# Business Paper

# Inner West Council

# Flood Management Advisory Committee

# 1st February 2017

Supper from 6:00pm

Meeting Commences at 6:30pm

Council Function Room

Level 3, 2-14 Fisher Street Petersham

**Agenda**

1. Welcome and Introductions
2. Terms of Reference
3. Apologies
4. Disclosure of Interest
5. Minutes of previous meetings (for information only TRIM 7380.17)
6. Reports

   Item 1 Alexandra Canal Draft Flood Study and presentation by WMA Water

   Item 2 Johnstons Creek Draft Flood Study and presentation by WMA Water

   Item 3 Marrickville Valley Floodplain Risk Management Plan Update

   Item 4 Hawthorne and Dobroyd Canal Floodplain Risk Management Plan Update

   Item 5 Leichhardt Flood Risk Management Study and Plan Update

   Item 6 Leichhardt Flood Mapping Tool

   Item 7 Westconnex and Sydney Metro Flood Impacts in St Peters
7. General Business

ATTACHMENTS

1. Alexandra Canal Draft Flood Study
2. Johnstons Creek Draft Flood Study
3. Marrickville Valley Floodplain Risk Management Flood Modification Options
4. Minutes of Meetings of previous Leichhardt and Marrickville Flood Committees

**Item 1 Alexandra Canal Draft Flood Study**

**ATTACHMENT 1** Alexandra Canal Draft Flood Study TRIM 7377.17

**Prepared by:** Ryan Hawken, Coordinator Asset Planning, Marrickville

The former Marrickville Council was successful in an application for an Office of Environment & Heritage (OEH) grant for the Alexandra Canal Flood Study. Council sought tenders for the project and subsequently engaged consultants WMA Water in February 2016 to undertake the study.

The Alexandra Canal is a tidal channel and has a total catchment area of approximately 1565 ha at its confluence with Cooks River. The catchment area comprises areas under the control of City of Sydney, and the former Randwick Council, Marrickville Council and Botany Bay. The study area for this project will be the former Marrickville Council area (230ha). The flood study extends existing flood models developed by City of Sydney in recent years in their area.

The majority of the catchment is fully developed and consists predominantly of medium to high-density housing, commercial and industrial development with some large open spaces.

The study utilised a DRAINS hydrologic model and TUFLOW hydraulic model based on 2013 ALS data, Council's GIS database and select survey of pits and structures.

Consultation was undertaken in April 2016. This included distribution of an information sheet and a questionnaire to gather information pertaining to the community's experience of flooding within the catchments. Council undertook this distribution to all properties within the study area, a total of 953. Only 8 responses were received reflecting the small number of properties affected by flooding in the Alexandra Canal Catchment area relative to more built up areas of the Inner West Council area.

Of particular flood susceptibility are low lying areas adjacent to either Cooks River or Alexandra Canal such as Holbeach Avenue, Bay Street, Old Street, Tempe Reserve and Kendrick Park which flood in storm tide events and in flooding events upstream of Cooks River and Alexandra Canal.

Other areas susceptible to flooding of note are:

- Canal Road and Burrows Road which experience overland flooding conveyed from princes Highway and down Canal Road.
- Edith Street and Barwon Park Road are both trapped low points which experience overland flooding conveyed from the upstream catchment.
- Industrial land including the MSC container terminal and port botany rail freight corridor which experience overland flooding conveyed from the upstream catchment including from the Princes Highway and Tyne Container terminal.

Based on the results of the draft flood study a total of 127 properties in the Alexandra Canal Catchment are identified as flood affected. This represents 3 fewer properties than are currently identified in Councils DCP in this area.

Identification of flood affected properties will be reviewed and refined by Council staff and WMA over the coming week prior to going to Council for endorsement.

It should be noted that at the commencement of this flood study, the NSW State Government were in the process of undertaking design and approval for WestConnex Stage 2. As part of WestConnex Stage 2, a major interchange is proposed for the Alexandria Landfill site located between Canal Road, Campbell Street, the Princes Highway and Burrows Road. Due to the proposal being in the

preliminary design stage, the St Peters Interchange and associated construction works were not included in the flood study.

The impacts from the Westconnex project within the Inner West Council managed Alexandra Canal Catchment are anticipated to largely be contained within the St Peters Interchange Site.

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**Officer's Recommendation**

That Council staff review and refine flood affected properties and make minor amendments prior to going to Council for endorsement; and

Council endorses the Alexandra Canal Draft Flood Study for public exhibition and writes to properties identified as flood affected informing them of the exhibition.

**Item 2 Johnstons Creek Draft Flood Study**

**ATTACHMENT 2** Johnstons Creek Draft Flood Study TRIM 7378.17

**Prepared by:** Ryan Hawken, Coordinator Asset Planning, Marrickville

The former Marrickville Council was successful in an application for an Office of Environment & Heritage (OEH) grant for the Johnstons Creek Flood Study. Council sought tenders for the project and subsequently engaged consultants WMA Water in February 2016 to undertake the study.

The study area for this project is within the former Marrickville Council area and includes portions of the Johnstons Creek (183ha) and Whites Creek (35ha) catchments.

The Johnstons Creek catchment extends roughly from Stanmore Road north to Rozelle Bay. Johnstons Creek has a total catchment area of approximately 460ha including parts of the suburbs of Newtown, Camperdown, Stanmore, Annandale, Forest Lodge and Glebe. The catchment area comprises local government areas under the control of Former Marrickville Council, Former Leichhardt Council and the City of Sydney.

A small section of the Whites Creek Catchment has also been included in the Johnstons Creek Study area as only a small portion of the Whites Creek catchment at the very top of the catchment is in the former Marrickville Council (35Ha) with the rest of the catchment under the control of Leichhardt Council.

The former Leichhardt Council and the City of Sydney areas have been covered in separate studies. The flood study extends existing flood models developed by City of Sydney in recent years in their area.

The Johnstons Creek and Whites Creek catchment is fully developed and consists predominantly of semi-detached or terrace medium density housing, with limited commercial and industrial development and limited open space.

The study utilised a DRAINS hydrologic model and TUFLOW hydraulic model based on 2013 ALS data, Council's GIS database and select survey of pits and structures.

Consultation was undertaken in April 2016. This included distribution of an information sheet and a questionnaire to gather information pertaining to the community's experience of flooding within the catchments. Council undertook this distribution to all properties within the study area, a total of 4971. A total of 91 responses were received reflecting the frequent flooding in the Johnston Creek area.

In the study area, like much of the inner city, as urbanisation occurred, many natural drainage lines were built over and piped, with limited consideration given to formal overland flow paths. Due to these drainage restrictions, topographic depressions can cause localised flooding as excess flows have no opportunity to escape via overland flow paths. This creates a significant drainage/flooding problem in many areas throughout both the Whites Creek and Johnstons Creek catchments and as a result many parts of the catchment experience severe flooding from overland flows even during minor storm events.

Areas particularly susceptible to flooding of note include:

- Parramatta Road, Bridge Road and Cardigan Street area which is adjacent to the Johnstons Creek open channel. When the capacity of the open channel is exceeded, both Bridge Road and Cardigan Street back up with flow until the flood levels reach such a height as to overtop Parramatta Road.
- Salisbury Road near Stafford Street, Stanmore where two overland flow paths converge; one originating from along Salisbury Road to the west, and the other from along Cardigan Street to the south-east. On Salisbury Road, these flows accumulate in the low point between Stafford Street and Stafford Lane until they can drain into the downstream channel.
- Salisbury Road and Mallett Street to the junction of Fowler Street and Gibbens Street, Camperdown. Rainfall runoff arrives at a low point in Mallett Street from the south and south-east with a contributing catchment area of approximately 20.7 ha which is conveyed overland down Tooths Place and Tooth Lane and through properties.
- Cardigan Street, between Salisbury Road and Railway Avenue, Stanmore which receive overland flow from the southern portion of the catchment and is conveyed along Cardigan Street before converging with overland flow from the east between Salisbury Road and Rowley Street.
- Liberty Street, Bedford Street and Railway Avenue, Enmore which receives overland flow from the southern portion of the catchment along Liberty Street and through the rail under bridge to sags in Bedford and Railway as well as Trafalgar Streets.
- Lennox Street to Australia Street. Rainfall that runs off into Lennox Street adjacent to Camperdown Memorial Park is obstructed by continuous buildings in Lennox and Mary Street until the flood level reaches the height necessary to divert along Eliza Street. Downstream Eliza Street and Australia Street topographical low points and continuous building extents result in floodwaters accumulating along the roadways.
- Trafalgar Street near Crammond Park is located to the south and upstream of the railway line which restricts overland flows and results in floodwaters accumulating along the roadways.
- Corunna Road, Margaret Street and Parramatta Road near Phillip Street which are topographical low points which receive overland flows from the upstream catchment.

Based on the results of the draft flood study a total of 526 properties in the Johnstons Creek Catchment are identified as flood affected. This represents an additional 262 properties than are currently identified in Councils DCP. An increase of this magnitude was expected in the area due to the nature of previous drainage studies which only identified properties in trapped low points rather than along overland flow paths.

Identification of flood affected properties will be reviewed and refined by Council staff and WMA over the coming week prior to going to Council for endorsement.

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**Officer's Recommendation**

That Council staff review and refine flood affected properties and make minor amendments prior to going to Council for endorsement; and

Council endorses the Johnstons Creek Draft Flood Study for public exhibition and writes to properties identified as flood affected informing them of the exhibition.

**Item 3 Marrickville Valley Flood Risk Management Study and Plan**

**ATTACHMENT 3** Marrickville FRMSP Options TRIM 7379.17

**Prepared by:** Ryan Hawken, Coordinator Asset Planning, Marrickville

The former Marrickville Council was successful in an application for an Office of Environment & Heritage (OEH) grant for the Marrickville Valley Flood Risk Management Study and Plan. Council sought tenders for the project and Council subsequently engaged consultants Cardno in July 2015.

Following the completion of updates to the 2007 model and analysis of flood risks within the catchment, the next stage of the study is to identify flood mitigations options. Options may include controls on development, helping people at risk or changing the behaviour of the flood through infrastructure works.

Infrastructure flood mitigations options were derived first by Cardno and then through workshops with Council staff and the SES. The process undertaken was:

- Assess flood behaviour throughout the catchment to determine the areas with frequent and/or significant flooding. These are the locations where flood risk management measures are most in need.
- Once the areas were identified, a preliminary list of flood risk management options was developed at each location. The intent of identifying a list of preliminary options was to ensure that each flood prone area was considered. Around 70 preliminary options were identified throughout the catchment area.
- An initial review of the preliminary options was then undertaken based on anticipated potential to reduce flooding, cost and known major technical, environmental and social constraints to identify a short list of options for hydraulic modelling. Around 40 options were

short listed throughout the catchment area. These options were packaged further to reduce the number of model runs required.

Following completion of the hydraulic modelling and cost benefit analysis of options, a multi criteria analysis will be undertaken based on the framework developed for the Leichhardt Flood Risk Management Study and Plan by the former Leichhardt Floodplain Risk Management Advisory Committee.

Council will then seek feedback from the local community through a series of localised workshops looking at flooding and options in specific locations. Following this the draft Flood Risk Management Study and Plan will be updated and presented to the Flood Management Advisory Criteria for endorsement to go on wider exhibition. This is anticipated to happen around April 2017.

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**Officer's Recommendation**

That the update be noted.

**Item 4 Hawthorne and Dobroyd Canal Flood Risk Management Study and Plan**

**Prepared by:** Ryan Hawken, Coordinator Asset Planning, Marrickville

The former Ashfield Council was successful in an application for an Office of Environment & Heritage (OEH) grant for the Dobroyd and Hawthorne Canal Flood Risk Management Study and Plan within their area and engaged WMA Water in 2016. The former Marrickville Council was subsequently also successful in an application for an OEH grant for the Hawthorne Canal Flood Risk Management Study and Plan within their area.

After amalgamation, Inner West Council, in consultation with OEH, subsequently agreed to increase the scope of the Dobroyd and Hawthorne Canal Flood Risk Management Study and Plan within the Ashfield area to incorporate the former Marrickville area.

WMA water has since undertaken updates to the model including:

- Update of pit and pipe modelling assumptions to align all studies currently underway in the Inner West Council area within the former Marrickville and Ashfield areas.
- Update of the digital terrain model based on more recent aerial laser survey data from 2013.
- Update of recent significant stormwater drainage works in the Hawthorne Canal catchment by developers and Council.

Community consultation is also currently underway to gather information from residents and owners about flooding in the area.

A more detailed update will be provided to the Flood Management Advisory Committee as the project proceeds.

**Officer's Recommendation**

That the update be noted.

**Item 5 Leichhardt Flood Risk Management Study and Plan Update**

**Prepared by:** Christine Phillips, Stormwater and Development Engineer, Leichhardt

The Leichhardt Flood Risk Management Study and Plan was commenced in 2013 by consulting engineers Cardno to develop a tool for use by Council and the community in the management of the identified flood risks within the former Leichhardt Local Government Area, that being the suburbs of Annandale, Balmain, Birchgrove, Leichhardt, Lilyfield, Rozelle.

The project will address management of the hazards associated with flooding and mitigation of the amount of flooding at or through properties. This will be addressed by more than one method, which can be broadly categorised as property modification measures, emergency response measures and flood modification measures.

The project has progressed to the point where modelling of the identified potential structural mitigation options across all nine catchments of the former LGA has been completed and draft reports of the results are being prepared.

A previously completed property floor level survey and economic analysis of the flood damages under existing conditions throughout the entire former LGA will be used to determining the economic feasibility of the proposed mitigation options.

As a means of directly incorporating the non-economic social values held by stakeholders into the analysis and prioritisation of management alternatives input from the Committee in development of a Multi Criteria Assessment (MCA) system was sought. The Committee's input has been received and the final MCA is being prepared.

The draft Leichhardt Flood Risk Management Study and Plan is expected to be completed by the end of April 2017. The Flood Management Advisory Committee will be asked to endorse the draft Leichhardt Flood Risk Management Study and Plan for public exhibition at a meeting in early May 2017.

**Officer's Recommendation**

That the update be noted.

**Item 6 Leichhardt Flood Mapping Tool**

**Prepared by:** Christine Phillips, Stormwater and Development Engineer, Leichhardt

As part of the Leichhardt Flood Risk Management Study and Plan project consultant engineers Cardno were required to create a web based flood mapping tool that could be accessed via Council's internet page and used by the community to assist in their understanding of the nature and extent of flooding throughout the former Leichhardt Local Government Area (LGA).

Using the results of the Leichhardt Flood Study (Cardno 2015), the Leichhardt Flood Mapping Tool allows the user to investigate the flood extent, hazard, depth and velocity for the 100 year ARI flood event and the Probable Maximum Flood (PMF) event for the entire former LGA. Users can investigate the elements of these floods either as a broad picture over the LGA by zooming out on the screen or in more detail in a given location or area by zooming in on the screen. It must be noted that the web based mapping tool has been deliberately limited to showing flood hazard, depth and velocity within roadways, parks and public open spaces. On private property, only the flood extents are shown.

The Leichhardt Flood Mapping Tool is now available for public access and can be found at: www.innerwest.nsw.gov.au/LeichhardtFloodMappingTool

Note that, the level of detail provided on the mapping tool is not enough to form the basis of any reports required as part of a Development Application. Those requiring more detailed information of the nature of flooding at or near their property will need to apply to Council for a Flood Certificate.

**Officer's Recommendation**

That the update be noted.

**Item 7 Westconnex and Sydney Metro Flood Impacts in St Peters**

**Prepared by:** Ryan Hawken, Coordinator Asset Planning

Westconnex Stage 2: New M5 includes local road works in Campbell Street, St Peters and around the intersection of Campbell Street, May Street and Bedwin Road, St Peters. This is a known flood hotspot and road closures and car rescues at this location typically happen a few times per year.

The original Reference Design and Environmental Impact Statement for Westconnex Stage 2 proposed an increase in the size of the Camdenville Basin and increased pump rates to mitigate flood impacts. Council provided comment at the time that this was not feasible due to high water tables, ground contamination, the desire to utilise the basin for community green space and possible impacts on the downstream drainage system and associated downstream flood impacts. Nevertheless designs for the project have proceeded based on this premise.

Council has advocated for an integrated area wide approach to resolve flooding in the area. However Sydney Motorway Corporation, who is tasked with delivering the project, has so far refused to look at possible options outside the project scope for which they currently have planning approval, and is yet to provide a solution that meets the objectives of all stakeholders. Council and Sydney Water have proposed a number of options which include works outside the project scope that warrant investigation.

Stage 1 of the Sydney Metro project, from north western Sydney to Chatswood is currently under construction. The NSW government recently announced planning approval for Stage 2 of the Sydney Metro in January 2017. Stage 2 of Sydney Metro starts at Chatswood and travels beneath Sydney Harbour, through the CBD to Sydenham. Construction within the Inner West LGA is anticipated to begin in 2019.

As part of the Stage 2 project, Sydney Metro is proposing a tunnel portal and elevated tracks to the north east of Sydenham Station. The proposed works will significantly impact existing drainage infrastructure and change flood behaviour. Most of the current flood impacts are in the Marrickville Valley catchment concentrated around Sydenham Station, Camdenville Basin and the surrounding road areas. This area crosses over with that impacted by Westconnex Stage 2 works.

Sydney Water, OEH and Council all provided comments on the Environmental Impact Statement and Project Infrastructure Requirement reports concerned that the level of analysis undertaken to date does not provide sufficient information for flood planning. These comments did not result in any changes to the Project Infrastructure Requirement reports or Conditions of Approval. Consultation between Sydney Water and Sydney Metro is ongoing.

Sydney Water and Council have repeatedly emphasised to Sydney Motorway Corporation and Sydney Metro that an integrated area wide approach by Sydney Metro, Sydney Motorway Corporation, Sydney Water and Council is needed to resolve flooding in the area. Consultation between Sydney Motorway Corporation, Sydney Water and Council regarding flooding now appears to have ceased.

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**Officer's Recommendation**

That the update be noted; and

Council's administrator write to the NSW Planning, Roads and Transport ministers requesting an integrated approach to flood management for the area by Sydney Motorway Corporation and Sydney Metro.