

JMG Ref: 173021PH

Council Ref: PLN-21-471

1st February 2023

Mr Ben Ikin
Hobart City Council
Via Online Development Services Portal

Attention: City Planning

Dear Mr Ikin

APPLICATION NO. PLN-21-471 - 175 CAMPBELL STREET & 177 CAMPBELL STREET & 179 CAMPBELL STREET & 169-173 CAMPBELL STREET, HOBART - PARTIAL DEMOLITION, ALTERATIONS, NEW BUILDING FOR 26 MULTIPLE DWELLINGS, FOOD SERVICES, BUSINESS AND PROFESSIONAL SERVICES, GENERAL RETAIL AND HIRE, AND SUBDIVISION (LOT CONSOLIDATION)

In further response to the representations and the officers comments in the draft agenda we would like the following considered in the future agenda report:

1. Flood Risk/Liability

We accept there is a risk with respect to flooding on this site, but these flooding risks appear on many sites within the Hobart City Council area. In these cases, Council manages these risks to be to an 'acceptable risk' by undertaking flooding analysis/risk assessments and putting in place management plans to ensure the risk is minimised. We have investigated control mechanisms to ensure the flood risk is known early and the car park can be closed to avoid severe flood risks. The mechanism to ensure this is a Flood Emergency Management Plan which details the necessary warning systems/actions and is put as a condition on the Planning Permit.

Whilst we are aware that Council have some pre-warning sensors within the Hobart Rivulet and the same could be done for the Newtown Rivulet, we believe the simpler approach is to rely on the existing Australian Bureau of Meteorology warning system. Based on the attached advice from BOM severe weather warnings are issued 24-36 hours before an event and thunderstorm warnings are issued with 1-3 hours notice (Attachment A). BOM have a subscriber service whereby text messages and/or data warnings can be sent to direct to specific mobiles or devices (Attachment B). As such, we propose as part of a Flood Hazard Management Plan occupiers of the building would receive a text to mobile warning of a severe weather warning (24-36h in advance of an event) and the car park would be automatically closed to vehicles 30 minutes after a thunderstorm warning (1-3h in advance of an event).

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Occupants would also receive the flood warning text to their phone and would be briefed that in such an event the car park will close in 30 minutes. This may be able to be done via specific text message to occupants also (ie the car park will be closing in 30min) or other internal building alarm/messaging. The car park would be opened by the building manager when the thunderstorm warning was lifted by the BOM. Again building occupants would be advised of this.

Our previous management measures would also remain in the form of:

- An on-site building manager (responsible for occupier inductions/communication, visual sweeps of the car park during a thunderstorm warning/car park closure and opening the car park after the risk has passed);
- A audio and visual (light) warning within the car park during a thunderstorm warning; and
- Physical closure of the car park to entering and exiting vehicles via a cable across the entry (that allows pedestrian egress up the entry ramp) 30 minutes after a BOM thunderstorm warning.

If Council gives access to it watercourse warning system and this is seen to have value in reducing risk this could also be worked into the management plan/warning system.

We believe a condition similar to that used on the Bethlehem House project in Harrington Street would meet Council's requirements on this issue:

SW 11

Measures to minimise impact on the overland flow path and mitigate flood risk from the critical 1% AEP at 2100 event must be installed prior to occupancy or issue of any completion (whichever occurs first).

Detailed engineering drawings accompanied with a report must be submitted as a Condition Endorsement prior to the issue of any approval under the Building Act 2016 or the commencement of work on the site (whichever occurs first). These must include (but are not limited to):

- 1. certification from an accredited and qualified structural engineer that all proposed structures within the flood zone are designed to resist inundation, erosion, undermining and likely forces from a flood event including debris loading such as vehicle impacts with support columns);*
- 2. The plans must be in general accordance with the submitted Flood Hazard Report and modelling by Flussig, and show;*
 - 1. the ground floor level must have a minimum height 300mm above the relevant flood level (ie FFL of 18.315m AHD from the Flood Hazard Report)*
- 3. details of the proposed mitigation and management of the 1% AEP flood zone including signage and measures to prevent blockage of the overland flow path (including but not limited to vehicle barriers, emergency exit, lift design, hydraulically*

permeable walls/gates, and restrictions on use of the area including storage and minor works);

4. a flood management summary plan from a suitably qualified and experienced expert that outlines the obligations for future property owners to flood and overland flow management, including:

- 1. the flood risk to the site, including time to inundation, frequency, and depth, extent and hazard ratings for the 1% AEP at 2100 event;*
- 2. the flood risk to the site, including depth, extent and hazard ratings for the 5% AEP event from a future fully developed catchment;*
- 3. identification of all measures to maintain and maximise the overland flow path through the site and their maintenance;*
- 4. identification of all flood management measures and their required maintenance, including occupant induction, building manager roles and obligations with respect to flood management, automated access controls and warning devices.*

All work required by this permit must be undertaken and maintained in accordance with the approved detailed drawings and report.

Advice: This condition requires further information to be submitted as a Condition Endorsement. Refer to the Condition Endorsement advice at the end of this permit. The Flood Management Summary Plan is not a Flood Study, but rather a plain english document summarising risk and actions required by a future site manager.

As the advice in this condition suggests the Flood Management Summary Plan/Flood Emergency Management Plan is a practical document to facilitate flood management, but will also be used to guide the detailed design/construction of the building (such as communication/warning systems).

2. Conditioning Flood Liability

Our experience with the Tasmanian Planning Commission on a similar issue on an application in Main Road Moonah confirms the opinion of Council officers whereby flood liability cannot be conditioned to be the responsibility of the applicant alone. The liability is effectively managed by the Flood Management Summary Plan/Flood Emergency Management Plan.

3. Issue 3 Meaning of Habitable Floor Level

The wording of the planning scheme is just that, but we would support a briefing to Councillors to explain the differences between the Scheme definition and the National Construction Code. In short, whilst the planning scheme simply refers to building classes under the Building Code to determine habitable floor area, the National Construction Code is more nuanced and excludes car parking areas from its definition of habitable floor area.

4. Design Alternatives

Whilst we welcome the suggestions of Council's subconsultant (Pitt & Sherry) these are not practical. Raising the car-park level to allow flood water to run underneath the building is both cost prohibitive and would result in a substantial reduction of dwellings or increased building height. Removal of the car park altogether is not desirable for tenants and would create an on-street car parking problem which the officers would be unlikely to support. The car stacker option again is not practical as these would not suit multiple tenants and cannot be located outside the flooded area. We have not previously shown a flood afflux map (a map showing flood level increase by placing an object in the flow) because the flood flows are effectively unchanged by the proposal. As the issue of an lacking a afflux map has been raised before we have had one modelled (refer to Attachment C).

5. GHD Central Hobart Precinct Stormwater Modelling

It is noted this work is 6 or more months from completion and thus will be of no use to this application.

We trust this information can be considered in the February Council meeting agenda. If further information or clarification is required, please contact me on 6231 2555 or at planning@jmg.net.au.

Yours faithfully

JOHNSTONE MCGEE & GANDY PTY LTD



Mat Clark
PRINCIPAL/SENIOR TOWN PLANNER

ATTACHMENT A

Bureau of Meterology Advice

Matthew Clark

Subject: FW: Australian Bureau of Meteorology correspondence regarding Enquiry CAS-43585-F7P4T7 [SEC=OFFICIAL] CRM:0122002073

From: Grant Atherton <gatherton@jmg.net.au>
Sent: Tuesday, 10 January 2023 5:23 PM
To: Matthew Clark <mclark@jmg.net.au>
Cc: Dean Coleman <dean@solutionswon.com>; d.fagan@tasbgas.com.au
Subject: FW: Australian Bureau of Meteorology correspondence regarding Enquiry CAS-43585-F7P4T7 [SEC=OFFICIAL] CRM:0122002073

Hi Team,
refer below response received BOM to a query on warnings for short term high intensity rain events. Basically small catchments such as we are interested in are generally issued 24 to 36 hours in advance or for thunderstorms maybe 1 to 3 hours.

I also spoke to them about their app, which can give localised warnings as they are issued. The future development of the app will enhance the current abilities. App warnings take into account radar, rainfall, forecasts and other data. I think this gives us some robust information on which to initiate a warning long before the event.

Regards,
Grant
Grant Atherton | Senior Civil Engineer
JMG ENGINEERS & PLANNERS

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From: Weather Questions <WeatherQuestions@bom.gov.au>

Sent: Tuesday, 10 January 2023 5:10 PM

To: Grant Atherton <gatherton@jmg.net.au>

Subject: Australian Bureau of Meteorology correspondence regarding Enquiry CAS-43585-F7P4T7 [SEC=OFFICIAL]
CRM:0122002073



Australian Government
Bureau of Meteorology

In reply please quote: CAS-43585-F7P4T7

Date: 10/01/2023

Dear Grant,

As promised here is the follow up information regarding our flood warning services. The Bureau provides riverine flood warning services for catchments with a response time of ~6 hours or greater. The service and catchments are documented in the [Service Level Specification for Flood Forecasting and Warning Services for Tasmania – Version 3.3](#).

Warnings for flash flooding in smaller catchments are covered by severe weather warnings, or severe thunderstorm warnings for heavy rainfall (exceeding 10% AEP) and intense rainfall (exceeding 2% AEP, see <http://www.bom.gov.au/tas/warnings/>):

- severe weather warnings aim to be issued the day before, aiming for 24-36 hours before the event, and
- thunderstorm warnings, due to the nature of the phenomenon only usually 1-3 hours' notice – although the potential for severe thunderstorms will be mentioned in the general text based forecasts the day before.

Flash flooding is the responsibility of regional councils and the Bureau provides advice and support where appropriate. More information is available on the [FLARE](#) webpage. For example, a flash flood alerting system has been set up by the [Break O'Day Council](#) using guidelines available on [FLARE](#).

With regard to short-duration observations, 5 minute and 1 hour rainfall accumulations are available on BOM Hobart ([Mt Koonya](#)) RADAR. Short-term Rainfields3 RADAR-based forecasts (2-10 hour depending on the RADAR) are available via the Bureau's [Registered User Service](#), for example see the [Rainfields3 – all mosaic domains – all QPE and QPF products](#). All available products are listed in the [product catalogue](#). More information and sample data are available from webreg@bom.gov.au.

Kind regards, etc

Regards,

Holly McCall
Weather Connect
Bureau of Meteorology

Phone: 1300 754 389, option 2

Monday to Friday, 8am - 6pm AEST and AEDT during daylight savings, except for Victorian public holidays

Email: weatherquestions@bom.gov.au

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----- Original Message -----

From: Grant Atherton <gatherton@jmg.net.au>;

Received: Mon Jan 09 2023 15:17:13 GMT+1030 (Australian Central Daylight Time)

To: Weather Connect <weatherquestions@bom.gov.au>;

Subject: Forecasting of short term high intensity rainfall events

Hi team,

We are increasingly coming across proposed developments where there is an identified risk of flooding of non-habitable areas, such as car parks, which still represent a risk to users.

Councils are requiring risk management plans for these developments, and while there are lots of technology that can be used to initiate warnings on site, there is a query over how much notice that might be given in an official forecast or warning of such events.

Some of the catchments we are looking at have critical durations as low as 10 minutes, and we are typically basing analysis on 1% Annual Exceedance Probability (100 year Average Recurrence Interval) rainfall events with an allowance for increased intensity due to climate change (typically designing for year 2100 conditions).

Are you able to clarify what is currently available for such events in terms of warnings (eg 24 hours before, 6 hours before, or is it such a small catchment that no warning would be made, ???). Also, while you obviously can't predict the future, is there anything that may increase this ability in the foreseeable future (thinking some kind of App with local warnings)?

These queries initially relate to catchments in the Hobart Tasmania area, but could well be elsewhere for future projects.

I'm happy to discuss by phone, my best number is 0438 315 715 .

Regards,

Grant

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ATTACHMENT B

Bureau of Meterology Subscriber Services



[Bureau Home](#) > [Business and Public Sector Solutions](#) > [Data Services](#) > [Real-time Data Services](#) > [Product Catalogue](#)

Catalogue and Charges for Registered User Services

The Bureau's Registered User Services are charged in accordance with the [Australian Government Cost Recovery Guidelines](#). All charges below are for the 2022/23 financial year and are GST inclusive.

For information on the services and products, refer to the attached user guides and sample data. Please note these services are real-time data only. For historical data, please see the Bureau's [Climate and Ocean Data Services](#).

Registered User Charges

One-time fees applied to all services

| Transaction Fees | |
|---|---------|
| Registered User service establishment fee | \$1,051 |
| Service change | \$354 |

Registered User FTP

| Annual Registration Fees | |
|--|---------|
| Registered User FTP | \$1,010 |
| Annual Subscription Fees | |
| Please refer to the Product Catalogue for annual fees. | |

GIS2Web

GIS2Web provides web map service and web feature service layers of selected Bureau of Meteorology data sets. [GIS2Web user guide](#)

| Annual Registration Fees | |
|--------------------------|---------|
| GIS2Web | \$3,393 |

Registered User FTP Product Catalogue

Search the catalogue:

| Product ID (samples) | Product Name | Fields/Keywords | Description | File Formats | Domain & Resolution | Time Step & Update Frequency | Charge |
|-------------------------------------|---|--|--|----------------|---|--|------------|
| IDBZ0003 User Guide | ADFD Weather Grids - Australia - Bundle | Rainfall; temperature; apparent temperature; dew point; wind; wind gust; humidity; fog; frost; precipitation; snow; thunderstorm; fire fuel dryness factor; combined | Gridded forecasts from the Australian Digital Forecast Database (ADFD) | GRIB2, NetCDF3 | Queensland (QLD), Victoria (VIC), Tasmania (TAS), New South Wales (NSW), South Australia (SA), Western Australia (WA), Northern Territory (NT). | Hourly, 3-hourly, and daily out to seven days. Updated twice daily | \$3,342.00 |

| | | | | | | | |
|--|---|--|---|-------------------------------------|--|---|----------|
| IDBC0002 User Guide | Seasonal Climate Outlook Grids - Bundle | Rainfall; maximum temperature; minimum temperature | Summary of the upcoming weeks, months and seasons being wetter or drier and warmer or cooler than usual | .NetCDF4, PNG (zipped) | Global 60km, 5km for some products in the Australian domain | fortnightly, updated twice weekly, monthly and seasonal, updated weekly | \$866.00 |
| IDBC0001 User Guide (AWAP) User Guide (AGCD) | AWAP Grids - Bundle | Rainfall; maximum temperature; minimum temperature; solar exposure (5km and 2km); 3pm vapour pressure; 9am vapour pressure; 9am to 3pm maximum temperature | Gridded analyses based on observational (station) data | NetCDF4 | Temperature, rainfall and vapour pressure: 111.975°E - 156.27°E; 9.975°S - 44.525°S Solar Exposure: 112.05°E - 153.95°E; 10.05°S - 43.95°S 5km and 2km | Daily, updated daily or twice daily. Monthly, updated monthly | \$866.00 |
| IDBZ0011 User Guide | All Warnings Australia Bundle | Warning; flood; cyclone; fire; marine; severe weather; agriculture; tsunami; thunderstorm; rainfall; wind; wave; heatwave; frost; road and bushwalker alerts | Every warning product for Australia. State specific bundles also available. | txt, xml, pdf, html | Australia or single state/territory | Non-routine | \$282.00 |
| IDBZ0012 User Guide | Flood Warning Australia Bundle | Flood; river; watch; alert | Flood warning products for Australia. State specific bundles also available. | txt, xml, pdf, html | Australia or single state/territory | Non-routine | \$282.00 |
| IDBZ0013 User Guide | Cyclone Warning Australia Bundle | Tropical cyclone; advice; forecast; track map; information | Cyclone warning products for Australia. State specific bundles also available. | txt, xml, pdf, html, ESRI shapefile | Australia or single state/territory | Non-routine | \$282.00 |
| IDBZ0014 User Guide | Fire Warning Australia Bundle | Fire weather; ban advice | Fire warning products for Australia. State specific bundles also available. | txt, xml, pdf, html | Australia or single state/territory | Non-routine | \$282.00 |
| IDBZ0015 User Guide | Marine Warning Australia Bundle | Marine; wind; wave; tropical cyclone; tsunami | Warning products tailored to mariners (coastal and offshore) around Australia. State specific bundles also available. | txt, xml, pdf, html | Australia or single state/territory | Non-routine | \$282.00 |
| IDBZ0016 User Guide | Severe Weather Warning Australia Bundle | Severe weather; thunderstorm; tropical cyclone; road and bushwalker alerts | Severe weather warnings for terrestrial locations across Australia. State specific bundles also available. | txt, xml, pdf, html | Australia or single state/territory | Non-routine | \$282.00 |
| IDBZ0017 User Guide | Agriculture Warning Australia Bundle | Agricultural; farming; sheep; frost; downy mildew; brown rot | Agricultural warning products for Australia. State specific bundles also available. | txt, xml, pdf, html | Australia or single state/territory | Non-routine | \$282.00 |

Showing 1 to 71 of 71 entries

ATTACHMENT C

Flood Afflux Map and Flussig Comments

Matthew Clark

From: max@flussig.com.au
Sent: Wednesday, 11 January 2023 11:18 AM
To: Matthew Clark
Subject: RE: Campbell Street
Attachments: Pre depth v Post depth map.pdf

Hi Matt.

The Afflux model was compared to THE Pre-development scenario to check if the assumptions made were reasonable. The attached map was from the 13min 30 sec at the time of maximum inundation as per **2.4.1** in our report (Refer image below) and consequently the Afflux model was also run for the 13min 30 sec as a comparison

2.4.1 Displacement of Overland Flow on Third Party Property

Figure 7 shows post-development depths on 169-173 Campbell St as the property immediately downstream, and on 167 Campbell Street to 1A Brisbane Street, when compared against pre-development, there is no increase in flood extents or depths.

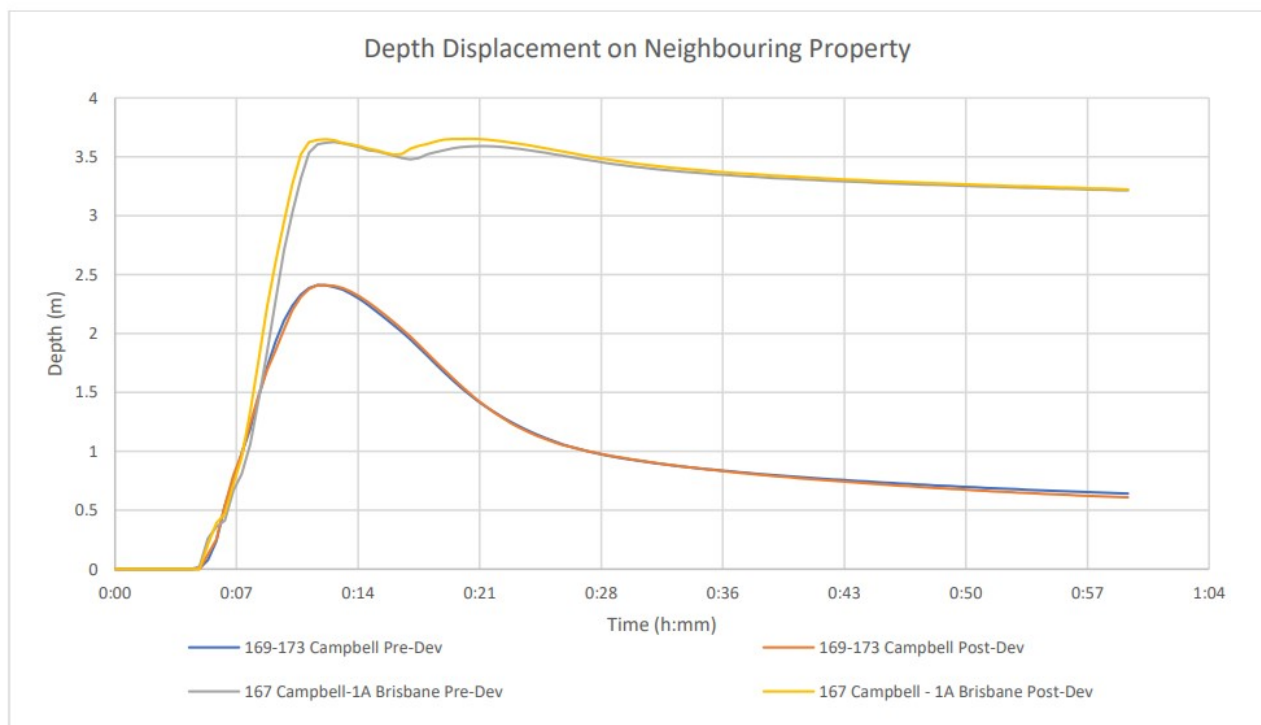


Figure 7. Pre and Post Development Depth Displacement 1% +CC

Time To Inundation

Figure 8 shows the pre vs post development depth-time graph. It can be seen from this graph that time to maximum inundation occurs at approximately 13m30s with a maximum depth in the post development scenario of 2.3 m, however, initial ingress of water into the carpark of approximately 30 mm, occurs around 5 minutes from the beginning of the storm.

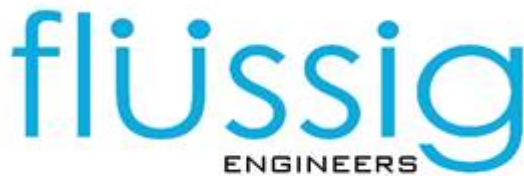
Therefore, from the first noticeable ingress of water to the peak there is approximately 8 mins, with water extending to greater than 1 meter at 8m03s from first ingress.

Regards.

Max W. Möller

BEng, FIEAust, EngExec, CPEng, NER, APEC Engineer, IntPE(Aus)

Managing Director / Principal Civil Hydraulic Engineer



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Hobart TAS 7000

From: Matthew Clark <mclark@jmg.net.au>

Sent: Wednesday, 11 January 2023 9:20 AM

To: max@flussig.com.au

Subject: FW: Campbell Street

See under Issues 4 & 5.

Matthew Clark | Principal
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From: Karen Abey <abeyk@hobartcity.com.au>

Sent: Tuesday, 10 January 2023 2:11 PM

To: Matthew Clark <mclark@jmg.net.au>

Cc: Neil Noye <noyen@hobartcity.com.au>; 'Dean Coleman' <dean@solutionswon.com>; Ben Ikin

Pre Depth Extent vs Post Depth Extent



Legend

- 175-179 Campbell Street
- Boundary Lines
- Existing Buildings
- Proposed basement structures
- Proposed Solid Walls
- Proposed carpark layout
- Proposed chain fence
- Proposed sealed sub-station

Pre 1% AEP + CC

Depth (m)

- 0.05
- 0.80
- 1.20
- 1.80
- 2.20
- 2.80

Afflux_Post_DEV_13min_Extent



0 10 20 m
meters



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