

04 September 2013

Mr Paul Robilliard
A/Director, Greenfield Delivery
Planning & Infrastructure
GPO Box 39
SYDNEY NSW 2001

Community Safety Directorate
Level 2, 6-8 Regent Street
Wollongong NSW 2500
PO Box 6126
Wollongong NSW 2500
Phone 02 4251 6111

Your Ref: 13/10156

Dear Mr Robilliard

RE: Revised Draft East Leppington (Liverpool Part) Precinct Plan

I refer to your correspondence to the NSW State Emergency Service (NSW SES) Commissioner, Mr Murray Kear, dated 30 July 2013, advising that the revised draft plan for the East Leppington (Liverpool Part) Precinct in the Southwest Growth Centre was placed on public exhibition.

As the agency responsible for coordinating the emergency management response to floods, storms and tsunamis in NSW, the NSW SES has an interest in aspects of public safety for the development of flood prone land, in particular, the potential for changes to land use to either exacerbate existing flood risk or create new flood risk for communities in NSW. Because the NSW SES is primarily focused on existing flood risk the Service does not usually have specific information about the flood risk for vacant land. The East Leppington (Liverpool Part) precinct is in proximity to an existing urban setting for which the NSW SES has a general understanding of the flood risk.

Impacts of cumulative development on emergency management capability

As outlined in previous correspondence to the NSW Department Of Planning and Infrastructure (DP&I), the NSW SES wishes to be consulted at the strategic level, not only for the Southwest and Northwest Growth Centres, but for the entire Sydney Metropolitan Strategy in so far as these matters have the potential to impact significantly upon the core business of the Service. The NSW SES reiterates that a strategic assessment of the impact of the cumulative growth targets on flood emergency management capability is required to determine if the entirety of the Southwest and Northwest Growth Centres can be accommodated in a flood emergency management context.

The NSW SES is concerned that without an accurate picture of total projected development into the future, the cumulative impact of proposed development in the Southwest and

Northwest Growth Sectors and the entire Metropolitan Plan for Sydney cannot be accurately assessed. In particular, the assessment of one part of what is proposed to be a much larger and more populous residential precinct in isolation, can result in an incomplete view of the risks to life and property from flooding.

The Water Cycle Management Report, produced by Cardo Pty Ltd for the Revised Draft East Leppington (Liverpool Part) Precinct Plan, acknowledges that significant flooding, especially of major roads that could act as evacuation routes, occurs within the proposed precinct boundary during a local probable maximum flood (PMF) event. Specifically the report at 4.8 acknowledges some issues with access and egress within the proposed precinct:

'The Precinct is split by Bonds Creek, its main tributary and the SCA canal with road crossings proposed at various locations. In determining safe egress from an extreme flood, it is necessary that the proposed road layout take into consideration the ability for residents to access a local road and make their way out of the floodplain without the need to cross neighbouring properties.'

And

*'It has been advised that Camden Valley Way is to be upgraded by RMS with the proposed road to be above the 100 year ARI flood levels. Notwithstanding this upgrade **it is not expected that the Camden Valley Way would serve as an evacuation route during the PMF.**' (emphasis added)*

The NSW Floodplain Development Manual, 2005 (FDM) recommends that the full range of flooding be considered, up to the PMF event. To achieve consistency with the principles of the FDM in land use planning, it is important not only to consider the PMF for the precinct or area subject for development, but also the valley-wide PMF.

Taking into account the impacts of a valley-wide PMF will aid in understanding the cumulative impacts of development on the floodplain and especially help determine if or what evacuation routes may exist during floods up to and including the PMF. It is important for the NSW SES and other emergency service organisations to know these cumulative impacts, in order to understand the communities at risk and whether there is sufficient time available for evacuation.

However, as submitted in previous correspondence to DP&I, it is clear is that there is likely to be considerably more evacuation traffic in future floods than has been allowed for in current NSW SES emergency planning, and previous evaluation of development proposals. This trend is likely to be exacerbated with continuing development in adjacent areas of metropolitan Sydney.

Road network

It is recommended that the precinct plan include an objective to provide a robust road network, with steadily rising local roads linking to arterial or regional routes to enable timely evacuation during floods. The objective should be explicitly stated in terms of emergency access and egress to support the key action of *'keeping people safe'* in the NSW Government's State Plan 2010. It is also recommended that a section on flood evacuation route design considerations is included.

Controls in any Development Control Plan must comply with any flood evacuation strategy and must take into account flooding up to the PMF. The application of these principles

during the detailed planning stage will help ensure that evacuations can be completed safely in accordance with NSW SES emergency management strategies.

Flash Flooding and Emergency Management Strategy

Consideration should also be given to the potential risk from flash flooding in this area. Flash flooding is defined by the Commonwealth Bureau of Meteorology as *'flooding occurring within about six (6) hours of rain, usually the result of intense local rain and characterised by rapid rises in water levels'*. The potential for flash flooding to occur in this catchment both in its current undeveloped state and under the proposed development scenario cannot fully be determined. Should the area be subject to flash flooding, safe evacuation may not be possible due to insufficient warning times and inadequate warning systems.

The Water Cycle Management Report prepared by Cardno Pty Ltd, (section 4.8) notes that:

*'An assessment of the potential to manage residual flood risk was undertaken by assessing the ability of the public to seek **refuge from floodwaters and to evacuate if needed during extreme floods** up to the PMF. **For the most part** it is expected that **the public would not require evacuation** because the duration of flooding in the study area is typically less than 6 hours for events greater than the 100 year ARI event'* (emphasis added)

Furthermore, Cardno at 4.8 states *'Some habitable parts of the floodplain are affected by the PMF and suitable provisions should be made so that the public can safely escape flood inundation if necessary. It is recommended that areas should be developed with muster points close to the flood prone area and safe egress pathways so that in the event of an extreme flood any affected members of the public can quickly take refuge until the flood subsides. This **approach is consistent with emergency management protocols for the Camden and Campbelltown LGAs** (SES, 2010).'* (emphasis added)

'Refuge', also referred to as 'shelter-in-place' has been shown to have significant associated risks including building stability during flooding, secondary emergencies such as building fire and medical emergencies and reliance on human systems and behaviours. The NSW SES notes that 'refuge' or 'shelter-in-place' is not equivalent, in emergency management terms, to evacuation. The issues created by 'sheltering-in-place' during flash flooding was the subject of a recent research project undertaken by the Project Delivery Unit of the DP&I. For more information in regards to land use planning and emergency management considerations in flash flood environments, please refer to the attached Australian Fire and Emergency Services Authorities Council Limited (AFAC) national best practice guideline titled: 'Guideline on Emergency Planning and Response to Protect Life in Flash Flood Events' ('AFAC guideline').

Specifically, section 3.3 of the AFAC guideline recommends '(g)iven the life risk posed by flash flooding...new urban areas...should facilitate rapid and safe evacuation from flash flood-prone locations, (and) should account for the likelihood that some people may be trapped inside buildings...' and at 3.7 'the safest place to be in a flash flood is well away from the affected area'.

The NSW SES supports the emergency management strategy of the AFAC guidelines, and notes the indication in the guideline of the inherent risks of seeking 'refuge' or 'sheltering-in-place', at section 3.15 '...remaining in buildings likely to be affected by flash flooding is not low risk and should never be a default strategy...even if the buildings are considered likely to

withstand the impact of flash flooding. Where the available warning time and resources permit, evacuation should be the primary response strategy'.

Regardless of any inconsistencies between the recommendations in the precinct plan reports (especially the Water Cycle Management Report) and the NSW SES flood plans, the NSW SES, as the designated combat agency for flood, will determine the appropriate flood evacuation (or other appropriate) flood response strategy. For this reason, it is recommended that consent authorities liaise closely with NSW SES at the strategic planning stage (please note this is also a recommendation of the AFAC guidelines at 3.4). This will reduce the likelihood of there being any inconsistencies with NSW SES legislation and/or policy.

NSW SES General Floodplain Risk Management Advice

To ensure that these and other flood management issues in the landuse planning context are fully considered please refer to the following guidelines developed by the then Department of Land and Water Conservation for the Hawkesbury-Nepean Flood Management Advisory Committee as part of the Hawkesbury-Nepean Flood Management Strategy:

- Building Guidelines
- Landuse Guidelines
- Sub-Division Guidelines

These documents can be found on the NSW SES web site at:

<http://www.ses.nsw.gov.au/communitysafety/floodsafe/hawkesbury-nepean-floodsafe>.

The NSW SES recommends that consideration of flooding issues is undertaken in accordance with the requirements of NSW Government's Flood Prone Land Policy of which the FDM and relevant planning directions under the *Environmental Planning and Assessment Act, 1979* (NSW) set out guidance on how to comply with the policy.

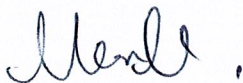
As with all such matters, the consent authority will need to be satisfied that the planning proposal demonstrates consistency with the NSW FDM. In this regard, attention is drawn to the following principles outlined in the FDM which are considered to be of particular importance to the NSW SES role as described above:

- Development should not result in an intolerable increase in risk to life, health or property of people living on the floodplain.
- Risk assessment should consider the full range of flooding; including events up to the PMF and not focus only on the 1% AEP flood (see FDM section 2.4, page 7).
- Risk assessment should have particular regard to flood warning and evacuation demand on existing and future access/egress routes. Consideration should also be given to the impacts of localised flooding on evacuation routes.
- In the context of future development, self evacuation of the community should be achievable in a manner which is consistent with the NSW SES's principles for evacuation.

- Development must not conflict with the NSW SES's flood response and evacuation strategy for the existing community.
- Evacuation must not require people to drive or walk through flood water.
- Development strategies relying on deliberate isolation or sheltering in buildings surrounded by flood water are not equivalent, in risk management terms, to evacuation.
- Development strategies relying on an assumption that mass rescue may be possible where evacuation either fails or is not implemented are not acceptable to the NSW SES.
- The NSW SES is opposed to the imposition of development consent conditions requiring private flood evacuation plans rather than the application of sound landuse planning and flood risk management (refer to section D5.7 and N7.2 of the FDM).

I trust that the above advice will assist in the East Leppington (Liverpool Part) precinct planning process and, more generally, in the future strategic planning for the Northwest and Southwest Growth Centres. Please contact me on (02) 4251 6638 if you wish to discuss this submission further.

Yours sincerely,



Marcus Morgan
Landuse Risk Management Officer
NSW State Emergency Service

CC: NSW SES Deputy Region Controller Sydney Southern Region