



Attachments

Planning and Strategy Committee

Notice is hereby given that an Planning and Strategy Committee of Council will be held at Council Chambers, 1 Belgrave Street, Manly, on:

Monday 6 September 2010

Commencing at 7:30:00 PM for the purpose of considering items included on the Agenda.

Persons in the gallery are advised that the proceedings of the meeting are being taped. However, under the Local Government Act 1993, no other tape recording is permitted without the authority of the Council or Committee. Tape recording includes a video camera and any electronic device capable of recording speech.

*Copies of business papers are available at the Customer Services Counter at Manly Council, Manly Library and Seaforth Library and are available on Council's website:
www.manly.nsw.gov.au*

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ATTACHMENT 1

Planning And Strategy Division Report No. 18 - Manly Local Environmental Plan 1988 – draft Amendment 81

Submissions from Road & Traffic Authority, Sydney Water, New South Wales Rural Fire Service and Warringah Council

Our Reference: Your Reference: Contact: Telephone	279.5314 v6 - SYD10/00295 116419 Angela Malloch 8849 2041	

The General Manager
Manly Council
PO Box 82
MANLY NSW 1655

Attention: Tom Irons

DRAFT MANLY LOCAL ENVIRONMENTAL PLAN (AMENDMENT NO.81)

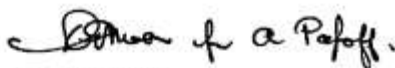
Dear Sir/Madam,

Reference is made to Council letter dated 31 March 2010 with regard to the abovementioned amendment to the Draft Manly Local Environmental Plan 1988 referred to the Roads and Traffic Authority (RTA) for comment.

The RTA raises no objection to amendment no. 81 of the Manly Local Environmental Plan.

Please refer any further queries on this matter to the nominated Assistant Planner, Angela Malloch on phone (02) 8849 2041 or facsimile (02) 8849 2918.

Yours faithfully,



Andrew Popoff
A/Senior Land Use Planner
Transport Planning, Sydney Region

5 May 2010

Roads and Traffic Authority

27-31 Argyle Street Parramatta NSW 2150
PO Box 973 Parramatta CBD NSW 2150 DX28555 Parramatta
www.rta.nsw.gov.au | 13 17 82

Planning And Strategy Division Report No. 18 - Manly Local Environmental Plan 1988 – draft Amendment 81

Submissions from Road & Traffic Authority, Sydney Water, New South Wales Rural Fire Service and Warringah Council

15 April 2010

Jennie Minifie
Manly Council
PO Box 82
Manly NSW 1655

Attention: Tom Irons



Sydney
WATER

Dear Ms Minifie,

Re: Draft Manly Local Environmental Plan Amendment No.81

Thank you for your letter of 31 March 2010 regarding the draft Manly Local Environment Plan Amendment No.81. Sydney Water has reviewed the proposal and provides the following comments for Council's consideration.

Sydney Water has no concerns with the proposed amendments of:

- The zoning of a number of unzoned parcels of land adjoining Burnt Bridge Creek to be zoned either open space or industrial to be compatible with adjoining zones
- The zoning of the closed and unzoned laneway between 18 & 20 Peronne Ave and 21 & 23 Gordon Street, Clontarf, to zone No.2 Residential
- The listing of a number of properties as heritage items
- Third party advertising being included as exempt development

Sydney Water notes the listing of Sewer Pumping Station No.0036, Golf Parade Manly, as a heritage item.

Sydney Water e-planning

Sydney Water has created a new email address for planning authorities to use to submit statutory or strategic planning documents for review. This email address is urbangrowth@sydneywater.com.au. The use of this email will help Sydney Water provide advice on planning projects faster, in line with current planning reforms. It will also reduce the amount of printed material being produced. This email should be used for:

- Section 62 consultations under the *Environmental Planning and Assessment Act 1979*
- consultations where Sydney Water is an adjoining land owner to a proposed development
- Major Project applications under Part 3A of the *Environmental Planning and Assessment Act 1979*
- consultations and referrals required under any Environmental Planning Instrument
- draft LEPs, SEPPs or other planning controls, such as DCPs
- any proposed development or rezoning within a 400m radius of a Sydney Water Sewage Treatment Plant
- any proposed planning reforms or other general planning or development inquiries

Sydney Water Corporation ABN 49 776 225 038

1 Smith St Parramatta 2150 | PO Box 399 Parramatta 2124 | DX 14 Sydney | T 13 20 92 | www.sydneywater.com.au

Delivering essential and sustainable water services for the benefit of the community

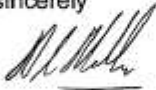
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Submissions from Road & Traffic Authority, Sydney Water, New South Wales Rural Fire Service and Warringah Council

If you require any further information, please contact Alexandra Plumb of the Urban Growth Branch on 02 8849 6066 or e-mail alexandra.plumb@sydneywater.com.au

Yours sincerely



Adrian Miller
Manager Urban Growth Strategy and Planning

ATTACHMENT 1

Planning And Strategy Division Report No. 18 - Manly Local Environmental Plan 1988 – draft Amendment 81

Submissions from Road & Traffic Authority, Sydney Water, New South Wales Rural Fire Service and Warringah Council

All communications to be addressed to:

Head Office
NSW Rural Fire Service
Locked Mail Bag 17
Granville NSW 2142

Head Office
NSW Rural Fire Service
15 Carter Street
Homebush Bay NSW 2127

Telephone: (02) 8741 8175

Facsimile: (02) 8741 5550

Email: development.assessment@rfs.nsw.gov.au



The General Manager
Manly Council
PO Box 82
Manly NSW 1655

Attention: Tom Irons



Your Ref: 116419

Our Ref: L08/0201
HQ10/1820

18 May 2010

Dear Mr Irons,

Re: Manly Local Environmental Plan (Amendment No. 81)

I refer to your letter dated 31 March 2010 providing a copy of the abovementioned planning proposal and associated supporting information.

The NSW Rural Fire Service (RFS) notes, in accordance with your correspondence, that specific lots have been identified within the Manly local government area that are considered suitable for rezoning to allow for further residential or industrial development and potentially for increased development densities. Importantly, some of the nominated areas have also been mapped as bush fire prone land.

As such, any future development within the abovementioned lots will be required to comply with either section 79BA (residential, commercial or industrial development) or section 91 (subdivision or special fire protection purposes development) of the *Environmental Planning and Assessment Act 1979*. The latter, relevant for all integrated development, will require the issue of a bush fire safety authority as per section 100B of the *Rural Fires Act 1997*.

For the purposes of future development planning, the requirements of *Planning for Bush Fire Protection 2006* should be considered from the early planning stages of future development within these bush fire prone areas. This consideration should include the provision of the following bush fire protection measures:

- Asset protection zones in accordance with Appendix 2 of *Planning for Bush Fire Protection 2006*;
- Public access in accordance with section 4.1.3 of *Planning for Bush Fire Protection 2006*. This includes the provision of perimeter roads;

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- Water supply for fire fighting purposes in accordance with section 4.1.3 of *Planning for Bush Fire Protection 2006*;
- Construction of future dwellings in accordance with Addendum Appendix 3 of *Planning for Bush Fire Protection 2006* and AS3959-2009 – *Construction of Buildings in Bush Fire Prone Areas*;
- Landscaping in accordance with Appendix 5 of *Planning for Bush Fire Protection 2006*; and
- Emergency evacuation measures in accordance with section 4.2.7 of *Planning for Bush Fire Protection 2006* (for special fire protection purpose developments).

Provided the above measures are considered as part of the planning proposal for the rezoning of land, then the RFS raises no additional concerns and supports the progression of the proposed amendments to the Manly Local Environmental Plan.

For any enquiries regarding this correspondence, please contact Daniel Copland on 8741 5175.

Yours sincerely



Nika Fomin

Team Leader

Development Assessment and Planning

The RFS has made getting additional information easier. For general information on *Planning for Bushfire Protection 2006*, visit RFS web page at www.rfs.nsw.gov.au and search under *Planning for Bushfire Protection 2006*.

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Planning And Strategy Division Report No. 18 - Manly Local Environmental Plan 1988 – draft Amendment 81

Submissions from Road & Traffic Authority, Sydney Water, New South Wales Rural Fire Service and Warringah Council



**Warringah
Council**

27 April 2010

General Manager
Manly Council
PO Box 82 Manly NSW 1555



Civic Centre 725 Pittwater Road
Dee Why NSW 2099
DX: 9118
(02) 9942 2111
(02) 9971 4522

www.warringah.nsw.gov.au
council@warringah.nsw.gov.au
31 565 068 406

Dear Sir

Re: Draft Manly Local Environmental Plan (Amendment No 81)

This letter is in response to correspondence received from Manly Council on 12th April 2010, regarding draft Manly Local Environmental Plan (Amendment No 81) (DLEP). The DLEP in question proposes to zone 2 parcels of unzoned Warringah Council owned bushland, which are located in the Manly Local Government Area.

Pursuant to S56 2 (d) (public authority consultation) of the Environmental Planning and Assessment Act 1979 (EPA Act), the following comments are made on the DLEP:

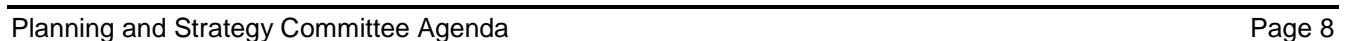
- The proposal to zone parcels Pt 7 DP 776891 and Pt 1 DP 1127989 to Zone 6 – Existing Open Space under Manly Local Environmental Plan 1988 is supported. The proposed zoning is compatible with the adjoining zones, and reflective of the current use of the land as open space.
- In recognition of the historical zoning of the parcels under Warringah Local Environmental Plan 1985 as *County Open Space*, it is requested that Manly Council consult with the Department of Planning to identify whether any public open space acquisition proposals have been earmarked for the subject land. It is requested that Manly Council notify Warringah Council of the outcome of any such consultations.
- Following the zoning of the subject open space parcels, it is requested that Manly Council and Warringah Council engage in discussions to address issues related to management, maintenance and operation of the land. These discussions should provide the basis for the establishment of a clear framework to identify the role of each Council in relation to the operation and management of the land.

If you have further questions regarding the zoning proposal, please do not hesitate to contact Warringah Council's Strategic Planning Department on telephone 9942 2111.

Yours faithfully

David Kerr
Manager Strategic Planning

Planning And Strategy Division Report No. 19 - Public exhibition of the North Harbour Reserve Landscape Masterplan
North Harbour Reserve Landscape Masterplan





DRAFT
LM Graham Reserve Masterplan - Action Plan
 August 2010

Background & Introduction

LM Graham Reserve is located on Balgowlah and Kenneth Roads immediately east of the Southern Paddock of Manly Golf Course. The Reserve is located within a mixed use area incorporating residential, open space and environmental protection areas.

The site currently contains; grassed sporting fields, two amenities buildings and canteen, practice cricket nets, swim centre, ½ basketball court, tennis courts, exercise station, the Roundhouse long day care centre and parking facilities.

The site provides sporting facilities accommodating; tennis, cricket, soccer, swimming, water polo, ultimate frisbee, casual basketball, and general exercise. The reserve fields are also used for walking, running, off-leash dog exercise and other casual and more passive recreational uses.

Adjacent to the current reserve area is a former section of Suwarrow Road, which has been closed and is presently being used as a Council storage compound. The LM Graham Reserve area is zoned as Zone No 6 Open Space under the Manly LEP 1988. There is an existing Plan of Management for LM Graham Reserve, which has guided the development of the Masterplan.

Objectives

The objectives of the LM Graham Reserve Plan of Management have been adopted for the Masterplan.

Masterplan Scope

The LM Graham Masterplan has been designed with consideration to surrounding facilities that are not specifically part of the Masterplan details including; the Roundhouse long day care centre, the Andrew Boy Charlton Swim Centre and car park and Kenneth and Balgowlah Roads.

Informing the Masterplan – Research & Consultation

The Masterplan design has been informed by:

- The existing LM Graham Reserve Plan of Management and the NSW Local Government Act 1993.
- General community consultation undertaken in November 2007.

Planning And Strategy Division Report No. 20 - LM Graham Reserve Masterplan – Final Draft for Public Exhibition

Draft LM Graham Reserve Masterplan – Action Plan

DRAFT_LM Graham Reserve Masterplan – Action Plan – August 2010

- Consultation with a representative community Working Group throughout the development of the draft.
- Recommendations of the environmental constraints report prepared by Natural Resources staff.
- Workshops and consultation with staff from across Council.
- LM Graham Reserve Local Studies Search results.

ACTION PLAN

Planning		
Issue	Background	Masterplan Management Action
P.1 Land ownership	The majority of the reserve and swim centre is Council owned community land. There is one small parcel owned by the Crown (within the reserve area) and another by Energy Australia (within the swim centre area).	The draft Masterplan has been designed to be consistent with the Local Government Act requirements for management of community land and the existing community land Plan of Management for LM Graham Reserve. It is also consistent with Crown Land management principles under the Crown Lands Act.
P.2 Local Government Act – Community Land Objectives	The existing Plan of Management categorises the land as 'sportsground' and 'general community use' under the NSW Local Government Act 1993.	<p>The draft Masterplan has been designed to be consistent with the following core objectives specified in the Local Government Act, for:</p> <p><u>Sportsground:</u></p> <p>(a) to encourage, promote and facilitate recreational pursuits in the community involving organised and informal sporting activities and games,</p> <p>(b) to ensure that such activities are managed having regard to any adverse impact on nearby residences.</p> <p><u>General community use:</u></p> <p>to promote, encourage and provide for the use of the land, and to provide facilities on the land, to meet the current and future needs of the local community and of the wider public:</p> <p>(a) in relation to public recreation and the physical, cultural, social and intellectual welfare or development of individual members of the public,</p> <p>(b) in relation to purposes for which a lease, licence or other estate may be granted in respect of the land (other than the provision of public utilities and works associated with or ancillary to public utilities).</p>

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<p>P.3 Existing Plan of Management Objectives</p>	<p>The existing Plan of Management for LM Graham Reserve establishes the following objectives:</p> <ul style="list-style-type: none"> a) Integrate local drainage needs into park design and bushland management, b) To manage all open space land in a flexible manner and to ensure that local needs are met, c) To maintain our active sporting areas and manage them to maximise choice. Consider LM Graham Reserve as an opportunity to provide major new recreation activities, d) Recognise the role of LM Graham Reserve within the wider community and in relation to other objectives, e) To encourage participation in design, development and management, f) Provide for user health, safety and enjoyment, g) Retain opportunities to use open space for special events or projects and for future activities or structures if need becomes apparent. 	<p>The draft Masterplan and Action Plan address each of these objectives by:</p> <ul style="list-style-type: none"> a) Drainage issues have not been raised as a specific issue, except for the need to consider broader flooding impacts and issues. The Masterplan considers flood mitigation measures to slow drainage into Manly Lagoon during large flood events. Stormwater harvesting has also been proposed to provide an alternative water source for watering the fields. b) Elements of the Masterplan that are less flexible (eg: hard court facilities and structures) have been located on the perimeter of the reserve to maximise flexible use of the undeveloped areas of the reserve. The multi-purpose facilities proposed in the Masterplan also enable flexible use and management of the space. c) The focus of the Masterplan is on active sporting use and the Masterplan has maintained and even increased choice of activities at the reserve, particularly with the planned refurbishment of the swim centre into a multi-use facility and the provision of multi-use courts on the western side of the site. d) The wider community has been considered in the Masterplan design through the provision of casual use sports facilities such as the multi-use courts and exercise stations, bicycle paths and parking as well as passive recreational areas. e) Community consultation has informed the Masterplan design. f) The Masterplan design considers and will contribute to the health, safety and enjoyment of reserve users. g) A large portion of the open space area can be used flexibly to accommodate future needs of the community.
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P. 4 Primary use of the area as an active sporting area.	Current user groups include: soccer, cricket, tennis, casual basketball, ultimate frisbee, dog walkers, walkers/runners, cyclists, passive users, swim centre users (swimmers, water polo & casual use), childcare centre. The community Working Group recommended to Council: <i>that active sporting areas be the main priority of the LM Graham Masterplan.</i> This has been agreed to by Council resolution.	The draft Masterplan incorporates active sporting areas as the main priority for use of the reserve and swim centre areas. However, it has also incorporated general community use options in accordance with the existing Plan of Management and community feedback through the community consultation.
Sport & Recreation		
Issue	Background	Masterplan Management Action
SR.1 Integration of the reserve and swim centre areas/facilities	<p>It was clear from the community consultation and Working Group that all could benefit from the better integration of the reserve and the swim centre. This would facilitate a cross-pollination of users and buildings and facilities could be consolidated providing the opportunity to more effectively use the area available for open space.</p> <p>The community also provided clear feedback through the general community consultation and the Working Group, a preference that the swimming pool remain an outdoor/open air facility.</p>	<p>The Masterplan will see upgrade of the current swim centre to incorporate cross-training facilities. This new multi-use swim and indoor activity centre (or similar) would integrate uses but maintain separate dry and wet use areas.</p> <p>Subject to detailed designs this facility could include areas such as: toilets, shower and change rooms, referee's room, first aid room, gym room, club room, community room (eg: for dance/yoga/other), short term childcare facility / crèche, café, storage areas, steam room, children's water play ground, ancillary office space for administering staff and other. In addition to open air swimming pools.</p>

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Draft LM Graham Reserve Masterplan – Action Plan

DRAFT_LM Graham Reserve Masterplan – Action Plan – August 2010

<p>SR.2 Current inefficient use of useable open space</p>	<p>There is significant demand and competition for use of sporting fields throughout the Manly LGA and across the wider northern beaches region. There is also a need to provide open space for passive use. The layout of existing infrastructure at the reserve (fencing, seating, sightcreens, amenities) limits the useability of the open space areas of the reserve.</p> <p>All sporting fields, courts, pools etc to be orientated in a North-South alignment.</p>	<p>The draft Masterplan and Action Plan address this issue through:</p> <ul style="list-style-type: none"> • Removing existing amenities buildings and consolidating new amenities and other facilities towards the swim centre to maximise usable open space. • Incorporating the former Suwarrow Road section along the western boundary into the reserve. • Alignment of sport fields to maximise the amount of playing surfaces, in consideration of usage patterns and maintenance requirements. • Removal of existing seating and fencing around the soccer/cricket fields and, subject to a feasibility study and detailed designs, replacement with shaded earth mounding, which could also incorporate some more formal seating. • Removal of permanent cricket sightcreens and replacement with portable sight screens. • Removal of the three existing tennis courts and replacement of these with two tennis courts (also available for hire by other compatible uses), as well as and one multi-purpose court incorporating 2 casual use half basketball and 2 casual use half netball courts along the western boundary. • All proposed sporting areas to maintain a North-South orientation.
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Draft LM Graham Reserve Masterplan – Action Plan

DRAFT_LM Graham Reserve Masterplan – Action Plan – August 2010

<p>SR.3 Improvement of the present swim centre</p>	<p>The pools have been assessed as being at the end of their economic life and will require replacement in the medium-term.</p> <p>There are opportunities to better integrate the swim centre and LM Graham Reserve facilities.</p> <p>Community and Working Group feedback indicate a strong community preference to maintain the swim centre's open air components.</p> <p>Feedback from consultation with the general community and Working Group has indicated the need to avoid domination by existing clubs or commercial users within the swim centre.</p> <p>Both pools are poorly oriented in an east-west direction, so that users are swimming into the sun. North –South orientation would be more suitable.</p>	<p>The draft Masterplan and Action Plan address these issues by:</p> <ul style="list-style-type: none"> • Better integration of the swim centre and the reserve earmarked for future detailed designs of swim centre refurbishment. <p>The swim centre upgrade will be subject to a detailed design stage. Learnings from the Masterplan consultation suggest the following for consideration in the design stage:</p> <ul style="list-style-type: none"> • Maintain open air components of swim centre • Provide a balance of structured and unstructured water-based recreation • Provide more extensive and varied range of facilities • If possible provide an additional pool for water polo to free up 50m pool for swimmers • Provide additional shading and areas to sit (sails / trees) • Increase spectator / passive areas • Ideally lap pools should have North-South orientation • New facility will require areas for plant, filtration and chemical treatment, water re-use tank, heating etc. • Facilities for the reserve area and to provide cross-training options, such as toilets, shower and change rooms, referee's room, first aid room, gym room, club room, community room (eg: for dance/yoga/other), short term childcare facility / crèche, café, storage areas, steam room, children's water play ground, ancillary office space for administering staff and other.
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<p>SR. 4 Increased need for sporting fields & facilities</p>	<p>Due to increasing demand as the diversity of sports increase and also their memberships, there is increasing pressure for sporting fields and associated facilities.</p> <p>The cricket facility requested an additional cricket field with wickets. This was considered following a survey of the fields and was unable to be accommodated given the limited size of the reserve in addition to the need to accommodate other user groups.</p>	<p>There is limited space at the reserve and that space must be managed sustainably by avoiding overcrowding or over-use. Key features of the draft Masterplan and Action Plan are to maximise use by a variety of sporting users without compromising the integrity of the fields and facilities through over-use. Key sporting features include:</p> <ul style="list-style-type: none"> • 1 cricket field, 6 wickets, 6 practice nets and portable sight screens • 1 premier size and 1 standard/senior sized soccer field, 3 mini/junior soccer fields, one being a synthetic grass surface (located outside the cricket field) for cross/wet weather training or multi-use. • Fields flexibly managed for other sporting users such as Ultimate Frisbee • 2 synthetic tennis courts (also available for hire by other compatible users) • 1 multi-purpose court (casual use basketball and netball) • Perimeter pathway for cycle path and walking/jogging • Casual use exercise stations along the perimeter path • Greater connection with proposed improved cross-training facilities at the future refurbished swim centre.
<p>SR.5 Tennis court surfaces require upgrade to address safety and quality issues</p>	<p>The current tennis court surfaces are in disrepair and require upgrade. The tennis facility consider this the main reason that the tennis court usage is low at the reserve.</p> <p>For competition tennis it is undesirable to use multi-purpose courts showing other line markings. Ideally the courts would be competition surface and larger to allow partial separators between each court.</p> <p>In addition to the 3 tennis courts at LM Graham Reserve, at present there are: 5 at Bareena, 6 at Keirle Park, 6 at Manly Oval, 2 at Cnr Condamine and Balgowlah Roads and 2 at Koobillya.</p>	<p>The draft Masterplan and Action Plan address these issues by:</p> <ul style="list-style-type: none"> • Allowing for two new synthetic tennis courts, with separators, relocated along the western boundary of the reserve to better utilise reserve space. The N-S orientation has been maintained. • The two tennis courts would also be available to hire for other compatible uses. No additional lines/markings would be permitted and removable/portable goals and equipment would be used. <p>The tennis facility requested that three tennis courts be maintained and upgraded at the reserve. Due to the intention to accommodate other user groups including casual use sports and general community use areas only two tennis courts for use in peak periods could be accommodated in the Masterplan design.</p>

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SR.6 Requirement for improved amenities and facilities	The current two amenities buildings are inappropriately located resulting in poor use of open space and fragmentation of the reserve area. Consultation indicated these should be consolidated and more appropriately located to improve efficient use of the space available.	The draft Masterplan and Action Plan address this issue by: <ul style="list-style-type: none"> Proposing consolidation of amenities such as toilets, change rooms and kiosk/canteen towards the future refurbished swim centre. Consideration will be given to the addition of community/club room as part of the proposed multi-use facility. Seating and shade to be provided, possibly accommodated by integration into earth mounding (also intended for flood mitigation) or similar.
SR.7 Need to provide better informal active and passive recreational opportunities	<p>Many people use the reserve for informal active and passive recreational activities such as dog walking, walking and jogging, physical exercise, picnicking etc.</p> <p>Additional exercise stations were repeated requests through the consultation. As did some form of multi-use facility that could be used for a variety of sporting activities and cross-training.</p>	<p>The draft Masterplan and Action Plan address these issues by:</p> <ul style="list-style-type: none"> Installing additional exercise stations around the perimeter of the reserve. Provision of a multi-purpose court to be used casually for mixed sporting pursuits like basketball and netball. Provision of a synthetic grass junior soccer field, also available for cross / wet weather training and multi-use purposes. Providing an area for general park use with BBQs and picnic seating in a part shaded area. Maintaining a suitable level of fencing for dog walkers while also improving fencing amenity issues raised consistently through the consultation. Providing a shared pathway to improve active transport and connectivity to and through the reserve.
SR.8 Current exercise station is well used. Also used as a substitute playground.	There were a few representations for a children's playground where the current tennis courts are located. This was integrated into one of the initial drafts put to the community Working Group, the majority of which indicated that this would not be desirable. Thus it was removed. A swing set has instead been included to provide a lower key play area.	<p>The draft Masterplan addresses these issues by:</p> <ul style="list-style-type: none"> Providing additional exercise stations around the perimeter of the reserve at strategic locations. Inclusion of a swing play area rather than a full playground facility.
SR.9 Increased need for basketball court	<p>The nearest basketball facility is Narrabeen Indoor Sports Centre.</p> <p>The existing casual half court facility is very well used, justifying a slightly larger area that also accommodates other sports such as casual use netball and possibly even tennis.</p>	<p>The draft Masterplan addresses these issues by:</p> <ul style="list-style-type: none"> Provision of a multi-purpose court facility for casual use. The facility will incorporate two half basketball courts and overlaid also 2 half netball courts.

ATTACHMENT 2

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Draft LM Graham Reserve Masterplan – Action Plan

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<p>SR.10 Dog off-leash area – needs to be better equipped and managed.</p>	<p>Dog walkers have indicated that the fencing is not adequate to stop dogs off leash from road hazards. They have requested complete fencing with automatic closing gates that do not stay open.</p> <p>A more common community perception is that the current fencing is not inviting and degrades from the aesthetics of the area. Many others wanted the fencing removed. The Masterplan will need to balance this tension.</p> <p>Community feedback indicates there is only one tap for humans and dogs and requested more drinking facilities, at least one specifically for use by dogs.</p> <p>The broader community has indicated the need for better management of dog faeces, recommending more bag dispensers and code of conduct signage.</p>	<p>The draft Masterplan and Action Plan address these issues by:</p> <ul style="list-style-type: none"> • Providing low, attractive and effective perimeter fencing with gates that automatically close. • Provide dog drinking facility separate to facility for people (eg: water bowl) • Code of conduct signage at all entrance points to include dog poo code plus bags dispensers on reserve bins.
<p>SR.10 Perimeter running track</p>	<p>A few community members requested a perimeter running track.</p>	<p>The space restrictions at the site do not permit this use in addition to the other user groups. It was considered that those wishing to go running/jogging could be accommodated informally on the site with the proposed layout including grassed areas and the shared pathway.</p>

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DRAFT_LM Graham Reserve Masterplan – Action Plan – August 2010

Environmental		
Issue	Background	Masterplan Management Action
E. 1 Flooding	Refer to Environmental Constraints Report	<p>Undertake a feasibility study into the establishment of LM Graham Reserve as a Flood Retarding Basin for a 1% and 2% AEP flood event. The potential flood retarding earth mounding used to achieve this effect is indicated on the Masterplan and consideration should be given to using this for the additional benefit of spectator viewing and seating. Other examples of this type of basin in Sydney demonstrate mounding of around 1m-1.5m height, although this is indicative only and would be subject to a feasibility study and detailed designs.</p> <p>In light of implementation of the above feasibility study, investigate the installation of new Stormwater Quality Improvement Devices (SQIDs) at priority locations to improve stormwater quality for Manly Lagoon and to ensure re-directed stormwater in a 1% and 2% AEP flood event does not create significant litter issues at the Reserve. Investigations should take into account current best practice technologies.</p> <p>Any modifications to the Reserve should not increase the upstream or downstream impacts of flooding.</p> <p>If the proposed flooding mitigation basin mounding is not feasible from a flood mitigation perspective, consideration should also be given to establishing the mounding for spectator use, instead designed to enable through flows of flood waters.</p>

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<p>E.2 Water Use</p>	<p>Refer to Environmental Constraints Report</p> <p>Current use of groundwater is not likely to be sustainable in the future therefore need to consider other options of water supply.</p> <p>Automated irrigation system: left field has 25 popup heads, 30 on right field and swim centre has 28 heads.</p> <p>The irrigation system on the east side was new as at 1998.</p>	<ul style="list-style-type: none"> • Council to investigate the re-use of treated grey-water from the North Head Sewage Treatment Plant for irrigation of the Reserve. Note: funding has been secured for the feasibility assessment and liaison with Sydney Water and other stakeholders is in progress. • Continue to monitor extracted groundwater for salinity and other parameters for early sign of reduced quality. Use of groundwater for irrigation should be sustainable, it should not compromise the health or integrity of the aquifer. • Investigate stormwater harvesting options for irrigation purposes. It is noted that this is likely to involve above or below ground water tanks for storage of harvested water. • Implementation of Council's Water Savings Action Plan for the reserve, swim centre and Roundhouse. • Upgrade to a better irrigation system with control and automatic rain cut-off (it is often on after it has been raining). Perhaps upgrade with the introduction of the treated effluent / S/W harvesting projects and/or re-surfacing of the playing fields.
<p>E.3 Suwarrow Road – clean up</p>	<p>Refer to Environmental Constraints Report</p>	<ul style="list-style-type: none"> • Clean up and incorporate the 'compound area' located adjacent to LM Graham Reserve, within the closed portion of the former Suwarrow Road, into LM Graham Reserve.

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E.4 Flora & Fauna (Including trees & shade)	Refer to Environmental Constraints Report Community consultation identified that there is a high value on the perimeter trees, particularly the paperbarks, casuarinas and brush box and the shade they provide.	<ul style="list-style-type: none"> • Incorporate native plantings that contribute to the establishment of strategic wildlife greenways (corridors) in the area and improve the amenity of the reserve while being sympathetic to the sporting and general community use of the Reserve (ie: maintain and enhance perimeter plantings). • Protect existing trees where possible. • Future plantings under the Odawara Sister City Program should incorporate native trees suitable to the Manly area. • Staged planting well in advance of any clearing of significant trees to make room for sporting facilities and grounds. Plantings should include local native species as far as possible. • Include additional trees to provide shade and amenity around the perimeter of the reserve. • Maintain the paperbarks, casuarinas and brush box and other trees around the perimeter of the park. Existing trees should be retained and replaced when they die or have to be removed for safety reasons. • Palm trees should be replaced as they are inappropriate to this context.
E.5 Soil Quality	Refer to Environmental Constraints Report	<ul style="list-style-type: none"> • Recommended to undertake intrusive soil testing to determine soil quality across the site in relation to guidelines for open space. Intrusive soil testing should also be designed to confirm the depth of fill across the site and where natural material is encountered, to confirm the presence or absence of any items of Aboriginal Heritage (eg: shells and charcoal located within natural soils may indicate the presence of a midden) (Refer to recommendation under 'Aboriginal Heritage').
E.6 Acid Sulphate Soils	Refer to Environmental Constraints Report	<ul style="list-style-type: none"> • Prior to any works that will expose potential or actual ASSs at LM Graham Reserve (these will be identified in the above soil investigations) an Acid Sulphate Soils Management Plan should be developed for the proposed works.

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E.7 Subsidence	Refer to Environmental Constraints Report	<ul style="list-style-type: none"> It is recommended that subsidence, as a result of past filling be addressed prior to any significant development within the Reserve. Any re-grading of the sporting fields, with particular attention to addressing subsidence issues due to past filling, should be undertaken following consideration of outcomes of the soil investigations. Integrate sustainability into the preparation and implementation of the Masterplan. Retrofit existing facilities (that are to remain under the Masterplan), with best practice water and energy efficient technology. Design new facilities to incorporate best practice water and energy efficient technology. New facilities and materials should be selected and designed based on a sustainability assessment and should utilise sustainably sourced materials or products eg: recycled materials, where possible.
E.8 Sustainable Development	Refer to Environmental Constraints Report	
Social		
Issue	Background	Masterplan Management Action
S.1 Aboriginal Heritage	Refer to Environmental Constraints Report	<ul style="list-style-type: none"> That LM Graham Reserve be subject to geotechnical testing to determine the depth of fill and the extent of the original soil profile and its condition (level of post-1900 disturbance). If such areas are found and if they are proposed for future impact (through earthworks etc), then it is recommended that an Aboriginal heritage assessment be carried out including archaeological sub-surface testing. If the only areas proposed for impact are in introduced fill, then there would not be any Aboriginal heritage constraints on any proposed use of the reserve. Refer to recommendation under 'Soil Quality'. Given that lagoons are important places and resource zones for Aboriginal people, that future interpretation or education measures intended for the reserve also consider using information about this importance and use.

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S.2 Noise	Refer to Environmental Constraints Report	<ul style="list-style-type: none"> The Masterplan design gives consideration to noise and visual impacts on surrounding residents. Main organised uses are located away from the southern boundary of the site, which is adjacent to residential properties. The Masterplan Action plan notes requirement to ensure new facilities (amenities, change rooms etc) are appropriately accessible.
S.3 Access	<p>Access for people with a disability and the elderly needs to be considered in any new facilities provided.</p> <p>Emergency access is also required to be maintained to the playing fields in the case of injury. This will also serve as maintenance access.</p>	
S.4 Safety	<p>Community consultation identified that the layout of the reserve makes users feel unsafe during night time activities.</p> <p>Cricketers at the nets use a bowling machine that requires an electric cord to be run from the southern pavilion, which is a potential trip hazard along with their bags and equipment.</p> <p>Regarding the cricket nets – the golf course has indicated that they get cricket balls on their course currently. There will be safety concerns for pedestrians, cars etc when it comes to relocation of these.</p>	<p>Safety concerns are addressed through the overall layout of the draft Masterplan and the action plan, particular features include:</p> <ul style="list-style-type: none"> Safety by design principles are considered in the Masterplan design. Consolidation of the amenities and associated facilities. Installation of a power outlet closer to the cricket nets where feasible. Provide benches near the cricket nets for gear storage in addition to providing a pedestrian and cycling pathway. The cricket nets proposed are fully enclosed to prevent balls escaping beyond the footprint of the cricket net area.
S.5 Children's playground	<p>There were a few representations for a children's playground to be located near the sporting fields and the Roundhouse childcare centre. This was integrated into one of the initial drafts put to the community Working Group, the majority of which indicated that this would not be desirable. Thus it was removed.</p>	<p>The draft Masterplan addresses these issues by:</p> <ul style="list-style-type: none"> While a children's playground has not been provided, a lower key swing set will be provided to provide some play equipment.

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Linkages		
Issue	Background	Masterplan Management Action
L.1 Circulation and thoroughfare	<p>A shared pedestrian - cycleway is provided along Kenneth Road and along the reserve section of Balgowlah Road. There is currently no formalised pedestrian or cycleway through LM Graham Reserve.</p> <p>There were some suggestions through the community consultation that a shared pedestrian – cycleway be provided to form a circuit around the facility.</p> <p>One of the main aims of the Masterplan is to encourage active transport to the reserve. By improving bicycle facilities at the site, including throughways and appropriate parking, it is envisaged that more people would elect to use active transport options.</p>	<p>The draft Masterplan and Action Plan address these issues by:</p> <ul style="list-style-type: none"> • Providing a shared pedestrian/cycle path through the western side of the reserve providing easy bicycle access and parking to the western facilities, including the tennis courts, multi-purpose courts, the Roundhouse, cricket nets and also with the eastern facilities such as consolidated amenities. • Making use of and connecting with the existing shared pedestrian-cycle pathways along Kenneth and Balgowlah Roads.

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<p>L2 Car & Bicycle parking</p>	<p>Parking is currently limited on weekends due to simultaneous use by soccer and swimming. Improved facilities are likely to further increase traffic.</p> <p>Currently motorists spill over into Kenneth and Balgowlah Roads when the swim centre car park is full. There has been unlimited free parking on these roads and also in the off-street parking area. A 2P (Northern side of Kenneth Road) and a 6P (southern side of Kenneth Road) restriction is being enforced to prevent trailer parking in this high use area.</p> <p>Public buses service the area stopping along both Kenneth Road and Balgowlah Road. Furthermore Council provides a free community bus service (the Hop Skip and Jump bus), one of the stops being the Manly swim centre.</p> <p>The swim centre car park, which has no parking restrictions imposed, is used informally as a park and ride during the week, which means parking is limited for swim centre and reserve patrons.</p> <p>The car park around the Roundhouse childcare centre needs to be formalised and potentially reconfigured to maximise the efficient use of space.</p> <p>Bicycle parking is provided at the swim centre but nowhere else at the reserve. This is not conducive to encouraging active transport options.</p>	<p>The draft Masterplan and action plan address these issues by:</p> <ul style="list-style-type: none"> Consideration to propose time restrictions on the swim centre parking to 6P and raising the 6P restriction on Kenneth Road to 10P to enable commuters parking and riding on the bus to park along Kenneth and Balgowlah Roads and for the swim centre and reserve patrons (shorter term) to use the off-street parking area. Encourages active transport options by providing bicycle parking in key areas and bike path linkages through and around the reserve.
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<p>L.3 Traffic</p>	<p>There were a number of issues raised concerning traffic safety. Given the nature and requirements of traffic related issues, these will be dealt with in a separate process with the RTA and Council's Traffic Committee.</p> <p>A number of short-term recommendations in relation to the swim centre area have already been made, some of which have been implemented with the others pending. Refer to Traffic Committee Report (Item 4/08 : 4/2/2008)</p>	<ul style="list-style-type: none"> Implement recommendations (short-term actions) of Traffic Committee Report for the Swim Centre: <ol style="list-style-type: none"> That Council arrange for skid resistance test and/or re-sheeting (subject to the testing) to improve the pavement traction conditions. That Council install directional chevron warning signs at the bend in the south side of Balgowlah Road to warn the motorists of the bend and provide visual warning. That Council install "Slippery when wet" signs to both approaches to the Pool. That Council install edge line to narrow the southbound lane width to lower the approach speed of vehicles before they reach the bend. That Council install a 'No Stopping' zone along the eastern side around the bend to prevent vehicles parking too close to the bend and increase approach sight distance to south bound motorists. That Council install edge line marking to delineate and guide north bound vehicles around the bend. That Council install a 'No Stopping' zone to ban parking in Balgowlah Road on the western side inside bend. That Council install 15m long pedestrian fence outside the main administration entry along the kerb line. That Council's Road Safety Officer develop a road user safety education guide for recreational facilities. Long-term management issues have been considered in the design of the draft Masterplan as far as possible given that the roadways are outside the scope of this Masterplan.
<p>L.4 Emergency / maintenance access from Balgowlah Road</p>	<p>Emergency and maintenance access is required to be maintained to the playing fields and associated facilities.</p>	<p>The draft Masterplan and Action Plan address this issue by:</p> <ul style="list-style-type: none"> Providing emergency and maintenance access for vehicles in current position along Balgowlah Road. Recessing the gate onto Balgowlah Rd, in the vicinity of the bus stop, into the reserve to allow a vehicle to pull off the road prior to opening the gate.

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Operational		
Issue	Background	Masterplan Management Action
O.1 Quality of playing field surfaces / ground maintenance	<p>The fields are subject to settlement as a result of past filling activities on the site.</p> <p>Overuse of playing fields has caused turf maintenance issues.</p>	<p>The draft Masterplan and Action Plan address these issues by:</p> <ul style="list-style-type: none"> Between summer and winter seasonal allocations, the action plan proposes to close fields for use to undertake surface renovations. Consideration to undertake any major upgrade / re-surfacing of playing surfaces prior to any major new facilities or moving existing facilities. Investigate aeration (perhaps once per year). Selection of appropriate turf species (high wear species) for the reserve area to reduce maintenance issues and improve playing surfaces.
O.2 Turf cricket wickets	<p>LM Graham has 1 turf cricket wicket. Costly to install and maintain thus it is important to ensure that other uses are managed to ensure no damage is caused to the wicket table.</p>	<p>The draft Masterplan and action plan address these issues by:</p> <ul style="list-style-type: none"> The field alignment has considered the impacts of soccer and other users on the cricket wicket table areas.
O.3 Wearing of entrance areas	<p>Wearing at gate entrances to the reserve results in either hard and dusty surfaces in dry weather or muddy surfaces in wet weather.</p>	<p>The draft Masterplan and action plan address these issues by:</p> <ul style="list-style-type: none"> Providing formalised entrance areas to absorb entrance wearing due to concentrated tracking in these areas.
O.4 Signage	<p>Code of conduct signage is required for the reserve and associated facilities.</p>	<p>The draft Masterplan and action plan address these issues by:</p> <ul style="list-style-type: none"> Code of conduct signage would be placed near each formalised entrance The code would include information to instruct dog owners to pick up after their dogs. Code of conduct signage for the multi-use court.
O.5 Bins	<p>Rubbish is an issue after weekend games, particularly in winter.</p>	<p>The draft Masterplan and action plan addresses these issues by:</p> <ul style="list-style-type: none"> Providing bins at strategic locations to reduce litter. Mixed recycling to be provided.
O.6 Drinking fountain	<p>Currently there is only one tap (outside of the amenities buildings, which are usually locked for casual use of the reserve), which is used by dogs as well as people.</p>	<p>The draft Masterplan and action plan address these issues by:</p> <ul style="list-style-type: none"> Providing 2 water drinking and bottle refill stations accessible to people using the sporting fields. Provide separate tap for dogs.

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O.7 Amenities opening times	Community feedback indicated that the amenities should be open during the day and evenings.	<p>The draft Masterplan and action plan addresses these issues by:</p> <ul style="list-style-type: none"> Amenities are likely to be able to remain open for longer following the consolidation of the amenities towards the swim centre. This will be possible as safety and vandalism would be better addressed through greater use of this more secure area, especially given the presence of centre management staff.
O.8 Seating	Some of the major sporting groups that use the reserve indicated a desire for a small grand stand. This was not considered appropriate for this area, however, earth mounding (grassed and shaded in parts with the potential for some in-built seating) is being considered for the dual purpose of providing seating for match viewers and also for flood mitigation.	<p>The draft Masterplan and action plan address these issues by:</p> <ul style="list-style-type: none"> Integrating seating areas into the proposed earth mounding for the dual purpose of spectator seating and also flood mitigation (earth mounding is subject to a detailed feasibility report).
O.9 Lighting	No issues over lighting were raised. There may be some adjustment required with the relocation of some facilities.	The draft Masterplan and Action Plan propose to maintain existing lighting levels ensuring that the fields, courts and multi-use area are appropriately lit.
Amenity		
Issue	Background	Masterplan Management Action
A.1 Reserve is 'unfriendly' and relatively isolated, sterile and hostile.	Especially for casual, family and children's uses.	<p>The Masterplan addresses these issues by:</p> <ul style="list-style-type: none"> Noting that fencing is required for off-leash dog exercise, replace hostile/industrial fencing with fencing more appropriate for open space use. Lowering the height of the fencing. Relocating and improving on existing amenities buildings. Providing more integrated and friendly open space areas including casual and family use areas. Landscaping and pathways to encourage picnics, jogging, cycling etc. BBQ facilities with clusters of space, shade etc.

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A.2 view corridors into the reserve	Any development of the reserve would need to consider impacts of viewing into the reserve from the surrounding residential areas. This would suggest that the opportunity for development or provision of facilities should be focussed on the northern, western or eastern sides of the park.	The draft Masterplan considers impacts on views of surrounding residents.
A.3 Public Art	There was no request for public art through any of the consultation undertaken.	Nil
Community Involvement		
Issue	Background	Masterplan Management Action
CI.1 Sister City Program at Odawara Close	Sister city cherry blossom plantings at Odawara Close need to be maintained.	The draft Masterplan addresses these issues by: <ul style="list-style-type: none"> • Maintaining area for tree planting activities of the Sister City Program, being the Friendship City relationship with Odawara, Japan. • Consider more appropriate species for ongoing plantings – such as local indigenous species.
CI.2 User group conflicts	The safety of other user groups during cricket training in the nets. At the moment passers-by have no warning of the training and other areas are open to shots outside the nets, which is a safety concern. Cricket balls are hit over the fence to the golf course property. These cannot be retrieved.	The draft Masterplan addresses these issues by: <ul style="list-style-type: none"> • Locating the cricket nets along the western boundary of the reserve and providing fully enclosed nets to prevent ball escape.
CI.3 Community Garden	A community garden was identified in one of the draft Masterplans presented to the community Working Group. This was incorporated in response to community requests for a community garden. This proposal was rejected by the majority of the community Working Group. It was then resolved in Council to locate the community garden at a property in Griffiths Street. Therefore it has been assumed that this is no longer a requirement for this Masterplan.	The Masterplan does not include a community garden space or facilities.

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LM Graham Reserve Environmental Constraints Report

LM Graham Reserve
Environmental Constraints & Recommendations Report
Updated July 2010

1. Site Description

LM Graham Reserve is located on Balgowlah and Kenneth Roads immediately east of the Southern Paddock of Manly Golf Course. The Reserve is made up of a number of lots and is shown outlined in red in Figure 1.1.

Figure 1.1: LM Graham Reserve (shown by red outline)



The site currently contains; grassed sporting fields, two amenities buildings and canteen, practice cricket nets, swim centre, ½ basketball court, 3 tennis courts, exercise station, the Roundhouse long day care centre and parking facilities.

The site provides sporting facilities accommodating; tennis, cricket, soccer, swimming, water polo, ultimate frisbee, casual basketball, and general exercise. The reserve fields are also used for walking, running, off-leash dog exercise and other casual uses.

Adjacent to the current Reserve area is a former section of Suwarrow Road, which has been closed and is presently being used as a Council storage compound.

The Reserve area is zoned as Zone No 6 Open Space under the Manly LEP 1988. On land zoned as Open Space, the following development controls apply:

- a) **Without development consent:** works for the purpose of landscaping, gardening or bush fire hazard reduction.
- b) **Only with development consent:** Agriculture; boating facilities; car parking ancillary to a use permitted in this item; child care centres; drainage; forestry; golf courses; marinas; parks;

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public baths; public dressing pavilions, racecourses; recreation areas; refreshment rooms;
roads; sports clubs; sports grounds; surf life saving clubs, telecommunications facilities;
tennis courts; utility installations other than gas holders or generating works or both.

- c) **Prohibited Development:** Any purpose other than a purpose included in items a or b.

2. Surrounding Landuses

The Reserve is located within a mixed use area incorporating residential, open space and environmental protection areas.

North

To the immediate north of the site is Kenneth Road. Further to the north is the Northern Paddock of Manly Golf Course, Council's Senior Citizens Centre and Manly Lagoon.

South

Immediately to the south of the site is Balgowlah Road. Further to the south are residential areas located on steeply sloping land draining towards LM Graham Reserve.

East

To the immediate east of the site is Balgowlah Road. Further to the east is residential land located on relatively flat, low lying land.

West

Immediately to the west of the Reserve is the south paddock of Manly Golf Course.

3. Geology and Soils

3.1. Geology

According to the Sydney Geological 1:250,000 series sheet (SI 56 – 5 Second Edition, 1961) the site is located on quaternary alluvium, gravel, sand, silt and clay. The site soils, however, have been modified through filling activities as described in Section 0.

3.2. Soils

Historical records describe the land as low lying but level swampy land with light undergrowth. These records show that LM Graham Reserve once formed part of the alluvial flats of the Manly Lagoon Riparian zone.

Filling and Development

LM Graham Reserve has historically been subject to significant filling to raise the level of the land for residential and industrial development. While filling is reported in historical files, neither the process nor the source of the fill material were described in detail and therefore the type of fill material that was used has not been confirmed across a large proportion of the site.

Prior to establishment of LM Graham Reserve, the land was used for residential and some industrial purposes and as part of the Manly Golf Club's land. The north-western portion was also used for 'landfilling'. Historical records of property valuations identify dwellings containing unlined fibro-

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plaster and cement sheeting. Industrial uses included furniture factory, sheet metal factory, clothing, motor engine, ice and blind manufacturing. Records indicated the intention for joinery works and fibro plaster works but no evidence of their operation was found.

There appears to be a gap in information on the land between 1957 and 1981. It is evident that during this time the remaining private properties were acquired by Council and the area provided for LM Graham Reserve.

Given the above filling practices undertaken on the land and former land uses of the Reserve area, a more detailed review of the site soils is recommended.

The fields and swim centre are also subject to settlement as a result of subsidence due to past filling activities on the site. This should be addressed before any additional structures are built.

Acid Sulphate Soils

Acid sulphate soils (ASS) and potential ASSs are widespread along the margins of the NSW coast, in estuarine floodplains and coastal lowlands, including urban areas, tidal flats, salt marshes and swamps. Potential ASSs are naturally occurring soils containing iron sulfides (pyrite). They become actual ASSs when they are dried, usually because of human activity, and the pyrite is exposed to air (oxygen). In air, pyrite is oxidised, resulting in production of sulphuric acid.

According to Manly's Acid Sulphate Soils Map, LM Graham Reserve contains potential ASSs. As identified in Figure 3.1 these soils are further classified into Class 2 (pink on the map), Class 3 (dark pink / red on the map) and Class 4 (light purple on the map) ASSs. These classes relate to the types of developments to which Clause 33 of Council's Local Environmental Plan applies. Clause 33 requires development consent for certain works¹.

For works in the Class 2 area, development consent is required for:

- Works below the ground surface;
- Works by which the watertable is likely to be lowered.

For works in the Class 3 area, development consent is required for:

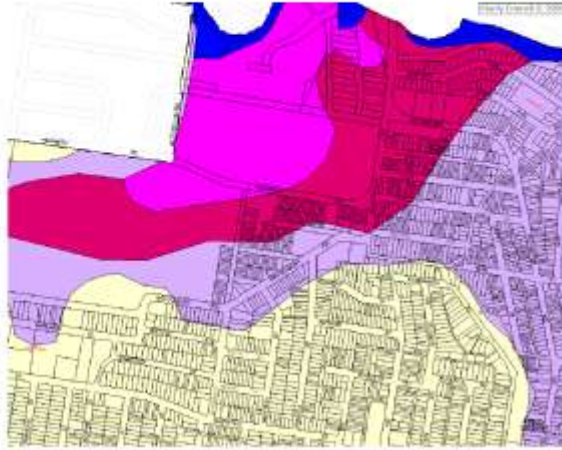
- Works beyond 1 metre below the natural ground surface;
- Works by which the watertable is likely to be lowered beyond 1 metre below the natural surface.

For works in the Class 4 area, development consent is required for:

- Works beyond 2 metres below the natural ground surface;
- Works by which the watertable is likely to be lowered beyond 2 metres below the natural surface.

Figure 3.1: Acid Sulphate Soils Map of LM Graham Reserve

¹ Works meaning: any disturbance of more than one [1] tonne of soil (such as occurs in carrying out construction and maintenance of drains, extractive industries, dredging, the construction of artificial waterbodies [including canals, dams and detention basins] or foundations, or flood mitigation works), or any other works that are likely to lower the watertable regardless of how much soil they disturb.



Legend: Class 2 (pink), Class 3 (dark pink / red) and Class 4 (light purple) ASSs

4. Landforms, Drainage and Stormwater

Prior to filling and development, the area known as LM Graham Reserve comprised naturally low lying alluvial flats, hydrologically forming part of Manly Lagoon. The site has, however, been filled and altered to provide a landform suitable for human uses, including the current sporting fields and facilities on-site. Precise levels have been determined by a recent land survey, which shows that levels vary across the site between 2m AHD and 5m AHD.

Stormwater pipes run under the reserve (as identified in Figure 4.1), carrying stormwater from the streets behind the reserve and transporting stormwater to Manly Lagoon. There are currently no stormwater treatment measures located within the reserve. As most of the site is grassed or vegetated and relatively flat, precipitation falling onto the site is largely allowed to infiltrate the site soils.

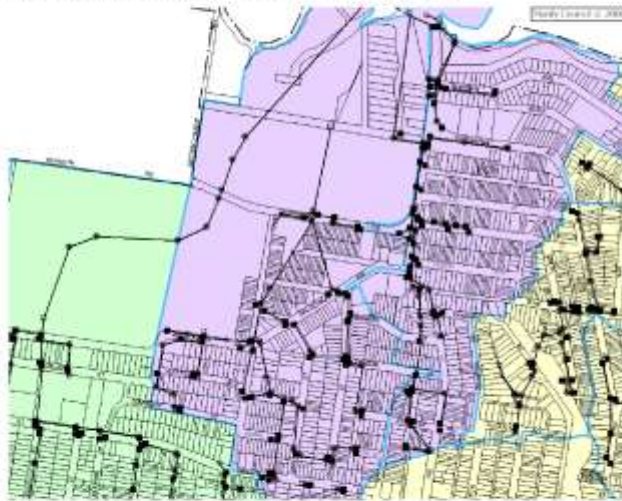
Over the last 5-10 years there has not been significant issues concerning drainage at the site. The general draught conditions experienced throughout the Sydney area and further abroad during this time may have contributed to this outcome.

The site is currently irrigated using bore water sourced from a subsurface aquifer forming part of the local hydrological system. However, use of this bore water at the Reserve is limited by natural re-charge of the aquifer (ie: the aquifer cannot be over-used without significant long term damage of the aquifer's integrity). Investigations into the feasibility of piping treated effluent from the North Head Sewage Treatment Plant for irrigation use on LM Graham Reserve (among other areas) are currently underway. Council is also currently investigating use of a second bore to assist with irrigation of the reserve area. If the effluent re-use project is successful it will provide an alternate and more sustainable water source for the Reserve. LM Graham Reserve is outside the grey-water prohibited use area.

Council is also investigating the feasibility of stormwater harvesting at the site, by intercepting flows through the site's underground stormwater pipes. This would require either above or below ground storage tanks and the water would be subject to treating and testing prior to use on the reserve.

The swim centre is connected to two 3,000L rainwater tanks, which provide some rainwater for top-up of the pool, following treatment.

Figure 4.1: LM Graham Reserve stormwater pipes



5. Flooding

LM Graham Reserve is located on the Manly Lagoon floodplain. Being a floodplain, this area is naturally subject to significant flooding events. The natural impacts of flooding have also been amplified by the fact that the site (and adjoining areas) have been subject to past filling and development.

There are many benefits to using the floodplain, however, these benefits need to be balanced and weighed against the costs associated with flooding. Costs such as impacts to people's safety, lives and properties and impacts on the environment and public infrastructure.

Figure 5.1 shows the area of LM Graham Reserve, and surrounding lands, affected by a 1% AEP flood event. A 1% AEP flood event means there is a 1% or 1-in-100 chance that the land will be subject to flooding in any given year. A 1% AEP flood event is therefore larger in scale than a 1-in-20 year flood, which is one that would occur more frequently.

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LM Graham Reserve Environmental Constraints Report

Figure 5.1: Flood Affected Area for a 1-in-100 year flood (area shown shaded blue).

Source: Manly Lagoon Flood Intelligence Report Volume II (Manly Hydraulics Laboratory, June 2005)



The Manly Lagoon Flood Intelligence Report (Manly Hydraulics Laboratory, June 2005) identifies that 142 properties located on the Manly Lagoon Floodplain are subject to flooding, above floor level, in a 1% AEP flood event. This poses both safety and economic risks for these properties. As an example of economic costs the 1997 Manly Lagoon Floodplain Management Plan (Department of Land and Water Conservation), estimated an average annual flood damage of \$270,000 with a potential damage bill of about \$5.6million in a 1% AEP flood event (based on 115 properties being affected, the number of properties has increased since this study).

LM Graham Reserve and the surrounding catchments are also affected by smaller sized flood events including 100% AEP, 50% AEP, 20% AEP, 10% AEP, 5% AEP and 2% AEP flood events.

The general rule when it comes to flooding and development is that any modifications to the Reserve should not increase the upstream or downstream impacts of flooding (eg: it should not increase the volume or velocity of flood waters downstream or cause upstream floodwaters to accumulate). That means the flood storage² of the site must not be decreased. The site's flood storage capabilities should be maintained, or in an ideal situation, increased.

² Flood storage areas means those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation. Hence, it is necessary to investigate a range of flood sizes before defining flood storage areas.

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By increasing the flood storage capacity of open space areas, such as LM Graham Reserve, by setting them aside as strategic retarding basins during 1% and 2% AEP flood events, the impacts of flooding on downstream areas (eg: residential and commercial properties) can be reduced. At a concept level there are opportunities for LM Graham Reserve to be established as a Flood Retarding Basin by creating earth mounding around the existing playing fields to contain stormwaters flowing down the existing stormwater paths from elevated areas of Balgowlah and Fairlight (refer to Figure 4.1). By containing these waters, a smaller volume of stormwater would be entering, and therefore flooding, the lagoon. Similar designs have been used successfully at a number of existing playing fields and open space areas in other areas of Sydney with minimal impact to sporting users and significant reductions in flooding downstream. Some examples include:

Playing fields:

- Gooden Reserve Flood Retarding Basin: Toongabbie Creek, West Baulkham Hills
- Ollie Webb Reserve, Parramatta
- The Charles McLaughlin Rec Reserve, Baulkham Hills
- Sydney Smith Park Basin: Domain Creek, Mays Hills

Golf Courses:

- Cumberland Golf Course Basins
- Fox Hills Golf Course
- Muirfield Golf Course Basins: Rifle Range Creek, North Rocks

Reserves:

- McCoy Park Basin
- Duncan Reserve Flood Retarding Basin: Grantham Creek, Seven Hills

Natural gorges:

- Lancelot Street Basin: Blacktown Creek, Prospect

A feasibility study would provide confirmation at a design level as to whether net benefit outcomes could be achieved with a similar design at LM Graham Reserve. Furthermore there may be an opportunity to use the retarding basin concept to justify proposed Masterplan options (such as a multi-purpose sporting complex) that would otherwise cause negative impacts on flood storage and therefore would not be considered to be a feasible option.

Further benefits of establishing flood storage mounding around the grassed areas of the site would include: noise barriers, stepped seating options providing a 'natural' and relaxed grandstand effect, natural containment of children playing, stray balls and dogs off-leash. There may also be a number of negative impacts to consider including the isolation of the sporting areas from surrounding facilities and impacts on the existing plantings.

Flooding will therefore constrain the use and development of LM Graham Reserve as Council will be aiming to ensure that there is no net increase of volume of development within the flood affected area in addition to investigating the feasibility of establishing LM Graham Reserve as a Flood Retarding Basin to increase the flood storage capacity of the site in a 1-in-100 year flood event.

6. Landslip

The Manly DCP for Landslip and Subsidence applies to all land in the Manly Council area, as indicated on the map marked "Geotechnical Zoning of Manly Council Area". The area relevant to LM Graham Reserve is included in Figure 6.1 below, which shows that most of LM Graham Reserve is in

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Geotechnical Zone D (areas marked as yellow), which includes beaches, foredunes and alluvial flats. The geology of these areas is generally characterised by unconsolidated marine and alluvial sands often overlying deep marine sediments or alternatively they are characterised by filled areas.

All developments within Zone D are required to follow good engineering practice given potential geotechnical hazards including: potential for settlement of foundations due to construction activity including failure of unsupported excavations, dewatering and vibrations. Possible earthquake induced settlement of foundation.

Given this landslip potential there will be certain planning requirements associated with any proposed works resulting from the Masterplan.

Figure 6.1: LM Graham Reserve Landslip Potential



Note: Areas marked in yellow are Geotechnical Zone D

7. Proximity to Local Sensitive Environments

LM Graham Reserve is approximately 250m south of the open tributary to Manly Lagoon and approximately 485m south of Manly Lagoon.

The Reserve is immediately adjacent to residential areas located to the south and east.

8. Flora and Fauna

The site is naturally part of an alluvial flat and has been historically filled for human uses such as residential and industrial development, landfilling of waste materials and open space uses. There is therefore no remnant vegetation remaining on the site, which is instead characterised by grass playing fields and a perimeter planting of a variety of trees including both native and exotic species.

The site is primarily used for sporting and general community uses and demand for these areas is high, therefore the opportunity for re-creation of any natural areas on the site is somewhat limited. However, there are opportunities within future landscaping around existing and proposed facilities

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and around the perimeter of the reserve to incorporate additional native vegetation either in the form of gardens of singular tree plantings. In addition to reintroducing native flora and fauna to the site, these areas would also act to improve the visual amenity of the reserve and available shade for Reserve patrons. Plantings would also facilitate movement and generally improve habitat for biodiversity.

A search of the NSW Atlas of Wildlife (Dec 2007) did not reveal any threatened species sightings at LM Graham Reserve.

The Cheery Blossom Trees planted adjacent to the Roundhouse were introduced through Council's Sister City Program and planted by visiting Japanese students from Odawa. These will need to be preserved in the Masterplan and are appropriately located on Odawa Rd. It is considered appropriate however that any future plantings incorporate native species suitable to the local environment.

9. Heritage

Non-Aboriginal Heritage

There are no known items of Non-Aboriginal heritage at LM Graham Reserve.

Aboriginal Heritage

The Aboriginal Heritage Office (AHO) was consulted with respect to Aboriginal Heritage / values with respect to LM Graham Reserve. The AHO's advice is presented below:

There are known Aboriginal sites in the Manly Lagoon area, however, LM Graham Reserve is understood to have been covered with fill and landscaped many years ago. The level of previous disturbance has lowered the archaeological potential of the reserve. However, there remains potential for buried Aboriginal archaeological material below the level of disturbance and fill.

The Aboriginal Heritage Office (AHO) recommends that the area be subject to geotechnical testing to determine the depth of fill and the extent of the original soil profile and its condition (level of post-1900 disturbance). If such areas are found and if they are proposed for future impact (through earthworks and so on), then it is recommended that an Aboriginal heritage assessment be carried out including archaeological sub-surface testing. If the only areas proposed for impact are in introduced fill, then the Aboriginal Heritage Office would not see any Aboriginal heritage constraints on any proposed use of the reserve.

Given that lagoons are important places and resource zones for Aboriginal people, the AHO recommends that if the Masterplan is looking at future interpretation or education measures for the reserve, that it also consider using information about this.

10. Noise and Visual Amenity

Given the location of the reserve in proximity to residential areas, noise and visual amenity will need to be carefully considered as potential environmental and social constraints to any proposed changes to the reserve. This will include, but not necessarily be limited to changes to lighting, hours of use, the positioning of facilities and car parking arrangements.

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11. Sustainable Development

LM Graham Reserve has incorporated a few measures to improve the environmental sustainability of the site eg: rainwater tanks and bicycle racks at the swim centre. There is significant scope in the development of the Masterplan to ensure sustainability measures are further integrated. Precise measures will depend on the facilities proposed, however, some generic and obvious examples include:

- Water and energy efficient buildings through building design, materials, fixtures etc
- Rain water tanks and stormwater harvesting systems
- Water re-use systems
- Facilities to support active and alternative transport
- Use of appropriate materials (eg: those that have been sustainably sourced or contain recycled content).

12. Masterplan Recommendations:

Environmental Constraint	Recommendation
Site Area	1. That the compound located adjacent to LM Graham Reserve, within the closed portion of Suwarrow Road, be cleaned up and the area incorporated as part of LM Graham Reserve.
Soils	2. Undertake intrusive soil testing to determine soil quality across the site in relation to guidelines for open space. Intrusive soil testing should also be designed to confirm the depth of fill across the site and where natural material is encountered, to confirm the presence or absence of any Items of Aboriginal Heritage (eg: shells and charcoal located within natural soils may indicate the presence of a midden) (Refer to recommendation No 10).
Acid Sulphate Soils	3. Prior to any works that will expose potential or actual ASSs at LM Graham Reserve (these will be identified in the above soil investigations) an Acid Sulphate Soils Management Plan should be developed for the proposed works.
Subsidence	4. Address subsidence, as a result of past filling, prior to any significant development within the Reserve. 5. Prior to any regrading of the sporting fields, particular attention needs to be paid to addressing subsidence issues due to past filling. This should be undertaken following consideration of outcomes of the soil investigations.
Flooding	6. Undertake a feasibility study into the establishment of LM Graham Reserve as a Flood Retarding Basin for 1% and 2% AEP flood events based on current examples. 7. In light of implementation of the above feasibility study, investigate the installation of new Stormwater Quality improvement Devices

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	<p>(SQIDs) at priority locations to improve stormwater quality for Manly Lagoon and to ensure re-directed stormwater in a 1%AEP flood event does not create significant litter issues at the Reserve. Investigations should take into account current best practice technologies.</p> <p>8. Any modifications to the Reserve should not increase the upstream or downstream impacts of flooding.</p>
Noise	<p>9. Consideration should be given to noise and visual impacts on surrounding residents of any proposed development.</p>
Aboriginal Heritage	<p>10. That LM Graham Reserve be subject to geotechnical testing to determine the depth of fill and the extent of the original soil profile and its condition (level of post-1900 disturbance). If such areas are found and if they are proposed for future impact (through earthworks etc), then it is recommended that an Aboriginal heritage assessment be carried out including archaeological sub-surface testing. If the only areas proposed for impact are in introduced fill, then there would not be any Aboriginal heritage constraints on any proposed use of the reserve. Refer to recommendation No 2.</p> <p>11. Given that lagoons are important places and resource zones for Aboriginal people, that if the Masterplan is looking at future interpretation or education measures for the reserve, that it also consider using information about this importance and use.</p>
Flora & Fauna	<p>12. Incorporate native plantings that contribute to the establishment of strategic wildlife greenways/corridors in the area and improve the amenity of the reserve while being sympathetic to the sporting and general community use of the Reserve.</p> <p>13. That future plantings under the Odawa Sister City Program incorporate native trees suitable to the Manly area.</p>
Water Use	<p>14. That Council investigate the re-use of treated grey-water from the North Head Sewage Treatment Plant for irrigation of the Reserve. Note: funding has been secured and liaison with Sydney Water is in progress.</p> <p>15. That stormwater harvesting options be explored for irrigation of the fields. It is noted that this would likely involve either above ground or underground water storage tanks plus treatments systems.</p> <p>16. Continue to monitor extracted groundwater for salinity and other parameters for early sign of reduced quality. Groundwater use for irrigation should not compromise the health or integrity of the aquifer.</p> <p>17. Investigate fitting the Roundhouse with rainwater tanks to flush toilets noting that microbial risk is highest for children therefore UV treatment would also be required.</p>

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Sustainable Development	<p>18. Integrate sustainability into the preparation and implementation of the Masterplan.</p> <p>19. Retrofit existing facilities that are to remain under the Masterplan, with best practice water and energy efficient technology.</p> <p>20. Design new facilities to incorporate best practice water and energy efficient technology.</p> <p>21. Select materials that are sustainably sourced eg: contain recycled content.</p>
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Planning And Strategy Division Report No. 21 - NSW Coastal Planning Guideline: Adapting to Sea Level Rise and Measures for Identifying Current and Future Coastal Risk Areas
Extended Summary of Guideline

Extended Summary of the Guideline

The NSW Coastal Planning Guideline: Adapting to Sea Level Rise (this Guideline) has been prepared to provide guidance on how sea level rise is to be considered in land use planning and development assessment in coastal NSW. Other climate parameters affecting coastal processes may be considered when preparing coastal and flood risk studies.

This Guideline applies to all coastal areas of NSW. The term 'coastal areas' is used broadly in this Guideline to be all land fronting tidal waters including the coastline, beaches, coastal lakes, bays and estuaries and tidal sections of coastal rivers. It also includes other low lying land surrounding these areas that may be subject to coastal processes in the future as a consequence of sea level rise.

In this Guideline 'coastal risks' are taken to include risks from coastal erosion, tidal inundation and coastal flooding, including impacts of sea level rise.

Guideline principles

This Guideline adopts six coastal planning principles for sea level rise adaptation. The principles should be applied in decision-making processes for land use planning and development assessment in coastal areas.

Principle 1 – Assess and evaluate coastal risks taking into account the NSW sea level rise planning benchmarks.

Principle 2 – Advise the public of coastal risks to ensure that informed land use planning and development decision-making can occur.

Principle 3 – Avoid intensifying land use in coastal risk areas through appropriate strategic and land use planning.

Principle 4 – Consider options to reduce land use intensity in coastal risk areas where feasible.

Principle 5 – Minimise the exposure of development to coastal risks.

Principle 6 – Implement appropriate management responses and adaptation strategies, with consideration for the environmental, social and economic impacts of each option.

1.4 Structure of the Guideline

This Guideline is structured around the implementation of six coastal planning principles for the consideration of sea level rise and includes:

SECTION 2 – IDENTIFYING COASTAL RISK AREAS outlines how sea level rise should be incorporated into coastal risk assessment.

SECTION 3 – STRATEGIC AND STATUTORY LAND USE PLANNING provides information on how sea level rise impacts can be factored into strategic and statutory land use planning.

SECTION 4 – DEVELOPMENT ASSESSMENT outlines the process for considering sea level rise in the preparation and assessment of development applications in coastal areas.

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Identifying Coastal Risk Areas

The Guideline adopts the sea level rise benchmarks, ensuring consistent consideration of the influence of sea level rise on coastal areas. In identifying and evaluating coastal risks, councils should use the Coastline Management Manual (1990) and the Floodplain Development Manual (2005), in addition to the advice contained within the Coastal and Flood Risk Management Guides (2010), all prepared by the Department of Environment, Climate Change and Water (DECCW).

Sea level rise investigation areas for strategic planning

Preparing new and updating existing coastal erosion and coastal flood studies will take some time.

Prior to the completion of new or revised studies, councils may adopt sea level rise investigation areas (potential coastal risk areas) for the purpose of informing strategic land use planning.

Sea level rise investigation areas should not be included in environmental planning instruments or DCPs or used in development assessment. A sea level rise investigation area can be used by a council as an interim guide to indicate land potentially subject to coastal risks now or in the future as a consequence of sea level rise. The sea level rise planning benchmarks should be incorporated into council's calculation of the sea level rise investigation areas.

Examples of possible measures that can be used in the identification of sea level rise investigation areas include:

- projected coastal erosion and recession distances along relatively long and straight sandy coastlines – 90cm sea level rise may result in coastal recession of 45 to 90 metres landward;
- projected tidal inundation in the lower reaches of a coastal waterway – additional 40cm by 2050 and 90cm by 2100; projected extension of flood prone land in tidal river reaches – additional freeboard added to the mapped flood planning area; and
- coastal areas below a set elevation in metres (AHD).

Sea level rise investigation areas should not be included in environmental planning instruments such as LEPs, or in DCPs until they can be confirmed by relevant local studies at which point they should be identified as coastal risk areas in maps within an LEP, regardless of the underlying zone.

Status of identification of Coastal Risk Areas within Manly LGA

Manly is particularly exposed to the sea level rise as a consequence to direct implications of climate change. This is predominantly due to its landform, having low lying topography in parts, existence of a coastal lagoon and being largely surrounded by coastline with no part of Manly more than 1km from either the Harbour or ocean.

Council, since 2006, has undertaken many initiatives to mitigate and adapt to impacts of climate change. Council in 2008 has commissioned a study to make an assessment of the likely effects of climate change (Cardno, 2008). A preliminary mapping has been prepared based on DEM (Digital Elevation Model) to provide a broad indication of the likely spatial effects of climate change. A number of areas within the Manly LGA are likely to be affected by sea level rise.

However, 'Coastal Risk Areas' within Manly LGA for either or both to erosion and flooding have not been identified so far. With the adoption and release of NSW Sea Level Rise Policy Statement (2009) by the NSW Government, Manly Council is embarking on processes to

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Extended Summary of Guideline

identify Coastal Risk Areas through modelling studies and full fledged flood studies. Resulting maps identifying Coastal Erosion Risk Area and Coastal Flooding Risk Areas will form part of the statutory LEP and DCPs.

Under the NSW Government's Flood Prone Land Policy (2005), the management of flood affected land is primarily the responsibility of Council. In order to manage flood risks Councils are encouraged to follow the processes outlined in the Floodplain Development Manual (2005). The Manual outlines the development of Flood Studies, Flood Risk Management Studies and Flood Risk Management Plans in order to identify flood risks and options for managing these risks.

However, a modelling study will take a year and flood study may take 3-4 years to complete.

The Guideline recognises this longer time frame and states, *'Preparing new and updating existing coastal erosion and coastal flood studies will take some time. Prior to the completion of new or revised studies, councils may adopt **sea level rise investigation areas (potential coastal risk areas)** for the purpose of informing strategic land use planning'*.

Following the methodology given in this Guideline, Council will initiate, at first, to identify sea level rise investigation areas.

Council has recently received a grant from DECCW to initiate a modelling study to identify and map Coastal Erosion Risk Areas.

Strategic and Statutory Land Use Planning:

Strategic planning includes land use planning activities at the regional, sub-regional and local level, including the preparation of Regional Strategies, LEPs, as well as local studies that inform the preparation of statutory plans such as LEPs and DCPs.

Land use intensification refers to processes that increase intensity or density of land use. For example, changing from low density residential to high density residential or from a rural zoning to a residential zoning would result in intensification. LEP and DCP controls can also be used to affect intensity. For example, principal development standards within an LEP relating to minimum lot size, height or floor space ratio can be used to change land use intensity.

In order to implement coastal planning, the following matters should be considered as part of the strategic planning process:

- Incorporating coastal risk studies into strategic planning
- Considering the effects of protection works on land use capability
- Accommodating appropriate new growth in coastal communities
- Managing existing developed areas in coastal communities
- Maintaining foreshore access, amenity and openspace and protecting coastal environments.

The Guideline indicates that land use planning at the local, sub-regional and regional level should aim to avoid intensifying land use and, where possible, reduce land use intensity in coastal risk areas. It advises councils to use their discretion in their strategic and land use planning to carefully weigh up the environmental, social and economic costs of altering land use intensity in coastal risk areas.

The draft guideline encourages a reduction in land use intensity where feasible, however notes that this should be carefully considered in light of the current land uses and use rights, existing environmental and planning constraints on development, land tenure and risk of requiring land acquisition.

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Extended Summary of Guideline

For example, it may be appropriate to use the E3 Environmental Management zone for rural or undeveloped land seaward of the immediate hazard line that may require careful management due to ongoing risks from coastal hazards. The draft guideline is designed to encourage a forward looking approach to coastal land use planning to prevent creating or exacerbating risks to property or life due to sea level rise.

Development Assessment

This section is intended to assist proponents in preparing coastal development applications and consent authorities assessing these development applications under the *Environmental Planning and Assessment Act 1979*.

The development assessment process provides a further opportunity to ensure that future coastal development does not increase exposure to coastal risks. Coastal planning Principle 5 of this Guideline indicates that proposed developments should seek to minimise exposure to coastal risks.

For development sites that are located *within* coastal risk areas, pre-DA consultation with the consent authorities and relevant State agencies will be an important component of the development assessment process.

The Guideline indicates eight planning criteria should be considered by proponents when preparing a proposal, and by consent authorities when assessing a development application in a coastal risk area. These criteria state that the proposal should not impact on natural coastal processes, not increase coastal risks around the site and should protect coastal ecosystems from development impacts.

PLANNING CRITERIA FOR PROPOSED DEVELOPMENT IN COASTAL RISK AREAS

1. Development avoids or minimises exposure to immediate coastal risks (within the immediate hazard area or floodway).
2. Development provides for the safety of residents, workers or other occupants on-site from risks associated with coastal processes.
3. Development does not adversely affect the safety of the public off-site from a change in coastal risks as a result of the development.
4. Development does not increase coastal risks to properties adjoining or within the locality of the site.
5. Infrastructure, services and utilities on-site maintain their function and achieve their intended design performance.
6. Development accommodates natural coastal processes including those associated with projected sea level rise.
7. Coastal ecosystems are protected from development impacts.
8. Existing public beach, foreshore or waterfront access and amenity is maintained.

The Guideline aims to provide direction to consent authorities for development assessment in coastal areas, outlining how proposals should be considered based on their location in the coastal risk area, in particular that:

- Proposed development within the immediate hazard line should be avoided;
- Proposed development seaward of the current 2100 hazard line should be assessed against strict planning criteria and be portable in the event of coastal erosion; and
- Proposed development seaward of the 2100 hazard line with sea level rise projections should be assessed against the strict planning criteria.

ATTACHMENT 1

Planning And Strategy Division Report No. 21 - NSW Coastal Planning Guideline: Adapting to Sea Level Rise and Measures for Identifying Current and Future Coastal Risk Areas Extended Summary of Guideline

According to the Guideline, any proposal located outside the coastal risk area – in other words behind the 2100 hazard line with sea level rise projections – is considered suitable for development with regard to coastal hazards, subject to merit based assessment of other relevant issues.

The NSW Coastal Planning Guideline – Adapting to Sea Level Rise can be found at:

<http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=VYjmQirQlAk%3d&tabid=177&language=en-US>

A document containing frequently asked questions, and plain-english responses to these has also been prepared and can be found at:

<http://www.planning.nsw.gov.au/LinkClick.aspx?fileticket=82RcA8J7t4%3d&tabid=177&language=en-US>