree is located by persons of non-Aboriginal extraction, has been scarred, carved, or modified by an Aboriginal person by:
 - (a) the deliberate removal, by traditional methods, of bark or wood from the tree, or
 - (b) the deliberate modification, by traditional methods, of the wood of the tree.
- (4) For the purposes of this clause, land is disturbed if it has been the subject of human activity that has changed the land's surface, being changes that remain clear and observable.

Note: Examples of activities that may have disturbed land include the following:

- (a) soil ploughing,
- (b) construction of rural infrastructure (such as dams and fences),
- (c) construction of roads, trails and tracks (including fire trails and tracks and walking tracks),
- (d) clearing of vegetation,
- (e) construction of buildings and the erection of other structures,
- (f) construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure),
- (g) substantial grazing involving the construction of rural infrastructure,
- (h) construction of earthworks associated with anything referred to in paragraphs (a)-(g).

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PROPOSED FAIRFIELD CITY WIDE DCP AMENDMENT

Appendix G Heritage and Development

Clause 1.2 Aboriginal Cultural Heritage

Issue: the clause is out of date and refers to a transfer of responsibility from the NSW National Parks and Wildlife Service to a stand-alone authority that didn't proceed.

The Fairfield City Aboriginal Heritage Study recommends detailed measures that are not included within this clause. Additionally, management of Aboriginal Cultural heritage is dissimilar to management of local heritage items listed under the *Fairfield Local Environment Plan* 2013. Therefore, it is appropriate that the controls are described in a separate appendix and references to 'Aboriginal Cultural Heritage' are removed from Appendix G.

Current Version:

1.2 Aboriginal Cultural Heritage

Council supports the conservation of items of Aboriginal cultural heritage, but there are no such items listed in the Fairfield Local Environmental Plan. At the time of writing of this Development Control Plan, new legislation which will transfer responsibility for Aboriginal cultural heritage from the NSW National Parks and Wildlife Service to a stand-alone authority is proposed. Proponents should check the Aboriginal Heritage Information Management System to ascertain whether their site may contain items of Aboriginal cultural heritage which may be protected by the relevant legislation. Whether or not a site is so protected, once work starts developers have a legal obligation to exercise due diligence and notify the relevant authority of any discoveries.

Proposed Version:

It is proposed that 1.2 Aboriginal Cultural Heritage is removed completely from Appendix G:

1.2 Aboriginal Cultural Heritage

Council supports the conservation of items of Aboriginal cultural heritage, but there are no such items listed in the Fairfield Local Environmental Plan. At the time of writing of this Development Control Plan, new legislation which will transfer responsibility for Aboriginal cultural heritage from the NSW National Parks and Wildlife Service to a stand-alone authority is proposed. Proponents should check the Aboriginal Heritage Information Management System to ascertain whether their site may contain items of Aboriginal cultural heritage which may be protected by the relevant legislation. Whether or not a site is so protected, once work starts developers have a legal obligation to exercise due diligence and notify the relevant authority of any discoveries.

Proposed Addition of Appendix H - Aboriginal Heritage Management

Proposed Version:

Appendix H

Aboriginal Heritage Management

The information and contents of this Appendix are based from the findings and recommendations of the Fairfield City Council Aboriginal Heritage Study 2017 which can be viewed on Council's website at www.fairfieldcity.nsw.gov.au. The specific technical requirements of this Appendix originate from the Office of Environment and Heritage's Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales accessible via their website https://www.environment.nsw.gov.au

Context and objectives

Aboriginal people have lived in the Fairfield Local Government Area for thousands of years. Their presence shaped the land encountered by the first Europeans and gave places like Cabramatta their name. Fairfield City Council understands the importance of both protecting and celebrating Aboriginal culture and heritage. One of the key ways to achieve this is by ensuring that the potential impacts of a development on Aboriginal heritage are considered.

This Appendix is designed to help applicants address the requirements of State Legislation and polices, including due diligence required by the *National Parks and Wildlife Act 1974*, as well as the *Environmental Planning and Assessment Act 1979*.

The objectives of this Appendix are:

- To ensure that new development takes appropriate account of the significance of Aboriginal heritage and that no Aboriginal objects are damaged in the development process
- · To promote the protection or conservation of Aboriginal objects or places
- To respect and celebrate Aboriginal Heritage in Fairfield City

1. What is Aboriginal Heritage?

Aboriginal heritage can include any object or place used by Aboriginal people up to and including the present day. Aboriginal heritage is not limited to the physical remains of a place such as a structure or archaeological site, but can also include the associations people have had, or continue to have with a place – a place's social history and social significance.

Managing Aboriginal heritage is therefore not only limited to protecting a place from development impact, it is also about celebration, remembrance and recognition. In some cases, this can be achieved through permanent signage onsite (even where nothing physical remains of the place), documenting oral histories, curating an arts exhibition or creating a website.

2. Statutory Requirements

Aboriginal heritage is protected by a range of State legislation and policies. Consideration of the potential impacts of development on Aboriginal heritage is a key part of the environmental impact assessment process under the *Environmental Planning and Assessment Act 1979*. Additionally, under Section 86 of the *National Parks & Wildlife Act 1974* it is an offence to harm either an Aboriginal object or Aboriginal Place in NSW either knowingly [s86(1)] or unknowingly [s86(2)].

2.2 Due Diligence

For activities that are not low impact and not on disturbed land (see 2.3 for definitions), evidence of following due diligence procedures in development is a defence against prosecution for the strict liability offence under s86(2) if an Aboriginal Object or Place is unknowingly harmed without an Aboriginal Heritage Impact Permit (AHIP).

The Office of Environment and Heritage has a *Due Diligence Code of Practice*, designed to assist proponents to exercise due diligence when carrying our activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP)

The due diligence procedure sets out reasonable and practicable steps which individuals and organisations need to take in order to:

- 1. identify whether or not Aboriginal objects are, or are likely to be, present in an area
- 2. determine whether or not their activities are likely to harm Aboriginal objects (if present)
- determine whether an AHIP application is required.

Council has its own detailed due diligence procedure that is applied during the Development Assessment process based on the OEH Due Diligence Code of Practice.

Prior to a submission of a Development Application proponents are able undertake an initial assessment of the potential impacts of their development on Aboriginal Heritage in accordance with the Office of Environment and Heritage's *Due Diligence Code of Practice*.

2.3 Low impact Activities and Disturbed Land

The requirement to undertake Due Diligence for proposed activities has exemptions for 'low impact activities' in 'disturbed lands'. These are defined by the National Parks and Wildlife Regulation and may be subject to change. See http://www.legislation.nsw.gov.au/ for up to date regulations.

The list of 'low impact activities' in the Regulation is lengthy and includes many common open space maintenance activities, however for example, does not include activities such as the construction of a *new* dwelling or road.

The list of 'disturbed lands' in the Regulation is also lengthy however, generally, land is considered 'disturbed' if it has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable. Some examples of activities that may have disturbed land include soil ploughing, the construction of rural infrastructure (such as dams and fences), roads, trails and tracks, buildings or structures, substantial grazing or earthworks.

NOTE: The exemption for 'low impact activities' in 'disturbed land' does not apply to Aboriginal Scarred trees whether or not they are 'known' through recording on the AHIMS Register.

The exemption only applies to 'low impact activities' in 'disturbed land'. It does not apply to other activities in 'disturbed land'. For example, constructing a house on land defined under the Regulation as 'disturbed' is not an exempt activity.

3. Potential Investigation Areas

To assist in the identification of areas of the City where Aboriginal Heritage needs to be taken into account, Council's *Aboriginal Heritage Study* identified Potential Investigation Areas based on best current archaeological practice. These areas include:

- · Relatively undisturbed ground within 200m of creekline or major ridgeline
- Land within 50m of known aboriginal Sites
- Aboriginal Historical Places

Properties within Potential Investigation Areas will be noted within a Section 149(5) certificate.

More information on the methodology behind the determination of Potential Investigation Areas in Fairfield City is available within Section 6.2.2 of the Fairfield City Council Aboriginal Heritage Study 2017.

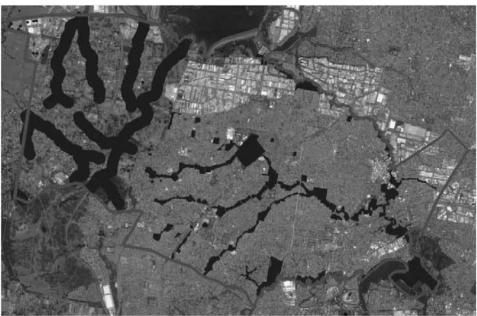


Figure 1: Potential Investigation Areas within Fairfield City Council

4. Procedure for Development Assessment

Each Development Application's impact on Aboriginal Heritage will be assessed by Council in accordance with the principles of Council's own Aboriginal Heritage Management system as recommended under Council's Aboriginal Heritage Study 2017.

If Council deems that a development may have an impact on Aboriginal Heritage, an Aboriginal Heritage Assessment will be required. The requirements for an Aboriginal heritage Assessment are outlined below (Section 4.1, 4.2).

Under the development assessment process, if Council advises that an Aboriginal Heritage Assessment is not required, this indicates that there is a low likelihood that Aboriginal objects will be impacted by the proposal. It does not however constitute a guarantee that no Aboriginal heritage may be exist on a site. Any Aboriginal objects which may be present within the property are still legally protected. All development applications in potential investigation areas contain an advisory note that outlines the legal responsibilities of all proponents regarding Aboriginal heritage.

NOTE: The presence of Aboriginal objects on a site does not prevent development from occurring. However, modifications may be required to a development to accommodate the presence of Aboriginal heritage.

4.1 Requirements for Aboriginal Heritage Assessment

Where proponents are required to provide an Aboriginal heritage assessment, the following standards need to be met. This will ensure that the assessment is consistent with the Office of Environment and Heritage Due Diligence Assessment requirements and the obligations of Council. Any Aboriginal heritage assessment report submitted to Council should:

- Be undertaken by a suitably qualified Aboriginal heritage consultant;
- Also meet the requirements for Due Diligence as per the OEH Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales;
- Contain evidence of Aboriginal community consultation with the relevant Local Aboriginal Land Councils;
- Include evidence of a current (no more than 12 months old) search of the AHIMS Aboriginal Sites Register and consideration of relevant previous Aboriginal heritage investigations;

- Involve a field inspection, or justification as to why an inspection was not considered necessary (for example if background research confirmed that the land has been comprehensively disturbed in the past);
- Consider ways in which harm to known or potential Aboriginal objects can be avoided in relation
 to the proposed activity and outline the steps to be followed to ensure this (e.g. an alternative
 location or method of construction);
- Identify further requirements in situations where harm cannot be avoided (e.g. archaeological test excavation, applications for an Aboriginal Heritage Impact Permit)

4.2 Actions Resulting from Aboriginal Heritage Assessments

All Aboriginal heritage assessments received by Council will be reviewed to determine:

- a) If the assessment and documentation is sufficient to support a determination in relation to the proposal;
- If the assessment report and proposal will require referral to the Office of Environment & Heritage as Integrated Development under Part 5 of the Environmental Planning and Assessment Act (1979);

It is noted that there are some options under current procedure which allow further investigation without referral to the Office of Environment & Heritage. Under the Office of Environment and Heritage Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW, in certain circumstances, archaeological test excavation can be undertaken without an Aboriginal Heritage Impact Permit. As part of the Aboriginal Heritage Assessment, a proponent may decide, on advice from their Aboriginal heritage consultant, that such test excavations will take place prior to obtaining development consent, The resulting report will be described as an Aboriginal Cultural Heritage Assessment report, and will require referral to the Office of Environment & Heritage unless no Aboriginal objects were uncovered during the excavations and it is assessed that no potential harm will arise from the proposed development activity.

NOTE: The requirements stated in 2.1 and 2.2 above will not apply to developments where there is no:

- a) Disturbance of the soil, or
- Construction works on the land. For the purposes of this section, any internal or external works to an existing building is not deemed to be construction work.

Meeting Date 12 September 2017

Item Number, 107

SUBJECT: Western Sydney Visitor Marketing Plan 2017/18 - Sponsorship Offer

FILE NUMBER: 14/20691

REPORT BY: Tony Walker, Acting Group Manager City Strategic Planning

RECOMMENDATION:

That Council endorse participation on the Western Sydney Business Connect – Visitor Marketing Plan 2017/18 and contribute twenty thousand dollars (\$20,000.00) in sponsorship from the Economic Development budget, subject to finalising a satisfactory Project Plan that fulfils the desired outcomes for Fairfield City.

SUPPORTING DOCUMENTS:

There are no supporting documents for this report.

CITY PLAN

This report is linked to *Theme 4 Local Economy and Employment* in the Fairfield City Plan.

SUMMARY

On 17 July 2017 Western Sydney Business Connect (WSBC) offered Council a proposal to become a sponsor for the development and implementation of a Western Sydney Visitor Marketing Plan 2017/18 for an investment of \$20,000.00. The opportunity to participate in this venture was extended to all councils in Western Sydney of which a number have already committed while others have declined or are still considering the opportunity.

Council also received a letter from Minister Ayres (Minister for Western Sydney and Sport) encouraging Council to participate in this project as a sponsor. The State Government viewed this project as an opportunity for growth in economic development.

This offer to participate arises from Council's long term Membership with WSBC and our recent involvement in the development of the South Western Sydney District Plan where Council had been involved in workshop discussions on tourism in South Western Sydney.

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The invitation also acknowledges Fairfield City's authentic cultural tourism destinations such as Canley Heights, Cabramatta Town Centre and Fairfield City Centre as well as other activities of regional interest including Aquatopia Water Park, Fairfield District Park Adventure Playground and numerous cycleways throughout open space, family picnic areas and along natural waterway corridors.

Proposed Visitor Marketing Plan 2017/18 – Project Framework

Strategy Goal

- To deliver a tourism visitor campaign that enables optimisation of the massive infrastructural and capital investment program currently underway in Western Sydney (i.e. residential development, transport infrastructure, Aerotropolis).
- Underpinning the entire initiative is the enhancement of the socio-economic condition of the Western Sydney region through increased economic development activity and employment opportunities.

Objectives and Outputs

The overall objectives of the Western Sydney Visitor Marketing Plan for 2017/18 are:

- Establish the overall Campaign, including its collaborative framework and processes to sustain its delivery over the long term.
- Facilitate the involvement of all its (LGA) stakeholders and rate paying businesses in the\$1.2m campaign.
- Induce a direct incremental direct spend by visitors to the LGA, of some \$4 million by June 2018.
- Enhance the creation of sustainable jobs particularly in the Small to Medium Enterprises (SME) and informal sectors.
- Enhance the lifestyle of the area by facilitating local resident enjoyment of all aspects of the city's amenities and services.
- Participate in promoting its brand and lifestyle to a wider audience of potential visitors, semi-permanent and permanent residents

Specific project elements and outputs are:

Smart phone application

- Increase local residents engaging with and partaking in 'local' visitor attractions, events, activities, etc.
- Direct access website
- Increase awareness of the external tourism market (Sydney region and regional NSW) to the multiple activities, events and celebrations available across Western Sydney.

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Digital marketing campaign (social media program)

- Promote and expand the uptake/download of the Smart Phone Application.
- Develop interest in and expand knowledge of the direct access website to tourism visitation markets and tourism operators by promoting its usage benefits.
- Generate interest for 'what's currently on' in Western Sydney.

Networks and experience marketing

- Establishment of at least 5 product/experience networks.
- Market identified tourism experiences to local and non-resident markets via social media.
- Create and display compelling reasons to tourism networks promoting the destination and recreation offers of Western Sydney.

Business events

 Create and execute a business events program focused on developing the skills and required competencies required to promote the Western Sydney metropolis.

Project Budget

A proposed estimate of expenses has been prepared by WSBC to support the delivery of this scope. It includes the request of \$20,000.00 in sponsorship from Western Sydney Council's, a successful commitment from the NSW State Government through Minister Ayres (i.e. Minister for Western Sydney) for \$140,000.00 and funding from Clubs (i.e. \$310,000.00), other sponsors (i.e. 310,000.00) and private sector SMEs (i.e. \$330,000.00).

Apart from the requested \$20,000.00 cash contribution, Council will also be required to contribute a Council officers' time 'in kind' to the Project. This will involve the research, generation and collation of relevant Fairfield City area tourism material that will form part of the Marketing Plans development and implementation.

If Council declines the offer at this time, Council officers will continue their contact with WSBC and monitor the progress with a possibility of increasing their involvement at a later stage.

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Project Timeline:

The proposed timeline for the project is:

- 1. Fund acquisition and commitment July–August 2017
- 2. Platform development (smart phone app and website) September-November 2017
- 3. Platform commercialisation August-October 2017
- 4. Product experience networks and trails development August–October 2017
- 5. Creative development and campaign planning with digital media **September October 2017**
- 6. Direct marketing campaign planning October-November 2017
- 7. Campaign launch **December 2017**

CONCLUSION

Fairfield City Council has the opportunity to contribute \$20,000.00 as a sponsor to the development of a Western Sydney Marketing Plan 2017/18 as part of a consortium led by the Western Sydney Business Connect which includes some Western Sydney councils, the NSW State Government and other private agencies.

Apart from the marketing and promotion benefits Council will obtain from the project, there is also an opportunity to build stronger regional relationships regarding the ongoing marketing of Western Sydney and inclusive of that is South Western Sydney to metropolitan, national and international visitors markets.

Tony Walker

Acting Group Manager City

Strategic Planning

Authorisation:

Director Community Outcomes

Outcomes Committee - 12 September 2017

File Name: **OUT120917 16.DOC**

***** END OF ITEM 107 *****

Meeting Date 12 September 2017

Item Number. 108

SUBJECT: Stronger Communities Programme - Round 3 - 2017-18

FILE NUMBER: 15/15241

REPORT BY: Cheryl Dewhurst, Policy Officer - Recreation & Open Space

RECOMMENDATION:

That:

- 1. Council note the submissions by Expressions of Interest for grant funding through the Stronger Communities Programme Round 3 2017-18.
- 2. A further report be submitted to Council following advice on the outcome of the submissions for project funding.

SUPPORTING DOCUMENTS:

There are no supporting documents for this report.

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

The 2017-18 round of the Federal Government's Stronger Communities Programme has been announced. The Stronger Communities Programme (SCP) is designed to fund small capital projects which deliver social benefits in local communities, and is open to Councils and not-for-profit organisations in each of the 150 Federal electorates.

The key features of the SCP are:

- Grants are available between \$2,500.00 and \$20,000.00
- Grants must be matched at least dollar for dollar by the applicant with cash or inkind (note: grants from other Federal Government initiatives cannot be included as matched funding)
- Grants are for small capital projects which deliver social benefits. The programme's intended outcomes are to improve local community participation and contribute to vibrant and viable communities.

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- Each electorate has a total funding pool of \$150,000.00 that can be allocated to a maximum of 20 projects per electorate.
- Expressions of Interest have been submitted to the electoral offices of Fowler, McMahon and Werriwa.
- If invited to proceed into the next stage, applications are due by 28 September 2017.

The projects listed have been submitted by Expression of Interest for consideration by Members of Parliament for funding as they meet the criteria for 1:1 matched funding.

Electorate	Location	Project Description	Grant Funding	Council Funding (Operational Plan)
Fowler	Bolivia Park Cabramatta	MPSRVOS1802 Bolivia Street Reserve – Renewal of play equipment and softfall.	\$20,000.00	\$105,000.00
McMahon	Makepeace Oval Fairfield	MPSRVSG1801 Makepeace Oval Amenity Building This project will see the refurbishment of the amenity building at Makepeace Park, including renovation works to the roof, bathroom amenities and electrical elements.	\$20,000.00	\$295,000.00
Werriwa	Wilson Park Bonnyrigg Heights	MPESMP1802 Wilson Creek Restoration – Construction Extension of the shared path/cycleway in Wilson Park to connect from the eastern side of the park around to the playground and other park facilities close to Wilson Rd. This project will occur in conjunction with creek restoration work that is taking place this financial year.	\$20,000.00	\$1,224,041

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CONCLUSION

It is proposed that Council note the submission of Expressions of Interest for projects in each Federal Electorate as outlined in the report in order to meet advertised deadlines. A further report will be brought to Council following advice about the outcome of applications for project funding.

Cheryl Dewhurst
Policy Officer - Recreation & Open
Space

Authorisation:

Manager Asset Management

Outcomes Committee - 12 September 2017

File Name: OUT120917_10.DOC

***** END OF ITEM 108 *****

Meeting Date 12 September 2017

Item Number, 109

SUBJECT: Western Sydney Infrastructure Plan - Smithfield Road Update

FILE NUMBER: 16/20390

REPORT BY: Emma Browning, Major Projects Coordinator; Roshan Aryal, Manager

Built Systems

RECOMMENDATION:

That the report be received and noted.

SUPPORTING DOCUMENTS:

AT-A Plan of Design and Construction Package

1 Page

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY		
Project Status:		
i Tojeci Status.		
Completed:		18%

The Western Sydney Infrastructure Plan (WSIP) involves improving major road and transport links to capitalise on the economic gains from the Western Sydney Airport, boosting the local economy and liveability of Western Sydney and making it an even better place to live and do business.

Fairfield City Council has obtained grant funding under the Federal Government's Local Roads Package Program associated with the WSIP for the upgrade of Smithfield Road, between Elizabeth Drive and Polding Street. The grant is administered by the Roads and Maritime Services (RMS).

The project budget is \$14,486,593.00 (P50 level). Additional funding up to an overall project budget of \$16,376,148.00 (P90 level) may be available subject to appropriate justification and approval by the Minister for Department of Infrastructure and Regional Development.

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The project proposes to upgrade 11 intersections of the Smithfield Road corridor over the approximately 5.4 km length between Elizabeth Drive and Polding Street. Its aim is to achieve a continuous 4 lane wide carriageway (2 lanes in each direction) to improve the flow of traffic through this heavily congested area. Dublin Street and Isis Street intersections on Polding Street will also be upgraded as part of this project.

Activities

Richards Road

In June 2017 Council agreed to undertake the necessary process to dedicate Richards Road as a public road. The first stage of this process (on-street public notices) commenced on 1 July 2017 and concluded 29 July 2017. There were no submissions to the Land and Environment Court against the proposal by the original owners' estates and so Richards Road was dedicated as a public road on 11 August 2017 with a notice in the NSW Gazette.

A letter has been sent to affected residents and stakeholders on the proposal to create a signalised cross intersection with Smithfield Road and the Fairfield Showground entry/exit. The letter also explained the proposed closure of the redundant section of Richards Road once the new realigned section is constructed and in operation.

Property Adjustments

Property adjustments at the Smithfield Road and King Street intersection, and opposite Berry Street and Beavors Street, are required to enable the widened road to be built. These land acquisitions are required from the owner (Department of Planning and Environment [DP&E]). At the 25 July 2017 Ordinary Council meeting Council resolved to negotiate with the DP&E to acquire/Transfer the land at these locations.

Property matters are being dealt with the DP&E in accordance with Council's resolution of 25 July 2017 and the strategy outlined in the report. The Department is in the process of transferring the necessary land to Council for the road upgrade and Council has commenced the road closure process for Richards Road. It should be noted that the Department has an expectation that Council will provide adequate compensation for the land transfer should the closure of Richards Road not be successful.

Negotiations in relation to the overall land swap arrangement between the parties are ongoing.

Soil Contamination and Geotechnical Investigations

On-site testing for soil contamination was carried out in June, focussing on areas where notable excavation is proposed. The resulting assessments were submitted to Council officers during August 2017.

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The results of these assessments found that there were no chemicals of potential concern detected at concentrations above Tier 1 human health screening values. However, at all seven investigation sites, copper and/or nickel and/or zinc was detected at concentrations above the Tier 1 ecological based screening levels which indicates there is a potential risk to the environment.

The consultants recommended that any future works involving soil disturbance incorporate an unexpected finds protocol to address any contaminated soil not identified during this round of assessment and that should any soil at these sites require off-site disposal, a Waste Classification letter be prepared to accompany the soil waste to an appropriately licenced landfill.

At this stage there are no proposed changes to the road layouts as a result of the report findings; however, they will be considered in the design and buildability of the proposals to inform safe working practices and to minimise impact on the construction budget. In particular, the Asbestos Management Procedure (WHS-17) and WHS Risks, Incidents and Process Control Management Procedure (WHS-03) will inform the contractors' Safe Method of Work Statements and procedures. The soil contamination investigation reports will be made available to designer(s) that produce the detailed designs and to the principal contractor(s).

Design and Service Utilities

The Design team commenced work (detailed concept design) on the section of Smithfield Road between Elizabeth Drive and Edensor Road which includes physical road widening at three intersections and upgrading the traffic signals at the Elizabeth Drive intersection with Smithfield Road. Service utilities designs are being prepared by consultants for the relocation and protection of services that form part of the works.

The traffic signal control designs for Elizabeth Drive, Richards Road and King Street intersections have been completed and submitted to RMS for approval on the TCS design component. Further RMS approval will be sought on the civils design component once the detailed design for the intersection is complete.

Procurement

The first construction package for Smithfield Road involves new parking restriction signs, line marking and minor civils work between the intersections with Edensor Road and Canley Vale Road / Myrtle Road, and King Street to Polding Street, and on Polding Street at the intersections with Isis, Dublin and Waverley Streets. These areas are shown as *Package 3* and *Package 6* on the attached *Plan of Design and Construction Package*, and form part of the first construction package (CP1).

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Contract documents, construction drawings and technical specifications were prepared in July and early August for a tender on CP1. The open tender was advertised from 7 August to 30 August 2017 on Tenderlink. The tender evaluation took place on 1 September and the panel's recommendations will be reported to the September 2017 meeting of the Services Committee. Provided a tender is awarded, the works are scheduled to commence in early November 2017.

August 2017

- Procured planners to undertake the Review of Environmental Factors (REF)
- Finalised geotechnical and site contamination assessment
- Ongoing discussion and finalised a final draft of a contract format for road works to improve contract management and reduce Council's exposure to contractual litigation
- Internal workshop to discuss D+C tender(s) for final two construction packages
- Tender for the first construction package advertised during August and tender evaluation completed – recommendations to be reported to September 2017 meeting of the Services Committee
- Richards Road dedicated as public road in NSW Gazette on 11 August 2017
- Finalised a protocol for potential land acquisitions and Transfers with Department of Planning & Environment as presented to Councillors in July 2017 and resolved at Ordinary Council on 25 July 2017
- Monthly reporting and meeting (telephone conference) with RMS Project Managers
- Preparation of updates to Project Management Plan including Communications Strategy, Resourcing Plan, Probity Plan and Procurement Plan

Current Risks & Issues

Resolved

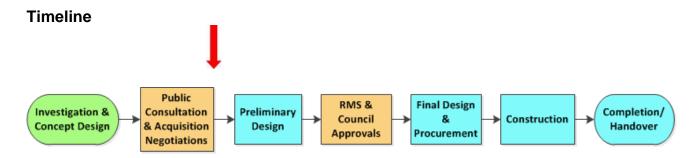
- Process for dealing with DP&E land acquisitions/transfers
- Ownership and dedication of Richards Road as public road
- Potential impact of soil contamination (at detailed concept design stage)

Outstanding

- Outcome of consultation on proposals for Richards Road
- Revision of some concept design e.g. Dunstan Street due to recently identified utilities and project budget constraints
- Potential impact of utility relocation/ protection and timescales
- Issue of D+C contract tender(s)

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The current progress for the first construction package remains on schedule. The schedule for the 2 other construction packages (CP2 and CP3) is 4 weeks behind; however, a workshop was conducted on 28 August to identify risks and deliverables for the tender packages, and the work for CP2 and CP3 is being rescheduled in light of the workshop discussions to bring the schedule back on track.

Key impacts on the programme relate to impediments in the land acquisition process, utility relocations and approvals, production of tender documentation deliverables, and traffic signal design approvals.

Budget vs Actual Expenditure

The current project estimate remains within the P50 project budget. Key concerns relate to any significant costs arising from the land acquisition processes, services relocations, expertise required to support the project and potential, and extensive soil contamination not identified as part of initial soil contamination investigations.

2016-19 Budget (\$)	Actuals (\$) at 31 August 2017 (2017-18)	
14,486,593.00	\$51,238.50	
2017-18 Forecast (\$)	2017-18 Q1 Forecast	
6,398,000.00	\$75,000.00	

Probity Issues

Probity Advisor, Monica Kelly of Prevention Partners NSW attends all internal Steering Committee meetings and raises any concerns for discussion.

The Probity Advisor has been assisting the Manager Built Systems to draft a document to assist navigating negotiations over land transfers with the DP&E and others, and Probity Plan to manage the overall project. The draft Probity Plan is not designed to incorporate tendering and it recommends the development of an overarching probity plan for tendering and purchasing for the project. The Probity Plan will be supported by polices to deal with transference of Council land and development of Council land, both of which are currently being developed.

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Emma Browning

Major Projects Coordinator

Roshan Aryal Manager Built Systems

Authorisation:

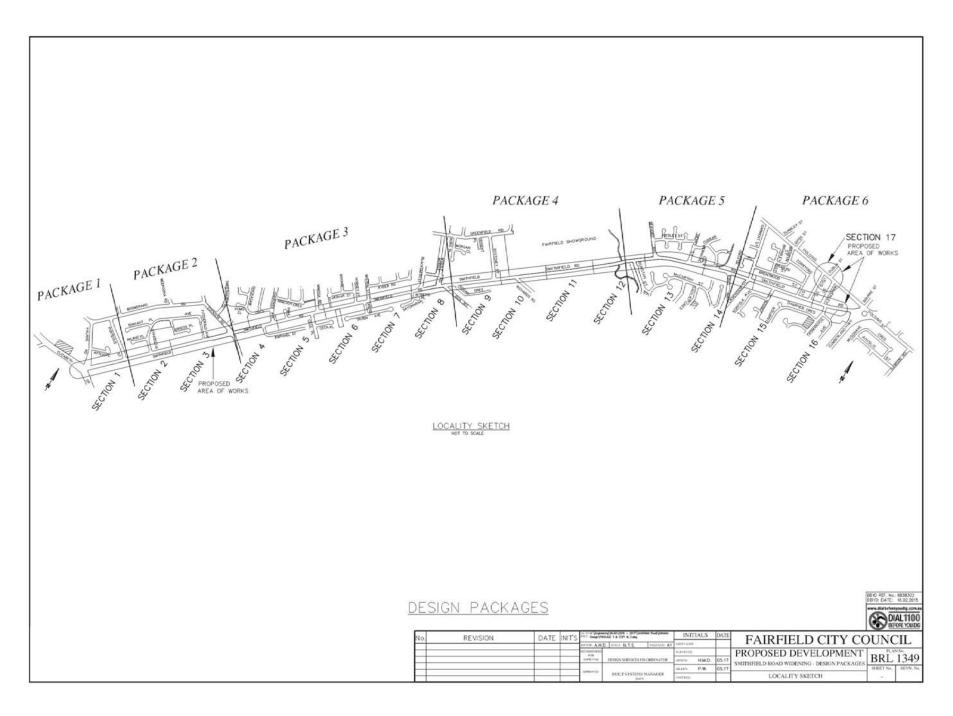
Group Manager City Projects

Outcomes Committee - 12 September 2017

File Name: OUT120917_15.DOC

***** END OF ITEM 109 *****

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Meeting Date 12 September 2017

Item Number, 110

SUBJECT: Major Projects Update - August 2017

FILE NUMBER: 13/16881

REPORT BY: Kerry Whitehead, Manager Major Projects & Planning

RECOMMENDATION:

That the report be received and noted.

SUPPORTING DOCUMENTS:

There are no supporting documents for this report.

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

The projects addressed in this report have been the subject of prior Council reports and briefings. In order to keep Council advised of the progress of key projects, this report will provide summary information on:

- Recent activity on the project;
- Activity due to occur in the coming month;
- Status update on budget and schedule; and
- Key issues relating to the progress of the project.

The matters discussed and covered in this report relate to Council in its role as a land owner, not in its role as a regulator. The report covers major projects currently underway.

Project Status Key:

Green: On Track Orange: Needs Attention Red: Behind Schedule

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<u> Aquatopia Water Park – Prairiewood Leisure Centre</u>



Main Elements and Landscaping – 100% Complete

The main elements - toddlers' pool, giant slides and aqua tower (activity centre), cabanas, landscaping, etc. have been constructed and commissioned and "Aquatopia" Water Park officially opened on Saturday 10 December 2016.

Stingray – 85% Complete

Construction of the Stingray (surf simulator) is well underway. Concrete works are complete. Equipment for water treatment is being installed. Rendering of the walls will commence on 4 September 2017. Murphy's will be on site early September 2017 to supervise the installation of the Stingray.

A specialist contractor has been engaged for landscaping and associated works on the areas around the Stingray. The contractor to supply and install the shade structure and associated furniture has been engaged.

Embellishments

Completion of the Stingray will allow the completion of the landscaping of the break out area.

The contractor for the supply and installation of LED TV has been engaged. It is anticipated that the LED TV will be installed in November 2017.

Fishpipe Attraction

It was resolved the Ordinary Council Meeting of 22 August 2017 to add the Fishpipe as an attraction to Aquatopia Water Park with delivery during the 2017/18 session. A budget of \$300,000 has been approved as part of the Quarter 1 budget adjustment for 2017/18.

Council officers have commenced the procurement process and the supplier/manufacturer of the Fishpipe will be engaged in September 2017.

Council will also need to consider the appropriate fee and staffing costs to operate the attraction (expect 1 staff member to manage the ride).

Officers are also verifying the classification of the ride – if it falls under an amusement ride category, appropriate licensing, maintenance and certification processes will need to be implemented.

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Concurrent Works

In finalising works in the lead up to the opening of Aquatopia's second season, there are other works being undertaken at Prairiewood Leisure Centre. The main work being coordinated is the replacement of the roof over the 25 metre indoor pool.

Aquatopia Expansion

Work on developing options for the expansion of Aquatopia continues. Concept design including proposed features and costing is being developed.

Activities

August 2017

- Ongoing construction of Stingray surf simulator.
- Options on concept design and costing submitted by consultant and include several options such as racing slides, wave pool, arena space, etc.

Current Risks & Issues

Resolved

N/A

Outstanding

- Completion of planning for embellishments
- Finalising concept/options for expansion
- Risk assessment for the Fishpipe attraction (single versus multiple patron ride)

Timeline: Stingray (Surf Simulator)



Budget vs Actual Expenditure

Water Park

Overall Project Budget (\$)	Actuals (\$) at 15 August 2017
9,987,000	8,466,006

Upgrade of Substation and construction of MSB

Overall Project Budget (\$)	Actuals (\$) at 15 August 2017	
330,000	472,835	

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Cabramatta Town Centre Upgrade



The works comprise a range of small to medium projects improving the condition of street furniture and streetscape in Cabramatta Town Centre with varying completion timeframes. The project is part of the Special Rate Variation program of works.

The project aims to create a more attractive area for local business, residents and visitors. Projects completed include:

- Painting of decorative lighting, pergolas and bollards.
- Installation of new granite seating with changed seating orientation in Freedom Plaza and part of John Street to replace timber slat seats.

Replacement of the white spherical lamps has been problematic with no standard product found. 16 custom built sphere lamps are to be trialled at the Freedom Plaza entry from John Street. Procurement for these pilot lamps has been initiated.

Activities

August 2017

- Decorative lighting (16 lamps of 34) ordered and currently being manufactured. Due for installation initially at Freedom Plaza in September/October 2017.
- John Street LED upgrade have received confirmation from Endeavour Energy of new LED Cat V luminaire availability. To be implemented and installed by December 2017.
- Gough Street Whitlam Plaza under awning lighting (30 downlights) due to be installed September/October 2017.

Current Risks & Issues

Outstanding

- Minimise disruption to local businesses during works.
- Resolution of decorative lighting refurbishment. Decorative light refurbishment will deliver 16 of the anticipated 48 lamps to enable review of operational characteristics before remainder 32 lamps are ordered.



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Budget vs Actual Expenditure

2015-16 Budget (\$)	Actuals (\$) at 28 February 2017
1,020,000	812,937

<u>Dutton Plaza Car Park (Proposed Additional Level) – Concept Development</u>

Project Status: Completed: 100%

Council's Dutton Plaza comprises a 275 space car park, a retail complex, public lifts and toilets, civic plaza and community meeting room.

An additional level of parking has been proposed. Council project implementation process was applied to this project. As part of the process feasibility study was carried out to assess:

- Concept design (yield)
- Construction costs (quantity survey)
- Impact on existing building services and modifications required
- Impact on tenancies and possible revenue impacts
- Impact on car parking operations
- Loss of spaces, lost revenuer

Concept design was prepared which included net yield of additional 89 car spaces. Advice from specialist consultant, architect and building professionals was sought during feasibility study.

The investigations concluded that while the construction of additional level is possible with some modifications in the existing services, there will be loss of review from the car parking spaces lost during construction.

Cost estimate was carried out which included loss in revenue from car parking spaces. Estimated rate per car parking space is \$59,400 per space which is higher in comparison to the cost per space of the existing Dutton Plaza car park.

The results of the investigations were presented at the Councillor Briefing on 29 August 2017.

Activities

August 2017

- Concluded investigations for feasibility study
- Councillor Briefing

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Timeline



Budget vs Actual Expenditure

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2016-17 Budget (\$)	2016-17 Actuals (\$)
at 25 January 2017	at 30 August 2017
50,000	8,108

Project Budget for concept design development: \$50,000

Other Projects

The Smithfield Road Upgrade project is the subject of a separate report on the Outcomes Committee Agenda each month.

Kerry Whitehead

Manager Major Projects &
Planning

Authorisation:

Group Manager City Projects

Outcomes Committee - 12 September 2017

File Name: OUT120917_7.DOC

***** END OF ITEM 110 *****

Meeting Date 12 September 2017

Item Number, 111

SUBJECT: Fairfield Youth Advisory Committee - August 2017

FILE NUMBER: 17/10197

REPORT BY: Peter Hope, Community Project Officer - Youth

RECOMMENDATION:

That the report be received and noted.

SUPPORTING DOCUMENTS:

AT-A Youth Advisory Committee Meeting Minutes - August 2017 2 Pages
AT-B Youth Advisory Committee Spotlight Discussion August 2017 - Young 2 Pages
People and Domestic Violence

CITY PLAN

This report is linked to *Theme 1 Community Wellbeing* in the Fairfield City Plan.

SUMMARY

The Fairfield City Council Youth Advisory Committee (YAC) provides a forum for elected representatives and Council staff to engage in a meaningful dialogue with young people across Fairfield City. The YAC provides young people with the opportunity to contribute to the planning, development and implementation of Council's youth-focused initiatives. The YAC often act as Youth Ambassadors for the Council at various forums and events, are supported to lead projects and are regularly engaged for consultation by other government agencies.

Key points discussed at the meeting include:

 A Spotlight Discussion focused on domestic violence (DV) and the impact that it has on the lives on young people. The YAC primarily discussed DV within the context of relationships. This approach to exploring the issue helped to make the topic relatable for YAC as "healthy relationship" education is common in schools. YAC explored how and why DV occurs in relationships, what services are available and support for victims.

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- Representatives from the Strategic Land Use Planning team consulted the YAC on public space planning and design. They discussed the YAC's vision for the city and ideas for achieving this vision. YAC members expressed a desire for an energising city with light, colour, festivals, art and nightlife. YAC members felt actions need to be taken that engage people and increase community spirit in an accessible, stimulating and sustainable city. YAC members expect to see a future with people living in higher density, with amenity, traffic and parking problems.
- The YAC were introduced to the Fairfield City Museum and Gallery learning about the site and the upcoming "One Night at the Museum: Pop" event that is targeting young people as volunteers.

CONCLUSION

The Fairfield Youth Advisory Committee took this opportunity to have a meeting on site at the Museum and Gallery to enhance their understanding of Council facilities and services. YAC members have a range of upcoming opportunities that they are currently preparing for, including the Cabramatta Moon Festival, the NSW Youth Councils Conference and forming a Youth Week 2018 Steering Committee. The next YAC meeting will be held on Wednesday 6 September at Fairfield City Council.

Peter Hope

Community Project Officer - Youth

Authorisation:

Team Leader Community Development

Manager Social Development

Acting Group Manager City Strategic Planning

Outcomes Committee - 12 September 2017

File Name: OUT120917_11.DOC

** END OF ITEM 111 *****

ATT - A



Youth Advisory Committee Wednesday 9 August 2017 Fairfield City Museum and Gallery

Chair: Nicole Araya

Minutes: Sebastian Bressa

Attendance: Clr Adrian Wong, Amrutkiran, Nicole Araya, Jessica Lam, Christian, Harry, Sebastian Bressa, Marshall Squires, Andrew Nguyen, Angelique, Isabel, Jorjina Antranik, Bethanie, Arthur, Monica, Martin, Abnob, Ashley, Rebecca Gong, Howra, Vishaal, Matelita, Darko, CPO-Youth

Guests: Strategic Land Use Planner (SLUP) Edward Saulig, SLUP Estelle Grech, Museum and Gallery Programs Officer Bethany Falzon, Christina Alkhamisi.

Apologies: Clr Sera Yimaz, Kelly Nguyen, Geromy

(Note: Fairfield City Council omits the surnames of young people under the age of 18 in Fairfield Youth Advisory Committee (YAC) meeting minutes to protect the privacy of Committee members)

Actions Arising from the August Minutes

ACTION	Responsible	Due By
YAC to provide feedback/advice on youth engagement to the Fairfield City Museum and Gallery	YAC Convenor/CPO Youth	September 2017

1. Acknowledgement of Country

1.1 An Acknowledgement of Country was given by the Chair.

2. Welcome, WHS and Introductions

- 2.1. The Chair welcomed all in attendance to the meeting.
- 2.2. Bethany Falzon the provided an overview of WHS emergency procedures.
- 2.3. Councillor Adrian Wong welcomed the YAC and congratulated them on their appointment.

3. Fairfield City Museum and Gallery

3.1.Bethany gave an quick overview of the services and programs offered at the Fairfield City Museum and Gallery (FCMG). The FCMG is looking to increase youth participation. The upcoming 'One Night At the Museum: POP!', event is targeting young people as volunteers. Bethany encouraged YAC members to engage with the FCMG and contribute ideas to support FCMG engaging more effectively with young people.

ACTION: YAC to explore ideas for youth engagement and provide feedback to the FCMG.

4. Public Space & Place Making

- 4.1. Strategic Land Use Planners (SLUP) Edward Saulig and Estelle Grech discussed the importance of having youth input in public space planning and design.
- **4.2.** They sought feedback from YAC on their vision for Fairfield City in 20 years, and ideas YAC has for to achieve this vision.
- 4.3.YAC members expressed a desire for an energising city with light, colour, festivals, art and nightlife. YAC members felt actions need to be taken that engage people and increase community spirit in an accessible, stimulating and sustainable city. YAC members expect to see a future with people living in higher density, with amenity, traffic and parking problems.

5. Spotlight Discussion: Domestic Violence & Young People

5.1.A spotlight discussion was held regarding domestic violence (DV) and the impact that it can have on the lives of young people. The YAC believe that DV that is a significant issue that requires ongoing education and awareness raising. The YAC discussed DV situations, relationships and support for victims. A full overview of the discussion is attached to the minutes.

6. Review: Team Building Activity

6.1.YAC members briefly discussed the team building activity on 29 July 2017. They agreed that it was a worthwhile activity that allowed the members to form a stronger connection and support each other through a variety of challenging activities (high ropes).

7. Christina Alkhamisi - UN Youth Ambassador Applicant

- 7.1. Former YAC member Christina Alkhamisi is applying to be Australia's Youth Representative to the United Nations in 2018. Christina is seeking YAC feedback on her proposed theme for youth engagement if successful. The YAC has agreed to act as an advisory/reference group for Christina Alkhamisi if her application is successful.
- 7.2. The proposed question/theme is 'What would society be like of our youth was empowered to act, rise and transform our society?" They provided feedback to Christina on the level of difficulty that they had in brainstorming the material. Feedback on the question focused on youth engagement and empowerment. They discussed the importance of a society where young people are included in decision-making.

Meeting Closed: 8:00pm

Next meeting: 6 September 2017



Spotlight Discussion: Domestic Violence and Young People 9 August 2017

The Spotlight Discussion focused on domestic violence (DV) and the impact that it has on the lives on young people. The YAC primarily discussed DV within the context of relationships. This approach helped make the topic relatable for YAC as "healthy relationship" education is common in schools. YAC explored how and why DV occurs in relationships and what services and support is available for victims.

YAC spent time determing what healthy relationships look like identifying strengths including positive communication, trust, loyalty, mutual respect, patience and honesty. They determined that any form of violence is an immediate indicator of an unhealthy relationship. Violence that impacts on relationships includes physical, verbal abuse, psychological abuse, financial abuse, dominant use of power and control over others. They noted that these types of violence exist within relationships between young people, within families and amongst friends.



1 Photograph used with permission

DV in relationships can include physical acts such as fighting, beating, and using physical strength to intimidate, dominate and control. Physical abuse is the most obvious and identifiable form of domestic violence that occurs regularly. The impact of this form of violence can cause serious physical and psychological harm for victims and witnesses, especially for those in the family – with women and children being particularly vulnerable. YAC discussed how children and young people who witness violence may see it as normal and repeat the behavior when they grow up. The YAC emphasised the importance of family modelling positive relationship behaviour.

In relationships between young people, DV often takes more subtle forms. YAC identified factors such as bullying, lack of respect, verbal abuse, financial abuse, sharing private information, images, and control. Any factors that have severe psychological harm can be considered a form of DV. The YAC felt that healthy relationship (including DV) education should be enhanced in the schools at an early age so children and youth do not become victims or perpetrators of violence.

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Young people have a very limited understanding of the DV services that are available. The only specific DV initiative that YAC were able to name was *White Ribbon Day Campaign* as it is well publicised and takes place in some schools. The YAC discussed places that young people can go to seek support and advice for DV such as youth services, school counsellors and websites. There is a need to promote these services further so that young people know where to seek support if necessary.

YAC members were all in strong agreement that DV is not acceptable in our society and cannot be tolerated. They discussed "reasons" that are often understood to justify DV such as stress, drugs and alcohol, poor anger management, jealousy, insecurity, punishment, cultural norms and mental health. More early intervention



2 Photograph used with permission

and education is required so people are aware that there is no justifiable excuse. It is often difficult to support victims, as they are reluctant to disclose the issue or willing to seek support. Young people need more understanding of how to assist others in finding the required support.

The issue of DV within relationships is relevant to our community. Some YAC members have expressed an interest in having involvement in local White Ribbon Campaign events in the area to increase their knowledge and contribute to raising awareness of the issue.

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Meeting Date 12 September 2017

Item Number, 112

SUBJECT: Information Report - Newleaf Renewal Project - Submission to South

West Planning Panel

FILE NUMBER: 10/02178

REPORT BY: Andrew Mooney, Executive Strategic Planner

RECOMMENDATION:

That a report be submitted to the September 2017 Council Meeting covering a proposed submission from Council to the South West Planning Panel on the Development Application for construction of Stages 6A and 7 of the Newleaf Renewal Project.

SUPPORTING DOCUMENTS:

There are no supporting documents for this report.

CITY PLAN

This report is linked to *Theme 2 Places and Infrastructure* in the Fairfield City Plan.

SUMMARY

Urban Growth NSW has submitted a Development Application (DA) on behalf of the NSW Land and Housing Corporation (LAHC) for development of Stage 6A and 7 of the Newleaf Bonnyrigg Renewal Project (also known as the Bonnyrigg Living Communities Project).

The Project has a capital investment value of approximately \$69 million and as such the Sydney South West Planning Panel (SWPP) is the relevant consent authority.

Under the approvals framework governing the project Council's Development Control Branch is undertaking separate independent assessment of the proposal on behalf of the SWPP and in due course will refer a report to the Panel on the DA's compliance against relevant legislation/policy, technical issues and any submissions received.

This holding report provides background information on the proposed new community facility and infrastructure required under Stage 6 with a more detailed report to be submitted to the full Council Meeting of the 26 September 2017 that will address a proposed submission to the current DA. There will be a Councillor Briefing on 12 September to inform Councillors of progress on discussions with the proponents.

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At this stage the critical issue is that Stage 6A/7 DA does not include provision of a community facility and community infrastructure as identified under a Voluntary Planning Agreement (VPA) and associated Infrastructure Services and Delivery Plan (ISDP) applying to the Project.

The timeline for the further report to Council will also ensure that Council's submission can be considered by the SWPP at an early stage following public exhibition of the proposal which is scheduled to finish on the 26 September 2017.

BACKGROUND

The Newleaf (Bonnyrigg Living Communities) Project was approved by the Minister for Planning in 2009 under the former Part 3A (Major Projects) legislation. It entails urban renewal of the Bonnyrigg Housing Estate in 18 Stages involving:

- Demolition of existing social housing in the ownership of the Land & Housing Corporation
- construction of 2,332 new dwellings
- 70/30 ratio mix of private and social housing
- provision of new infrastructure including a number of reconstructed roads and stormwater drainage
- reconstructed and reconfigured open space areas and park

Under the original approval for the project Council entered into a voluntary planning agreement (VPA) with the proponents and Department of Housing which will result in new infrastructure, parks and roads being transferred into Council's ownership.

PROJECT CHRONOLOGY

Since its original approval in January 2009, the Department of Planning and Environment (DP&E) and NSW Planning and Assessment Commission (PAC) has approved a number of important modifications to the Concept Plan as follows;

Modifications 1 & 2 – Sept 2009 & April 2010

- Rectified a number of minor errors and technical issues associated with the Concept Plan and Stage 1
- Reduction in min lot widths for detached dwellings,
- Include a formerly privately owned lot in Deakin Place in the Project

Modifications 3 & 4 – July 2011& July 2012

- Introduction of 3 storey apartments into the development
- Reduced the lot width for detached dwellings to 6.4m creating the potential for increased density in the development.
- Amending side setback requirements and boundary fence types.
- Increased the number of proposed dwellings under the proposed from 2,332 to 2,500

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 Increase in the overall amount of open space realised under redevelopment estate from 12

DETAILS OF PART STAGES 6A/7

In summary Stages 6A/7 include following scope of works:

- Construction of 161 residential dwellings comprising
 - 75 detached dwellings
 - 14 terraces
 - o 32 semi-detached dwellings
 - o 2 apartment buildings containing a total of 40 dwellings
- Landscape and public domain works including
 - Road resurfacing
 - New kerb and gutter
 - Stormwater infrastructure
 - Street landscaping and tree planting measures

It is noted that under the original Concept Plan a mix in private/social housing at a ratio of 70/30 is proposed for the whole Project. However, the documentation submitted with the current DA does not provide any details of the ratio in private/social housing mix achieve under Stages 6A/7 or the subsequent level generated of the overall development up to the current Stage.

KEY ISSUE – Community Facility and Community Infrastructure

The redevelopment of the Newleaf Estate is accompanied by a Voluntary Planning Agreement (VPA) endorsed by Council, LAHC and original proponents for the redevelopment (Bonnyrigg Partnerships).

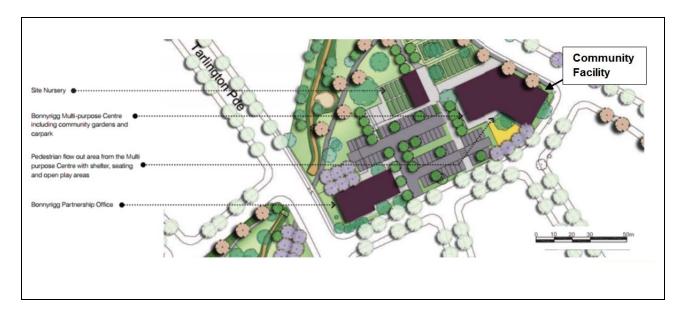
It is noted that the obligations of the VPA have now been transferred to NSW Urban Growth who are the proponents for Stages 6a/7.

The VPA and associated Infrastructure Services Delivery Plan (ISDP) cover the provision of all the public infrastructure and facilities to be included in the redevelopment including public open space, landscaping measures, roads, stormwater drainage and community facilities. The VPA/ISDP also stipulate the specific arrangements and details applying to the provision of the new infrastructure/facilities including, timing, size and technical specifications.

Under the Concept Plan approval (as modified) a new community centre and community infrastructure are proposed to be located within a community precinct located in the midpoint of the Estate off Tarlington Parade (below) as part of Stage 6.

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Original consideration of the community facility for Newleaf Project involved investigations and consultation with stakeholders dating back to 2008.

Given the changing needs of the community over this time it will be necessary to reengage with stakeholders to plan for and design a community facility that meets the future needs of the community.

CONCLUSION

That a detailed report be submitted to the September 2017 Council Meeting covering a proposed submission from Council to the South West Planning Panel on the development application for construction of Stages 6A and 7 of the Newleaf Renewal Project.

Andrew Mooney **Executive Strategic Planner**

Authorisation:

Director Corporate Governance

Outcomes Committee - 12 September 2017

File Name: OUT120917_9.DOC

**** END OF ITEM 112 *****