

31/05/2018

Mark Lederer
Project Manager
Opal Aged Care
Level 27, 135 King St
Sydney NSW 2000

Dear Mark

Re: Opal Aged Care Toongabbie – Comments on NSW SES Letter

I have reviewed the letter of 28th February 2018 from Peter Cinque of NSW State Emergency Service commenting on flood risks in relation to the proposed Aged Care Facility at Toongabbie. This letter responds to the issues raised in that letter.

NSW SES Premise

The fundamental issue underlying the NSW SES's response is its statement at the beginning of the letter.

"The NSW SES's primary strategy to protect life during a flood is evacuation from the hazardous environment to an area above the PMF located outside the floodplain."

This statement needs to be unpacked and critiqued in the local flooding context before the specific contentions in the rest of the letter are responded to.

The first thing that needs to be understood here is what is defined as a hazardous environment. Flood modelling by Martens Associates demonstrates that the site as it currently stands is not flooded at all in the 1% AEP flood and only by low hazard floodwaters up to the 1 in 2,000 (0.05%) AEP flood (Martens, May 2018). It is proposed to fill the site so that the facility is above the reach of the PMF and is contiguous with adjacent land which is also above the PMF. In this regard the occupants of the facility will not be directly exposed to flood hazards up to the PMF.

They are indirectly affected in extreme floods in excess of the 1% AEP event when they are isolated by flooding. They will be effectively on what the NSW SES refers to as a "High Flood Island".

They may also experience loss of power supply but this could be caused by any number of events including an extreme weather event without any flooding. Which is why the development includes a generator set for backup power supply.

So arguably, the facility is not a "hazardous environment" in itself but may be isolated within a "hazardous environment".

The NSW SES goes on to say that their primary strategy to protect life is evacuation from this hazardous environment *"to an area above the PMF located outside the floodplain."*

The following figure shows the extent of PMF flooding in the catchment and the site, highlighted in red, can be seen to be part of one of several high flood islands that are not a long distance from the creeks. However, if one looks at the map more closely it is clear that the whole of the suburb of Girraween is a high flood island which is cut off by floodwaters on three sides and by the M4 to the south. Therefore evacuating the site to those parts of Girraween which are *"above the PMF located outside the floodplain"* would not change the risks of isolation for the evacuees nor necessarily take them into an area with less risk of loss of power supply.

Evacuating in a different direction would not necessarily solve the problem either as all of the nearby suburbs are similarly isolated by adjacent tributaries in the Upper Parramatta Catchment.

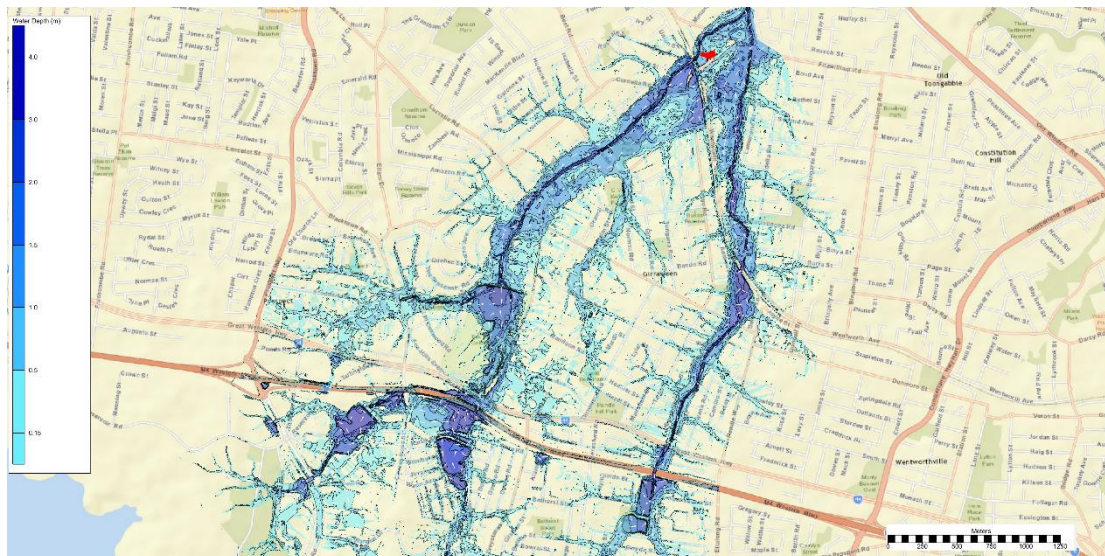


Figure 1: Catchment-wide PMF Flooding

Evacuation in this part of Sydney is therefore not a practical flood response unless people are in imminent danger of direct contact with floodwaters.

Although it is not explicitly stated in the NSW SES letter, the reasons usually given by the NSW SES as to why it is not appropriate for people to be isolated on a high flood island are:

- They cannot be reached by ambulance if there is a medical emergency
- They cannot be reached by fire appliances if there is a fire
- They may need to be rescued by the NSW SES

These are all valid points but this site has a low probability and duration of isolation in regards to the above isolation risks which is identical to the probability and duration of these risks for the whole of the suburb of Girraween.

By extension of the NSW SES logic, not only would anywhere in Girraween which is above the level of the PMF be unsuitable for an aged care facility but the whole of Girraween would be “hazardous” and would need to be evacuated.

As mentioned above, large parts of the Upper Parramatta River Catchment could be characterised in this way and therefore arguably would warrant the same emergency response.

It is within the above context that the other points raised in the NSW SES letter should be considered.

Vulnerable Population

There is no argument that the residents of the aged care facility are vulnerable but the facility is designed to cater specifically for those vulnerabilities. The facility will be designed and operated to be able to continue to function when outside services are disrupted for any reason, not just flooding.

There is no direct threat to the occupants from flooding only the indirect threat caused by isolation. However, the residents are used to being isolated within the facility and, unlike occupants of other developments, they have no imperative, motivation or ability to independently leave the premises during a flood. So it is only with regard to access to emergency services in events greater than a 1% AEP flood where they are exposed to a secondary risk from flooding. As mentioned earlier, they would face the same risk in this regard if the nursing home were built in flood free land in the middle of Girraween which is not subject to any planning controls in relation to flooding.

The issue is only being raised at this site because it is being filled to create a high flood island rather than it being a naturally occurring high flood island.

Shelter in Place

Staying within the aged care facility is the best option for residents unless it is dangerous for them to do so. A flood at the site does not create any direct danger to the residents. As demonstrated by flood modelling by Martens Associates, even in events up to the 1 in 2,000 AEP flood, hardly any of the site would flood and where it does the flooding would not present a significant hazard.

The building would be able to be designed to remain structurally stable in all floods including a PMF. There would also be a pedestrian evacuation route on a rising gradient from the building to flood free land only a few metres from the main entrance and at worst people would need to walk through 0.1m of ponded water at the peak of the PMF. Flooding certainly presents no direct risks to those sheltering in the building nor does it prevent safe egress from the main entrance of the building. So again it is only secondary risks to which residents are exposed.

The point that the NSW SES makes regarding the behaviour of real floods compared to design floods is understood.

Had this facility existed in 1986 it would not have been isolated from access to emergency services in either the 1986 or 1988 flood because the modelling indicates that those floods were not large enough to do so.

A flood large enough to isolate the facility may have multiple peaks and cause isolation for longer than the couple of hours suggested by the design flood modelling. There may be significant damage to roads and other infrastructure which will take some time to repair as stated by the NSW SES. However, all of these impacts are external to the site and would impact an aged care facility in virtually the same way if it were constructed on any flood free land in Girraween and probably on flood free land in several surrounding suburbs.

In fact, large tracts of Sydney which are not directly impacted by floods are indirectly impacted by them in this way and applying this measure to determine the suitability of a site for an aged care facility would provide very limited options for their siting.

Lack of Evacuation Strategy

It is self-evident that shelter-in-place is not an evacuation strategy. As discussed above there is no imperative to evacuate the premises in a flood. The events that would trigger a need for evacuation at this location would be the same that would trigger the need for evacuation or rescue for any other flood free site (i.e. above the PMF) in the surrounding area. The difficulties of evacuation would be the same at other flood free sites but at those no planning controls in relation to flooding currently exist.

Difficulty of Rescue Operations

The rescue difficulties cited by the NSW SES are valid but are not unique to this site. The flooded roads which rescue teams need to cross to reach this site are the same ones they need to cross to reach the flood free areas of Girraween.

Operational Complexity

Again the NSW SES cites genuine operational complexities that it will face during widespread flooding in Sydney. However, it is spurious to suggest that placing an aged care facility in this location as opposed to another flood free location nearby is going to significantly increase those complexities.

Displacement of Floodwaters

In order to respond to SES concerns about displacing flood waters, further flood modelling has been undertaken by Martens Associates (Martens, May 2018). This shows that the development would not displace floodwaters onto neighbouring properties in any event up to and including the 1 in 1,000 (0.1%) AEP flood. In the 1 in 2,000 AEP (0.05%) flood it would increase flood levels by up to 50mm on part of the residential apartment site immediately south west of the proposed development. However, it is standard practice in Parramatta LGA and elsewhere that developments only need be designed to prevent afflux in floods up to the 1% AEP event.

Conclusion

Flood modelling shows that the site will not be affected at all by flooding in the 1% AEP flood and only by a small area of low hazard floodwater in events up to and including the 1 in 2,000 (0.05%) AEP flood.

The proposed development will be constructed in such a way that the building itself will be flood free and will be contiguous with adjacent flood free land in all floods including the PMF.

This flood free area will only be isolated by flooding in events larger than the 1% AEP flood and in such events will become what the NSW SES refers to as a "high flood island".

The high flood island of which the development will be part will have the same risk of isolation from access by emergency services or supply of power as the whole of the suburb of Girraween which itself will become a high flood island.

Residents can be kept safe within the building as they are isolated and sheltering in place is the most appropriate response to flooding at this location.

The proposed development is therefore at no greater risk from the direct or indirect effects of flooding than any other site within Girraween that is above the level of the PMF.

The development will not cause unacceptable flood impacts on neighbouring properties.

Yours faithfully

For Molino Stewart Pty Ltd

A handwritten signature in black ink, appearing to read 'S. Molino', written in a cursive style.

Steven Molino

Principal

Cc: Corey Taylor

Dan Brindle

Y:\Jobs\2017\1008 Opal Aged Care Toongabbie - Flood Risk Assessment\Reports\Final\1008 Opal Aged Care Molino Response to NSW SES Feb 2018 Letter Draft v2 responding to Opal and BBC comments.docx

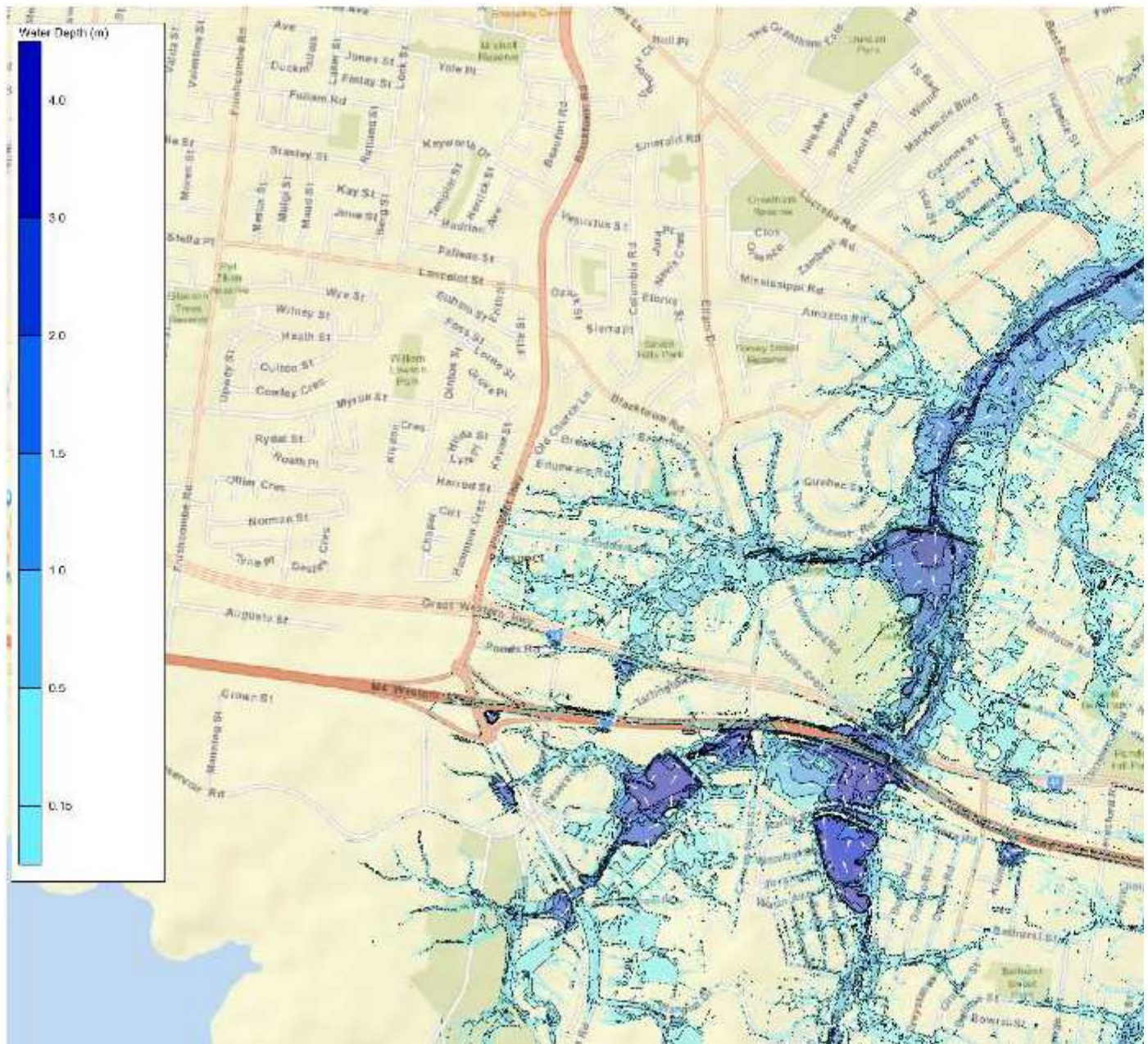
Lisa Foley

From: George Jeoffreys <george.jeoffreys@ses.nsw.gov.au>
Sent: Wednesday, 25 July 2018 10:30 AM
To: 'Caren Friend' (Caren.Friend@health.nsw.gov.au)
Cc: enid.robinson@health.nsw.gov.au; Shaylin Moodliar; Paul Clark
Subject: Aged Care DA
Attachments: SWR SES Response to DA12812016 FINAL.PDF

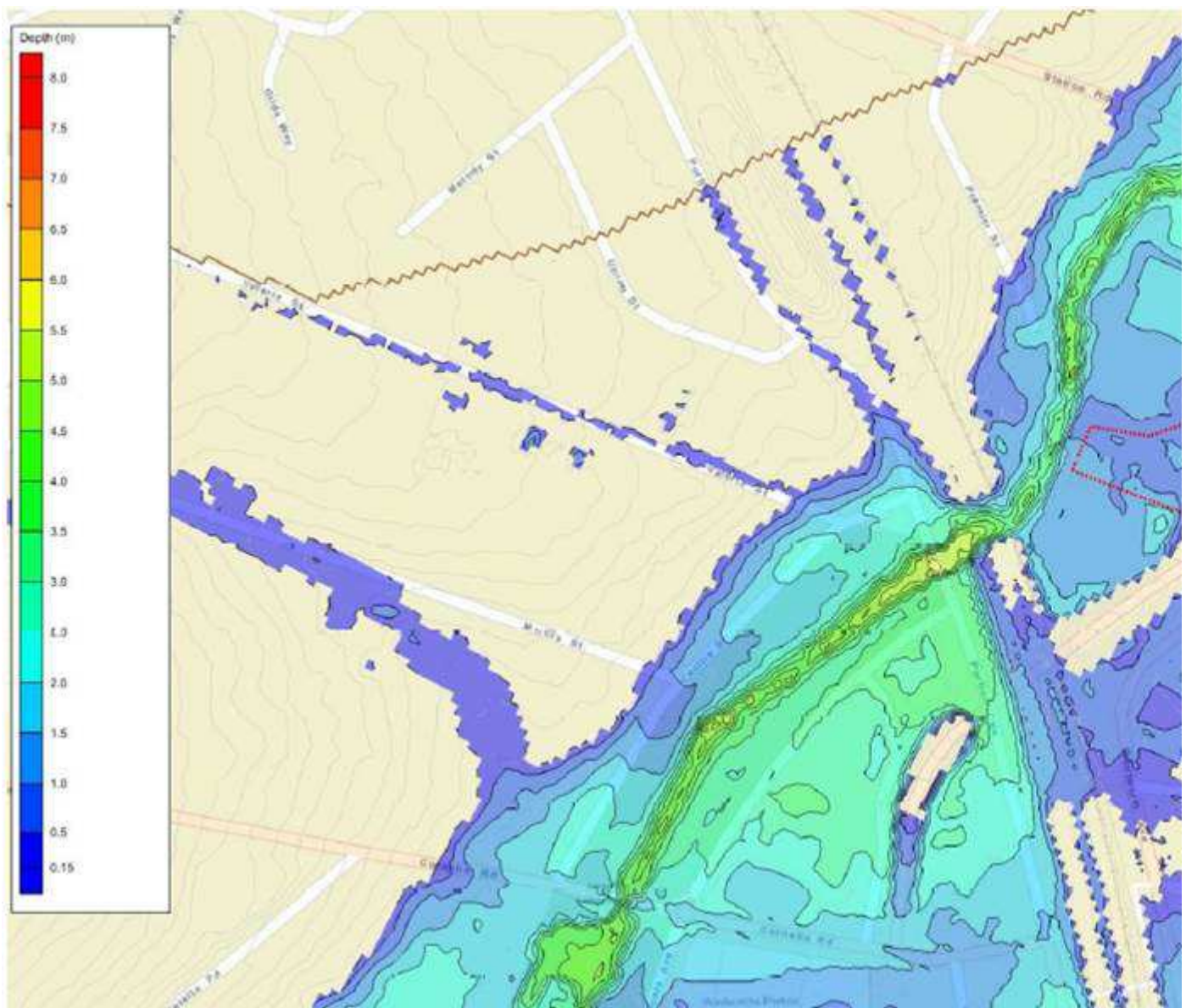
G'day Caren,

I am writing to seek your assistance with a development issue we are facing in Toongabbie. I have CC'd Enid as a courtesy because I spoke with her about it on the back of an REMC meeting recently, and she suggested you would be a good person to contact regarding my concerns. Also CC'd are Shaylin Moodliar (Senior Development Assessment Officer for City of Parramatta) and Paul Clark (Senior Catchment & Development Engineer for City of Parramatta Council), who are both involved in the approvals (or refusal) of developments such as this one, which they do not support. The SES also does not support the development. Due to the nature of the planned facility, I am hoping you may be able to provide some input. I have also included the initial response from SES to Council, which is currently being objected to by the proponent, and the issue is now set to go before an Independent Planning Panel for final determination. I apologise for putting you on the spot but due to a number of factors, time is short and my ongoing involvement in this issue may be limited due to the restructuring of the SES. I wanted to introduce you to the team at Parramatta directly to minimise any risk inherent with me being the conduit.

The development proposal is for a 128 bed aged care facility with a population to include dementia and high care residents. The site sits within an area bounded by Girraween and Pendle Hill Creeks, and the M4 Motorway (or the railway in larger events). The site is not inundated at the flood planning level of 1:100 flooding, but is isolated at that level. The site is later fully inundated by the Probable Maximum Flood (PMF), which is the level that the SES conducts emergency planning for. You can see from the picture below, that the site, shown in red, cannot be serviced by emergency services during major flooding. Furthermore, due to the nature of flooding within the catchment, it is likely that access to the site by emergency responders including SES and FRNSW will be problematic, if not impossible.



The depths around the site during a PMF are considerable, and will prevent access by any means other than higher risk options including boat or helicopter (in the unlikely event that they can fly in the sort of weather which will cause such flooding). In the event of a secondary emergency (fire or medical incident whilst isolated by flood), it is unlikely that an emergency response will be possible.



In brief, SES does not support the development because it seeks to place a vulnerable population in a flood affected area which becomes isolated at lower levels of flooding, and then inundated at higher levels. The building itself is to be built at a height that will prevent water entering the building however all occupants will be trapped within the building. The proponent has been unable to provide a suitable evacuation strategy and is proposing a shelter-in-place strategy instead. They claim that flood duration will be short (6-9hrs) and have provided a generator to provide electricity for up to 8hrs. If you look at the hydrographs for a single flood peak, that timing is accurate. However, examination of historical flooding in this catchment clearly shows that the catchment is so sensitive that it experiences multiple peaks during a flood event. A prominent example is the 1986 flood which saw at least 7 overlapping flood peaks that resulted in high flood levels for 3 day consecutive days. This is repeated for many of the recorded floods. There is a likelihood that utilities including water, sewer and gas will be cut but I have not had time to confirm this, nor its likely duration, with the utility providers. There is no scope for relocation of dementia patients to alternate secure facilities, and even if the residents were able-bodied, evacuation on foot to the motorway would be challenging. With bed-ridden patients it will be almost impossible.

There are a number of documents that contain detail around the development and the flood issue, but SES does not own them. I suspect that Shaylin and Paul would be more than willing to provide copies of them should you need more information.

Any advice you could to Shaylin and Paul provide regarding the appropriateness of this proposed development would be appreciated. I believe that SES has addressed the flood aspects, but you are better placed than I am to speak on the vulnerable population and the expectations/requirements of NSW Health in ensuring their safety.

Regards,
George



George Jeffreys

Deputy Region Controller

NSW State Emergency Service - Sydney Western Region

P 02 8811 7711 M 0448 187 700 E george.jeffreys@swd.ses.nsw.gov.au

Unit 3 / 7 St James Pl Seven Hills, NSW 2147
www.ses.nsw.gov.au



MISSION - NSW SES SAVING LIVES AND PROTECTING COMMUNITIES

VISION - BE THE BEST VOLUNTEER EMERGENCY SERVICE IN AUSTRALIA

FOR EMERGENCY HELP IN FLOODS AND STORMS CALL THE NSW SES ON 132 500

This message is intended for the addressee named and may contain confidential information. If you are not the intended recipient, please delete it and notify the sender. Views expressed in this message are those of the individual sender, and are not necessarily the views of the NSW State Emergency Service.

28th February 2018

City of Parramatta Council
PO Box 32
Parramatta NSW 2124

Attn: Shaylin Moodliar – Senior Development Assessment Officer
Re: DA/1281/2016

Dear Mr Moodliar,

Thank you for the opportunity to provide comment on the planned development at 12 Station Rd, Toongabbie. The New South Wales State Emergency Service (NSW SES) is the combat agency for floods, storms and tsunamis within NSW. An integral part of this role includes planning for, responding to, and coordinating early recovery efforts from flooding. As such, the NSW SES has an interest in the public safety aspects of the development of flood prone land, especially where the development may exacerbate existing risk or create new risk areas. While planning controls for flooding applies to land in the flood planning area defined by Council (normally the 1% AEP event +500mm freeboard), the NSW SES plans for events up to the probable maximum flood (PMF).

The NSW SES's primary strategy to protect life during a flood is evacuation from the hazardous environment to an area above the PMF located outside the floodplain.

It is noted that the Certificate of Site Compatibility requires the applicant to demonstrate how people dependent on care can be evacuated in case of emergency. Shelter in place does not constitute evacuation and there is no clear indication of intent to evacuate in the documents provided.

The NSW SES does not support the proposed development, for the following key reasons:

- Placement of a vulnerable population within a high flood risk area.
- Unsuitability of shelter-in-place
- Lack of evacuation strategy
- Difficulty of rescue
- Increased complexity of response operations and demand on emergency services.
- Potential for displacement of floodwaters onto neighbouring properties due to bulk landfill as part of the development.

Vulnerable population

The development application is for a 128-bed aged care facility. It is noted from the applicant's Statement of Environmental Effects that the facility is being designed for a cohort where *"the average age of occupants is 85 years and over and the majority of the occupants will have some form of disability and impairment (such as dementia)."*

Flood models developed independently by City of Parramatta Council, and the applicant, show some variation in expected flood impacts. However, both indicate that the site will become isolated by a flood event greater than the 1% AEP and less than the PMF. There is no disagreement that the site will experience indirect and direct impacts of flooding across the range of events. The intentional placement of a vulnerable population into an area where such does not already exist, cannot be supported.

Shelter-in-place

Numerous documents provided by the applicant advocate a shelter-in-place strategy. This response strategy leaves residents vulnerable to secondary risks and does not actually remove them from the hazard. The NSW SES does not support shelter-in-place as a primary response strategy.

While available modelling suggests that flooding of the site from a single event is likely to be of relatively short duration, analysis of historical flood levels, including the 1986 and 1988 flood events within the Parramatta River catchment, indicate a propensity for multi-peak flood events, caused by multiple rain bursts over consecutive days. This is consistent with the sensitivity expected of a flash flood catchment. By way of example, the April 1988 flood event saw a series of seven peaks over 3 days with no return to "normal" water levels between peaks.

In combination with the extended duration of a multi-peak event, the resultant damage to infrastructure has the potential to make the area unfit for ongoing habitation for a significantly longer duration, consequently increasing the duration of entrapment. Surrounding roads and infrastructure in the wider local network may be unserviceable for an even longer duration due to debris and/or damage.

As a result, many measures, such as the provision of 3 days food and medication supply (page 16 Flood Issues Summary – Molino Stewart) and on-site power generation to supply electricity to the facility for 8 hours (applicant's Flood Emergency Response Plan) may prove inadequate in floods of greater magnitude than the 1988 event (which was less than a 1% event) necessitating the mass rescue of trapped residents.

Lack of evacuation strategy

The NSW SES policy is to pro-actively evacuate residents before floodwaters affect the area. Evacuation (rather than rescue) ensures public safety and eliminates the need for high-risk, time-critical rescue operations due to inundation; resupply operations due to prolonged isolation; and maintains the safety of residents in the face of extended utilities outages.

Shelter-in-place is not an evacuation strategy as it does not remove people from the hazard area. The chance of successful evacuation is lessened by the short warning time for flooding at the site. The age, and physical and mental condition, of the residents of the development are not conducive to self-evacuation, and would require a multi-agency response incorporating specialist medical transport vehicles. Even with the installation of the proposed flood warning device, it is unlikely that the evacuation would be successful. Any attempt at evacuation of residents in response to a flood evacuation order is likely to be further compromised by rapidly rising flooding on surrounding roads. In addition, many of the residents would require transport to specialist care facilities, rather than general evacuation centres. The NSW SES cannot guarantee that it will have resources to facilitate the evacuation of patients from this site.

Difficulty of rescue operations

Where evacuation and shelter in place are not viable, rescue is the only remaining option. The location of the site, with multiple approach routes cut by flooding, makes access for rescue teams hazardous and difficult. Low points on access roads are likely to be cut by higher hazard flooding than that experienced at the site, resulting in a higher risk profile for rescuers, or a complete inability to reach the site. As stated previously, this large scale rescue operation will require a multi-agency approach including specialist medical transport vehicles. The proposed use of the site to house a vulnerable population represents a further threat to the success of either evacuation or shelter-in-place, and is not supported.

Increased operational complexity and demand on emergency services

The NSW SES cannot support plans that result in a requirement for shelter-in-place, or likely evacuation or rescue, of vulnerable communities. Operational complexity is brought about by the scale of the event, and the diversity of the response required. Emergency service resources will already be heavily engaged in responding to the existing threat due to the scale of a Parramatta River flood event. Furthermore, weather events likely to cause this type of flooding are likely to cause simultaneous flooding on other major waterways within the Sydney Metropolitan area including the Hawkesbury-Nepean, Georges and Cooks Rivers. This will result in greater competition for finite emergency service resources.

The proposed population for the development will require assisted evacuation and, in many cases, ambulance assistance. This demand does not currently exist at the site and to add this complex demand to any existing emergency response is not acceptable.

Displacement of floodwaters

The importing of 1236m³ bulk fill onto the site reduces the sites ability to carry floodwater. While the site is not within the floodway, it does provide flood storage. Acknowledging that catchment-wide effects may be small, the potential for local impacts is a concern with a distinct possibility of exacerbating flood impacts on surrounding properties. Furthermore, the design of the building could channel water away from the floodway and into the surrounding floodplain.

I trust that the issues above have been covered in sufficient detail. If you require further information, please contact George Jeffreys on 8811 7700 or george.jeffreys@swd.ses.nsw.gov.au

Yours Sincerely

A handwritten signature in cursive script, appearing to read 'P. Cinque'.

Peter Cinque ESM OAM
Sydney Western Region Controller
New South Wales State Emergency Service