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Attention:

Riverstone Police Station Development – JRPP-09-3146 – Flooding Issues

JRPP business paper prepared for a JRPP meeting on 26 Aug 10 contains comments and questions in relation to flooding issues at the site of the proposed Riverstone Police Station. At the meeting (on Thursday 26 Aug 10) after some discussion of what information was expected to have been provided prior to the meeting- the Project Manager was asked to address various flooding issues raised by council.

The subject areas to which comments and questions generally relate are

1. The Design Flood Level
2. Hazard Classification
3. Warning
4. Evacuation
5. Technical Nature of Response

Although the site is zoned 5A – Special Purposes – Police Station there were no zoning related issues raised in the context of flooding.

Flood Related Issues for This Development

The References for the subject are -

- A: The Floodplain Development Manual 2005 – NSW Government (Referred to in the following text as "The Floodplain Development Manual")
B: Floodplain Management in Australia -Best Practice Principles and Guidelines CSIRO 2000 (Referred to in this text as "CSIRO Floodplain Management in Australia")
C: JRPP report submitted to JRPP on 12 Aug 10 (Referred to in the following text as "The JRPP Report")

1. The Design Flood Level

- The basic Design Flood Level is the 1%AEP flood level (with 500mm freeboard added for habitable floor level setting). In several parts of the JRPP report (pages 3,4 and 44) Council appears to agree with The Floodplain Development Manual (page K-1) that the 'normal' design flood event for the site is the 100 yr flood level.
- The Floodplain Development Manual suggests that for police stations (and other similar facilities) consideration be given to adopting the PMF for design flood level - but - as is stated in that manual and in CSIRO Floodplain Management in Australia

....."In general, it is economically and practically infeasible to provide complete flood protection up to the PMF event. As a result, lesser flood events are typically adopted for planning and development purposes, that is, defined flood events (DFEs), and represent a compromise between the level of protection we can afford and the risk we are prepared to take with the consequences of larger floods"

Notwithstanding the fact that the design flood level is the 100yr flood level, flood levels in the Railway Terrace area (according to the model) have an unusually large interval between the 1%AEP level and the PMF meaning that any flood, slightly worse than the 1% AEP event, will inundate the ground floor.

2. Hazard Classification

Council has classified the site as 'high hazard' from a 'hazard map' for the whole area- and not from an analysis of the specific site. The hazard map is contoured for various floods. With the hazard map approach, part of the site would be within the high hazard map, based on an assessment against appendix L of The Floodplain Development Manual. At the time of preparation of the hazard map, without having any details of the proposed development, council would be obliged to classify the whole of the site as 'high hazard'.

Appendix L of The Floodplain Development Manual provides a basis for a specific site assessment.

Relevant aspects of the hazard assessment method are

Hydraulic Categories – Floodway, Flood storage and Flood Fringe. The Riverstone Police Station site is generally in the hydraulic category 'Flood Fringe' consistent with the nature of the flooding (backwater flooding), with little or no flow velocity.

Hazard Categories – there are 2 (see attached)

- **High hazard** = possible danger to personal safety; evacuation by trucks difficult; able-bodied adults would have difficulty in wading to safety; potential for significant structural damage to buildings.
- **Low hazard** = should it be necessary, truck could evacuate people and their possessions; able-bodied adults would have little difficulty in wading to safety.

The starting point for the determination of hazard categories is figure L1 and L2 on page L3 of appendix L of The Floodplain Development Manual (see attached) . These two figures together seek to describe high hazard and low hazard in terms of a combination of water depth and water velocity. An assessment based on the figure L1 and L2, provides a provisional hydraulic hazard categorization which is then considered against nine other factors that influence the flood hazard. These factors are

- size of the flood
- effective warning time
- flood readiness
- rate of rise of flood waters
- depth and velocity of flood waters
- duration of flooding
- evacuation problems
- effective flood access; and
- type of development

For the Riverstone police station site, the south and south western parts of the site will have water depths in excess of 1 m at zero or low velocity and would therefore be classed as high hazard.

The Northern part of the site, where the design is specifically based on the needs for evacuation in a 100 year flood or worse, has a different hydraulic hazard category. From the RL17.8 ground floor of the building, a pedestrian could walk across an area unaffected by the flood and

evacuate to the north along Elizabeth Street. For a vehicle, evacuation from the site in the 100 year flood conditions, involves passing over the Elizabeth Street gutter where a zero velocity water depth of 500 – 600mm would exist (according to the flood study – and without any local modification to the kerb and gutter).

In consideration of the nine additional factors listed above, noting that the hazard categories are based on a truck, the northern part of the site (ie. that part of the site to which evacuation issues relate) can be classified as **Low Hazard**.

Additional specific situation in Elizabeth Street.

The JRPP report (page 37) describes a particular situation in Elizabeth Street, claiming that there will be flows of 2.9m/sec and water depths of 0.25m.

It is necessary to see the detail (the derivation) of 2.9m/sec at 0.25 m depth but it is presumed, and I believe confirmed by council on 26 Aug 10, that this velocity and depth (upon which there is a good deal of reliance – for the purpose of supporting a high hazard classification) occurs in the gutter and on the road pavement, and that elsewhere off the road, the combination of depth and velocity would easily be in the low hazard range i.e. with a very small velocity/depth product.

If this presumption were not correct, then the flood flow across the 20m total width of Elizabeth Street (boundary to boundary) would be in the order of the 14.5 cubic metres per second. A more likely maximum flow at the bottom of Elizabeth Street, across the total width of the street, would be about 9 cubic metres per second during the design storm (the ARI100 storm) – using a sub catchment area of 120,000 square metres.

Having claimed the high hazard classification, the JRPP report then advances the claim that there is significant risk to life. Is reasonable to assume that evacuating personnel will chose to walk up Elizabeth Street via the footpath and nature strip rather than in the gutter – in any case, gutter flows will be significant in Elizabeth Street for some distance above the police station site but only during the period immediately following a high rainfall event. As soon as gutter flows reach the flood backwater at the bottom of Elizabeth Street the flow velocity will be dissipated.

Hazard classification – CSIRO Floodplain Management in Australia

CSIRO Floodplain Management in Australia has a simpler approach to hazard classification, as illustrated on the attached diagram.

Hazard Classes are **Extreme, High, Medium, Low** based on position relative to flood water (see attached). A hazard category for a police station can be either low or medium where the hazard classification is

- Low – above the DFE + freeboard – but within the PMF
- Medium – partially within the defined flood fringe - partially under the DFE – partially above the DFE

Under the CSIRO Floodplain Management in Australia hazard classification system the Riverstone Police Station Site classification is Low to Medium (at northern end of site where access egress required during flood) - and High at southern and south western end of site where access/egress NOT required during flood

Threat to the Structure

It is noted on page 38 of the JRPP report, based on a chart (on page 39) prepared for a single storey brick veneer house, that, at a minimum, the police station has a high to the extreme risk of structural damage with the proposed ground floor level at RL17.8. The validity of using this chart for a reinforced concrete and steel building is questionable. A reinforced concrete structure built to AS3600 will not suffer structural damage in most flooding situations, in particular, backwater flooding. This has been confirmed by the project structural engineers (Birzulis and Associates)

3. Warning

There are 2 aspects related to warning time..... **Weather Forecast and Flood Level Forecast**
Bureau of Meteorology advice 24 Aug 2010 is that a rainfall event or series of events leading to widespread 100 year flooding (or worse) in the Sydney Region would be forecast at least 5 days in advance. A 100 yr flood in this catchment, is at least a 72 hr event (i.e. 72 hours of rainfall) and the flood study forecasts a rise in the flood level of about 500mm per hour at the peak.

Flood Level forecasts (Emergency Services responsibility) provide warning time for evacuation from the Police Station in terms of hours.

4. Evacuation

Personnel evacuation from the police station, involves walking a short distance up Elizabeth St via a low hazard area. (velocity x depth is < 0.4 on footpath and nature strip and will only be a factor when rain is falling). The claim that overland flow in Elizabeth St has a depth of 250mm and a velocity of 2.9m/sec is highly questionable and has been addressed above. A reasonable person would not expect to evacuate the building during the storm event which would produce this flow. The rainfall event would have a duration of less than 1 hour and a reasonable person would wait for cessation of the rain before moving from the building.

Truck and genuine 4wd vehicle evacuation via the Elizabeth Street driveway from the police station site at 100yr flood level is not a problem. For cars (not part of the hazard classification) the depth of water at kerb across current crossover location exceeds the safe limit (see diagram L1 on the attached). Obviously there is a need to move cars earlier.

Note:

Whilst not always evident, it should be noted that for hazard classification and evacuation purposes, The Floodplain Development Manual has been prepared for a residential scenario.

For The Riverstone Police Station – these factors (hazard and evacuation) would collectively pose a lesser problem than the same factors would pose for a resident in an equivalent situation with household goods and belongings to consider in the evacuation process.

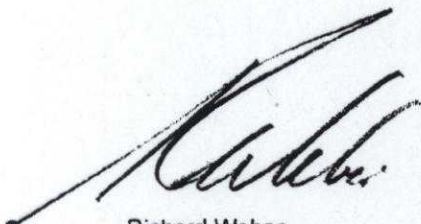
5. Technical Response

A technically rigorous approach in response to opposition to the project on issues related to flooding, would involve a detailed critique of the hydrological model and the flood routing model. As with any predictive model there would be disagreement with the input parameters such as

- surface characteristics
- rainfall intensities
- storm temporal patterns
- water course geometry (particularly cross sectional shapes in the flood routing model)

It would not be reasonable to revisit the fine detail in all of the modeling related to this project – unless a particular piece of information looks questionable. Data from flood studies has to be accepted for the time being, including the unusually high difference between the ARI100 level and the PMF (9.1m)

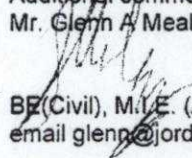
In terms of technical content of responses – the flood study results are based on a collection of probabilities, predictive models & highly infrequent events and to take an excessively technical approach is to place too much credence in the hydrological design process.



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Attachments:

Extract from The Floodplain Development Manual - pages L-2,L-3,L-4 (Hazard Classification)
Extract from CSIRO Floodplain Management in Australia page xvi (Hazard Classification)

flood flow, which may in turn adversely affect other areas. They are often, but not necessarily, areas with deeper flow or areas where higher velocities occur.

Flood storage areas are those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood. If the capacity of a flood storage area is substantially reduced by, for example, the construction of levees or by landfill, flood levels in nearby areas may rise and the peak discharge downstream may be increased. Substantial reduction of the capacity of a flood storage area can also cause a significant redistribution of flood flows.

Flood fringe is the remaining area of land affected by flooding, after floodway and flood storage areas have been defined. Development in flood fringe areas would not have any significant effect on the pattern of flood flows and/or flood levels.

In determining appropriate hydraulic categories, it is important that the cumulative impact of progressive development be evaluated, particularly with respect to floodway and flood storage areas. Whilst the impact of individual developments may be small, the cumulative effect of the ultimate development of the area can be significant and may result in unacceptable increases in flood levels and flood velocities elsewhere in the floodplain.

L4 Determination of Hydraulic Categories

In all but the simplest flow situations, the results of a flood study will be required to determine hydraulic categories. A flood study involves a detailed hydraulic analysis of flood behaviour for a range of flood severities up to the PMF, and generally involves the use of numerical or physical models (see Appendix F). A flood study provides details of peak depths and velocities across the floodplain, the pattern and timing of flooding, etc.

It is impossible to provide explicitly quantitative criteria for defining floodways and flood storage areas, as the significance of such areas is site specific. The following guidelines, although general, are given to assist in the delineation of flooding and flood storage areas:

Floodways are areas conveying a significant proportion of the flood flow and where partial blocking will adversely affect flood behaviour to a significant and unacceptable extent. It is essential that this be investigated across the full range of potential floods as the definition of the floodway is one of the critical steps in the floodplain risk management process.

Flood storage areas - those areas outside floodways which, if completely filled with solid material, would cause peak flood levels to increase anywhere by more than 0.1 m and/or would cause the peak discharge anywhere downstream to increase by more than 10%.

Areas being tested by the above criteria should be treated as contiguous entities, having regard for topography and location within the overall flood-prone area. They must not be separated or considered in a piecemeal fashion.

L5 Determination of Hazard Categories

Hazard categories are broken down into high and low hazard for each hydraulic category. These can be defined as:

- high hazard possible danger to personal safety; evacuation by trucks difficult; able-bodied adults would have difficulty in wading to safety; potential for significant structural damage to buildings.
- low hazard should it be necessary, truck could evacuate people and their possessions; able-bodied adults would have little difficulty in wading to safety.

A comprehensive analysis of flood hazard to establish risk can only be made from within the strategic framework of a floodplain risk management plan. The plan requires the detailed results of a flood study and an assessment of all the factors in Section L6, such as flood warning, flood awareness, flood readiness, possible evacuation problems, etc. The process involves firstly evaluation of hazard level from pure hydraulic principles, and then refining the hydraulic hazard category in light of other relevant factors affecting the safety of individuals. Figures L1 and L2 have been prepared to allow initial hazard categorisation on hydraulic considerations alone. Figure L1 shows approximate relationships between the depth and velocity of floodwaters and resulting hazard. This information has been used to define the provisional low and high hazard categories of Figure L2.

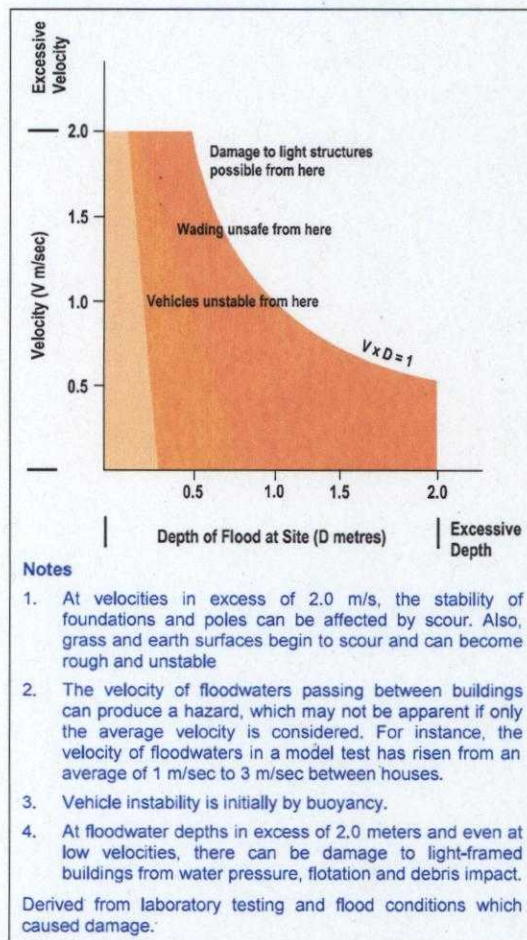


FIGURE L1 - Velocity & Depth Relationships

These categories are provisional because they do not reflect the effects of other factors that influence hazard. In effect, the two diagrams provide a starting point for the determination of hazard categories. When the other factors that affect hazard are identified and qualified, the provisional hazard categories of Figure L2 should be revised if necessary to develop true hazard categories.

For instance, the impacts associated with a particular hazard category, in an existing developed area, may be reduced if an effective local flood plan is developed, implemented and maintained under the guidance of the SES.

However, even plans with effective in-built maintenance mechanisms (such as local flood plans prepared under the guidance of the SES) cannot be guaranteed to overcome flood risk nor do they change the degree of hazard itself, ie. if they do not work effectively the level of hazard is unchanged. Maintenance of local flood plans and floodplain risk management plans is necessary to ensure that they remain

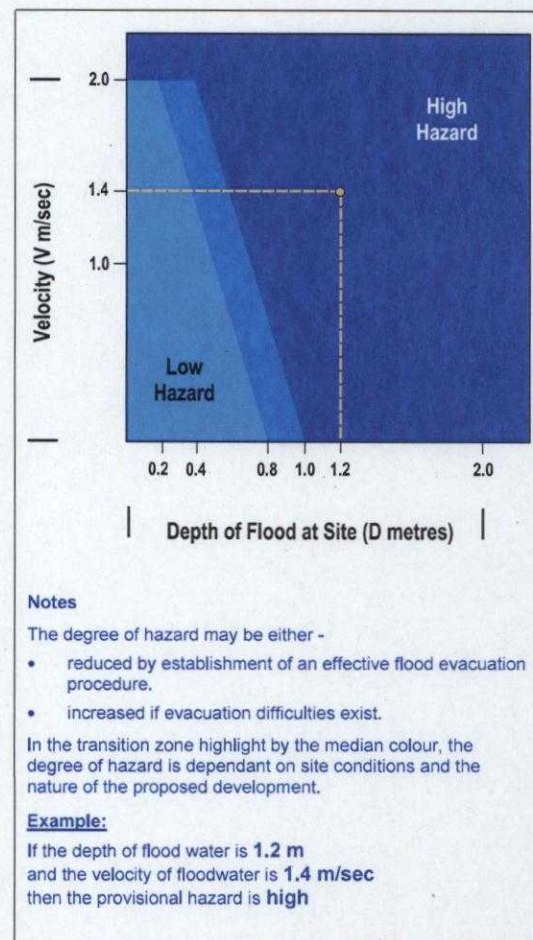


FIGURE L2 - Provisional Hydraulic Hazard Categories

appropriate in the light of future changes within the catchment and in management policies, procedures or practices.

It should be noted that evacuation measures proposed in private or site specific flood plans (see Section N7) for individual developments, outside the development types considered appropriate in the management plan, is not an appropriate measure to rectify adverse impacts, to manage the consequences of inappropriate decisions or to override the management plan. Therefore private or site specific flood plans should not form the basis for development consent.

It may be necessary to increase the hydraulic hazard classification derived from Figures L1 and L2, from low to high, if there are substantial difficulties associated with the evacuation of people and their possessions. In assessing these aspects, it is necessary to consider the difficulty of the conditions that could be expected if an extreme flood occurred.

Figure L2 is presented as a tool to assist in the development of hazard categories in floodplain risk management plans. It is not appropriate to use Figure L2 to determine the hazard implications of individual developments. Flood hazard, like flood hydraulics, needs to be assessed on an integrated and strategic basis across the entire flood prone area, not on an isolated basis associated with individual developments.

To use Figure L2, it is necessary to know the average depth and velocity of floodwaters at various places in a flood prone area. The depth of floodwaters is the difference between the flood level and the ground level. The velocity of floodwaters is obtained from the results of a flood study, or pending the completion of such studies, from an assessment of available flood information or data.

As part of the floodplain risk management study, it may be appropriate for council to prepare 'hazard maps', which define areas of low and high hazard across the flood prone area for the potential range of floods. Detailed maps may also be prepared for floods associated with the FPLs and the PMF, with less detailed maps for other floods as required. Such maps can be used to assess the consequences of the hazard for existing and future development areas on flood prone land.

L6 Factors Which Determine the Flood Hazard

Provisional flood hazard categorisation based around initial hydraulic evaluations does not consider a range of other factors that influence flood hazard. Therefore provisional hazard categorisation should be used with the following factors, (which are discussed in detail below) to determine true hazard categories:

- ☐ size of flood;
- ☐ effective warning time;
- ☐ flood readiness;
- ☐ rate of rise of floodwaters;
- ☐ depth and velocity of floodwaters;
- ☐ duration of flooding;
- ☐ evacuation problems;
- ☐ effective flood access; and
- ☐ type of development.

Other factors, such as the complexity of the stream network and the inter-relationship of flows between streams will need to be considered, as appropriate.

L6.1 Size of the Flood

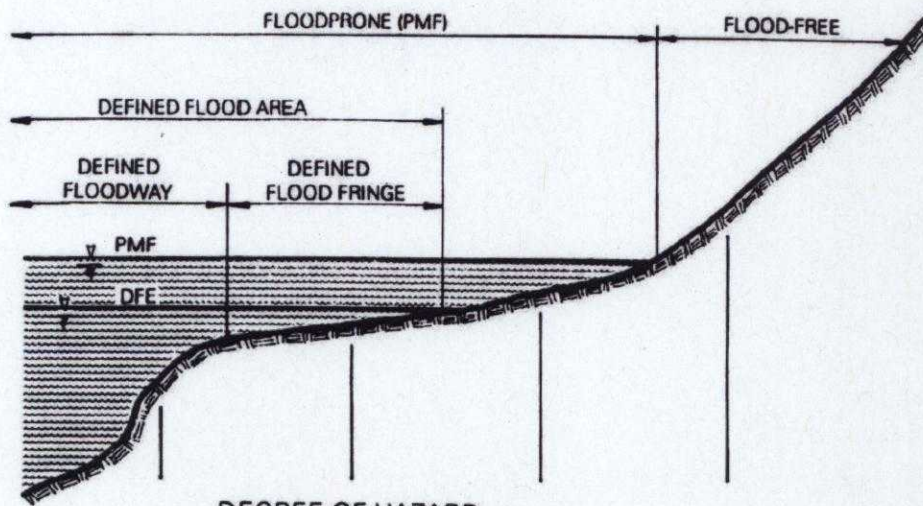
The size of a flood and the damage it causes varies from one event to another. Small floods generally cause minor damage and community disruption. Mid range floods can cause significant disruption and damage. Large floods, although rare, can cause massive damage and disruption. Unfortunately, it is impossible to predict in advance when flooding will occur. Also, there is no guarantee that, if a major flood has occurred recently, another perhaps larger flood will not occur in a relatively short period of time (see Table A1).

L6.2 Effective Warning Time

The effective warning time, or actual time available for people to undertake appropriate actions (such as raise pumps, lift or transport belongings and/or evacuate) is always less than the total warning time available to the emergency services. This is because of the time needed, firstly, to alert people to the imminence of flooding (by radio, loud-hailer, television, word of mouth or other means), and secondly, to have them begin effective property protection and evacuation procedures.

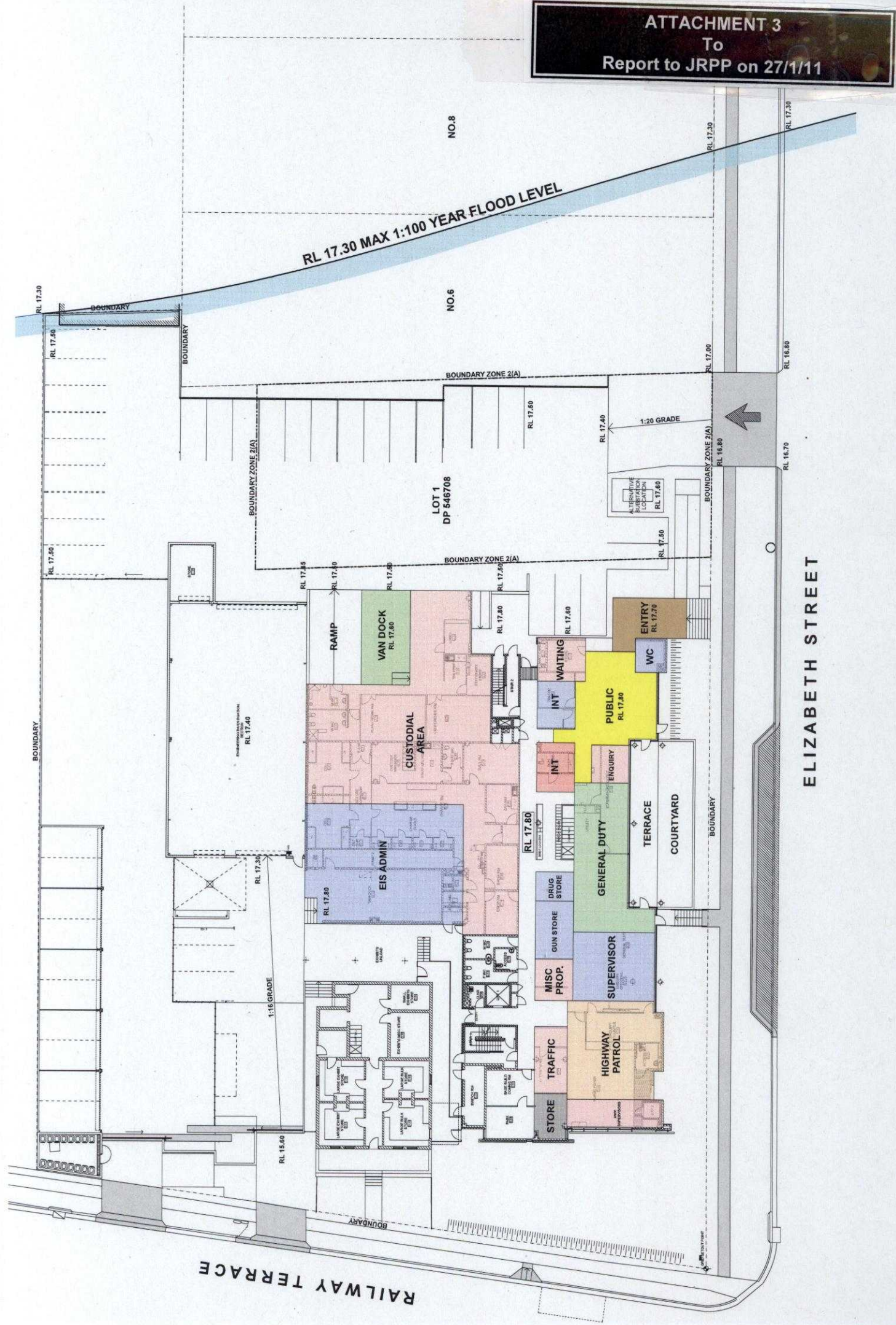
The consequences of flooding can be reduced if adequate time is available and is well utilised. However, even if people are fully evacuated along with transportation of possessions, a flood will generally still cause significant damage to the structural fabric of buildings, to stock and crops, to urban infrastructure and still wreak substantial community disruption. People are temporarily displaced from their homes and workplaces, flood-affected buildings need to be cleaned and restored, and transported possessions have to be returned. The whole process costs time and money and endangers lives and affects health.

Total available warning time is determined largely by catchment characteristics. The larger the catchment and the slower the rate of rise of floodwaters, the longer the available warning time. Some towns on the large western rivers of NSW have warning times measured in weeks. In contrast, warning times for coastal rivers and coastal areas in New South Wales are often



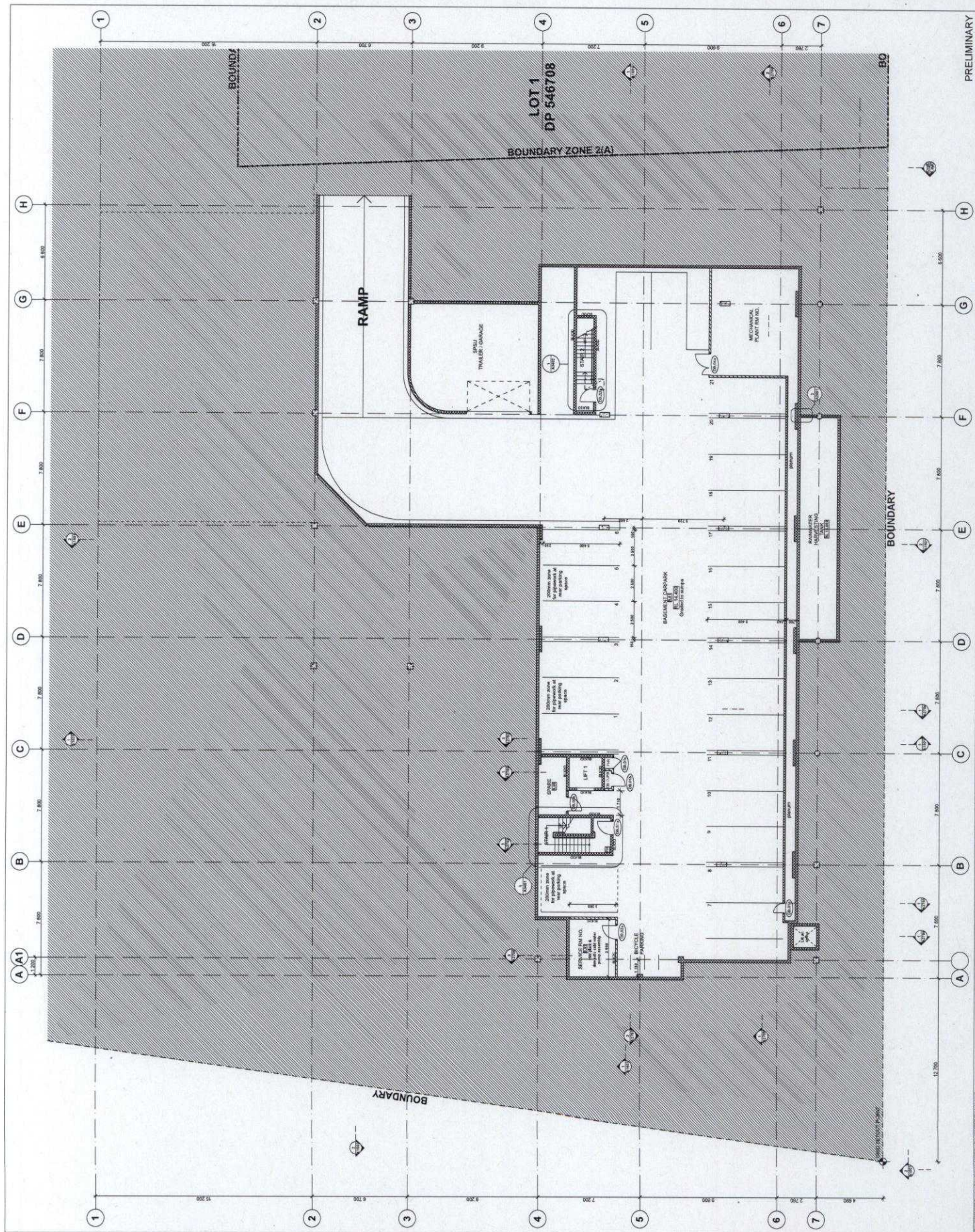
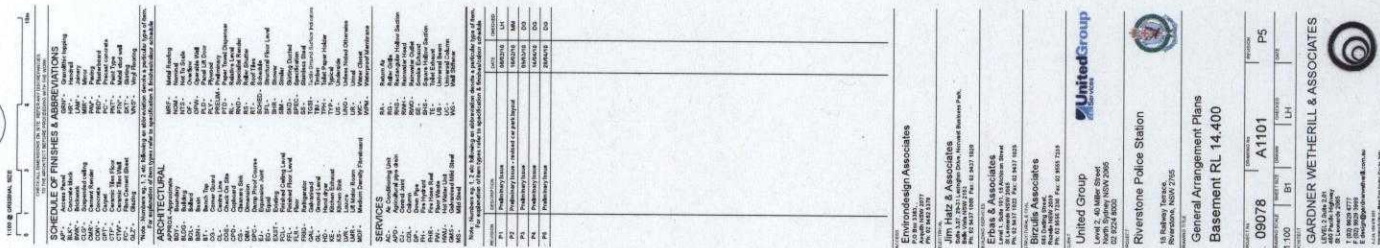
DEGREE OF HAZARD

Extreme	High	Medium	Low
Rural Recreation Open Space Environment	Rural Recreation Open Space Environment Commercial* Industrial* Clubs*	Rural Recreation Open Space Environment Residential* Commercial* Industrial* Clubs* Schools* Public Institutions Caravan Parks Council Police	Rural Recreation Open Space Environment Residential Commercial Industrial Clubs Schools Public Institutions Caravan Parks Council Police Telephone Exchange SES Hospitals Homes for Elderly Museums/Libraries
	* with special controls	* with special controls	



ELIZABETH STREET

RAILWAY TERRACE



RIVERSTONE POLICE STATION

FLOOD EMERGENCY RESPONSE PLAN (FERP)

Flooding Solutions Advisory Group

REF: C0100830-R1.01
ISSUE No. 2
3 November 2010

REPORT ISSUE REGISTER

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1	Preliminary	Con Vink	Con Vink		2 Nov 2010
1	Draft	Con Vink	Con Vink		3 Nov 2010
2	Draft	Con Vink Lindsay Henry	Con Vink		4 Nov 2010
3	Final	Con Vink Lindsay Henry	Con Vink		5 Nov 2010

REPORT AMENDMENT REGISTER

Rev. No.	Section & Page No.	Amendment Description
1	N/A	Original Issue
2	Throughout	Updated with survey levels etc
3	Pages 9 and 10	Additional information provided by NSWPF.
4	Pages 6 and 7	Clarification of Alarms

FINAL DRAFT ACCEPTED BY:

AUTHOR:

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Date:.....

REVIEWER:

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Keith Jackson

Date:

Signing for and on behalf of Flooding Solutions Advisory Group

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APPENDIX A	A1
Site Plan	

1. SITE BACKGROUND INFORMATION

1.1 Site Orientation

The Riverstone Police Station is located at the corner of Elizabeth Street and Railway Terrace. Railway Terrace runs roughly north-south, while Elizabeth Street runs roughly east-west.

1.2 Site levels

Critical levels at this site are tabulated as follows.

Location	Level (metres, Australian Height Datum)
Ground Floor	17.80
Engineering Investigation Section	17.40
Basement	14.40
Threshold at crest of ramp to basement	17.50
Exhibits stores (old building)	16.60
Rear car park, northern boundary	17.50
Site boundary at Elizabeth Street driveway	16.80
Gutter level at Elizabeth Street driveway	16.60
Lowest level on site (at northern end of Railway Tce frontage - north-west corner)	15.30

Refer to the attached **SITE PLAN** in the Appendix.

1.3 Site Occupation

The maximum number of staff expected to be on site at any time is 38, including both front-line and non-sworn staff.

Quakers Hill Local Area Command has stated that the number of detainees being held may vary. It is noted that the proposed Custodial Area has four Charge Docks and two Cells, with a maximum capacity of six cell beds.

In addition to staff on site, it is expected up to 68 staff will be actively engaged 'off site' at peak times, such as during a flood emergency.

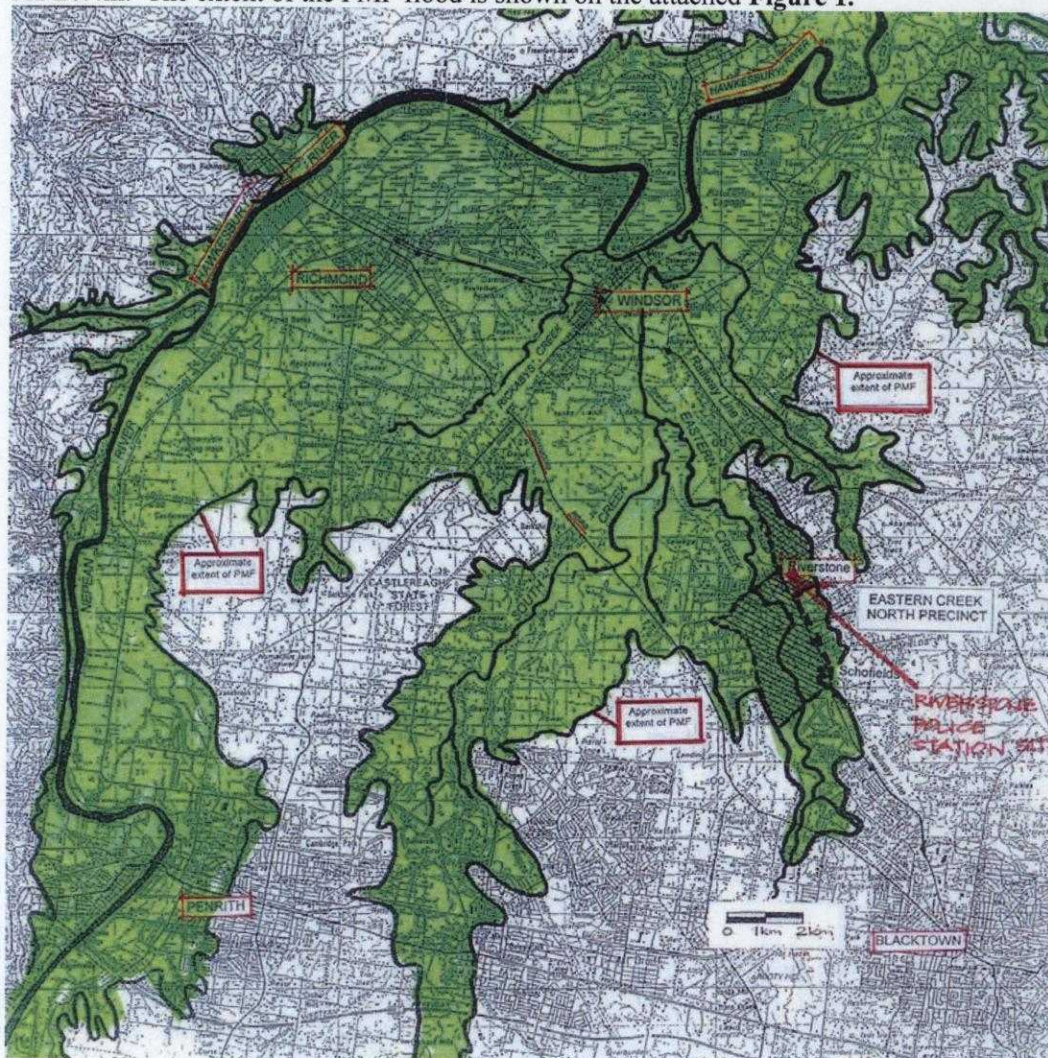
Note: Riverstone Police Station will have a total Major Shift of 106 staff (consisting of 38 on site and 68 off site staff).

2. FLOOD BACKGROUND INFORMATION

2.1 Flood Catchments

The Riverstone Police Station is located within the catchment of Eastern Creek, which is itself within the catchment of the Hawkesbury-Nepean River.

Both catchments have a long history of flooding, with the highest recorded flood level to date being RL 19.7m on Australian Height Datum (AHD). This flood occurred in 1867. However, the highest possible flood level, known as the PMF (Probable Maximum Flood) is RL 26.4m. The extent of the PMF flood is shown on the attached **Figure 1**.



2.2 Flood Levels

Reference flood levels are given in the following table, for a range of Average Recurrence Intervals (ARI).

Details	Flood Level (M, AHD)	Height relative to ground floor
100-year ARI	17.30	0.5m below floor level
Highest recorded flood	19.7	1.9m above floor level
250-year ARI	19.3	1.5m above floor level
PMF	26.40	8.6m above floor level

3. EVACUATION

3.1 Timescale

The rate of rise of flood levels varies depending on the storm location and intensity. The rate of rise for the 1978 flood was measured at 0.5m per hour.

There is no way to predict what will be the rate of rise of flood waters in any particular flood, or the peak level reached, based only on meteorological reports.

There is no way to predict the location of police vehicles at any time during a flood event.

There are no automatic flood recording devices or alarm systems in the area.

Therefore it is not feasible to base an evacuation plan solely on the basis of meteorological reports or on reports from police vehicles outside the site.

Accordingly, this evacuation plan is based initially on advance notice from the SES or police vehicles, but ultimately on alarms which will be located within the police station site.

3.2 Flood Precautionary Steps

The State Emergency Service has promised to provide NSW Police with 3 days notice of impending flood events. However, a good indication of flood risk is the river level at Windsor Bridge.

When flooding is reported at the Windsor Bridge, make preliminary plans for evacuation of personnel and prisoners. This should not be left until the flood warning alarms are activated on site.

Procedures for evacuation and determining where personnel and prisoners are to be relocated in the event of evacuation are contained in the Business Continuity Plan attached to this FERP.

- Make a count of the number of personnel on site and the number of prisoners.
- Calculate how many vehicle trips will be needed for transfer of prisoners.
- Ensure that sufficient vehicles are available, or if multiple trips are required, estimate the round trip time and thereby estimate how long it will take to evacuate all prisoners.

3.3 Alarms

There will be two alarm sensors, located at the lowest point of the site.

The 'First' alarm sensor, will provide an warning signal via the buildings PA system, throughout the entire facility, and will register that flood waters have now entered the site. This will result in a warning message on the building management system.

The warning message will state the following:

WARNING

Flood waters have entered the police station site.

This flood alarm is at RL 15.4 and was recorded at [REDACTED] hrs.

Evacuate all prisoners from Custodial Area and all vehicles from the basement car park.
DO NOT use Railway Terrace as it will already be subject to flooding.

The 'Second' alarm sensor, will provide another warning signal via the buildings PA system, throughout the entire facility, and will register that flood waters have reached the top of kerb level at the Elizabeth Street driveway. This will result in a second warning message on the building management system. The warning message will state the following:

WARNING

Flood waters have rendered the Elizabeth Street driveway impassable to passenger cars.

This flood alarm is at RL 16.75 and was recorded at hrs.

_____ minutes have elapsed since the previous alarm, representing an average rate of rise of _____ metres/hour.

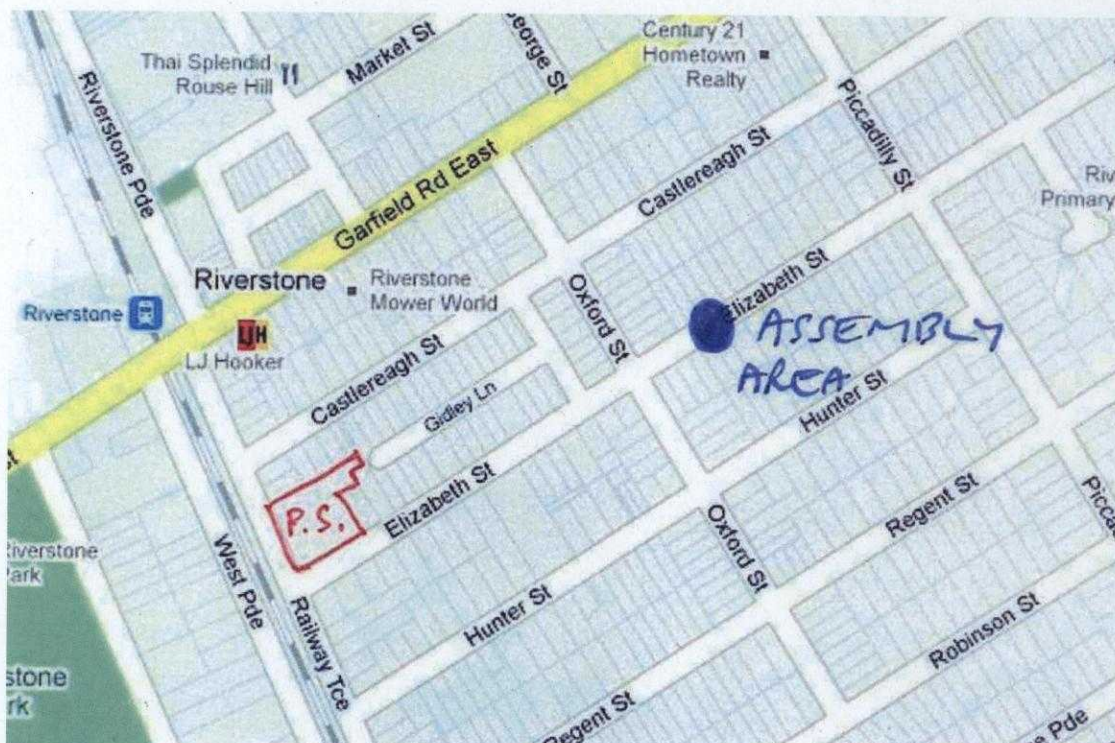
At this rate of rise, the flood waters will enter the basement in minutes, and will be above ground floor level in minutes,

Proceed to evacuate all personnel from the entire Police Station.

3.4 Evacuation Route

The principal evacuation route will be via Elizabeth Street, proceeding in a north-easterly direction to higher ground. At a distance of roughly 350 metres from the Police Station, just past Oxford Street, ground levels are above Probable Maximum Flood levels. Personnel who have evacuated the site and are awaiting transportation should assemble in this area.

Refer to **Figure 2** below.



3.5 Evacuation – Stage 1

At this time, any prisoners and disabled staff remaining on site are to be evacuated from the site. All vehicles must be driven out of the basement car park, and progressively all vehicles should be driven from the site to high ground.

Elizabeth Street will still be trafficable to normal passenger cars in the direction away from Railway Terrace.

Vehicles should be driven to high ground, preferably above the Probable Maximum Flood level (roughly 350 metres from the Police Station, just past Oxford Street) so that there will be no possible need for them to be moved a second time.

Based on a typical flood rise time of 0.5 metres per hour, there should be approximately 2-1/2 hours to relocate passenger vehicles before the driveway becomes impassable due to rising flood waters.

When relocating vehicles, start relocating vehicles with low ground clearance first, such as passenger cars, followed by vehicles with higher ground clearance, such as true 4-wheel drive vehicles and light trucks.

Some high-clearance vehicles may be left parked in Elizabeth Street a short distance uphill from the Police Station in the event that Stage 2 Evacuation is required, to ferry passengers who may not be able to walk to the parked vehicles.

3.6 Evacuation – Stage 2

At this time, all remaining personnel are to be evacuated to other flood-free sites and the Police Station secured in accordance with the Business Continuity Plan.

Elizabeth Street will be impassable to passenger cars at the driveway. Accordingly, personnel should travel on foot along the footpath of Elizabeth Street.

All staff located off site, are to be instructed not to return to this Police Station.



4 NSW POLICE – CONTINUITY PLAN

The following information was provided by NSW Police - Quakers Hill Local Area Command, following a meeting of 14th October 2010 to address Police operational and evacuation procedure protocol, in the event of an emergency flood.

4.1 Flood Emergency Response Plan

Operational protocol for the manning of the proposed Riverstone Police Station during a flood situation would undertake the following procedures:

- 'Flood sensor alarm notification' will alert all officers and staff on duty, and the Business Continuity Plan will then be activated – that is, dispatching staff and offices to accommodation as provided by another State Government Department and listed in the Business Continuity Plan.
- Auxiliary unsworn staff will be housed at various Police Stations within the North West Metropolitan Region. Staff will have the ability to work from remote locations.
- 'First Response Police' will work out of the accommodation as note above.
- Mobile Command posts will also be utilised.
- The Riverstone Police Station building will then be secured with its own security system.

4.2 Maximum numbers of staff on site and persons in custody

The number of police on site depends on the day/night of the week according to workload. The number of persons in custody at any one time varies. However, Quakers Hill Local Area Command have indicated that the 'maximum staff on hand' (being sworn and unsworn) at the proposed Riverstone Police Station would be approx. 38 persons.

4.3 Staffing Details

Including responsibility levels (managers etc) and their availability on site.

Local Area Commander – overall Command (available Mon – Fri or in emergency)
Duty Officer – Line Command (as above or 24/7 on Shared Duty Officer weeks)
Shift Supervisor – Shift Manager (every shift – day and night)
Local Area Manager (Monday to Friday or as needed)

4.4 Vehicle Details

Being used for transportation of prisoners (in terms of flood clearance)

State Emergency Services (SES) has indicated that New South Wales Police would receive a minimum of three (3) days notice of an impending backflow flood. This is more than ample time to relocate persons held in custody and to also implement alternate custody arrangements as covered in the Business Continuity Plan.

4.5 Relocation of Staff and Vehicles

First Response Policing staff and vehicles would be moved to an alternate location as identified in the Business Continuity Plan.

Non first response staff would also be able to work remotely from various allocated Police Stations within the North West Metropolitan Region.

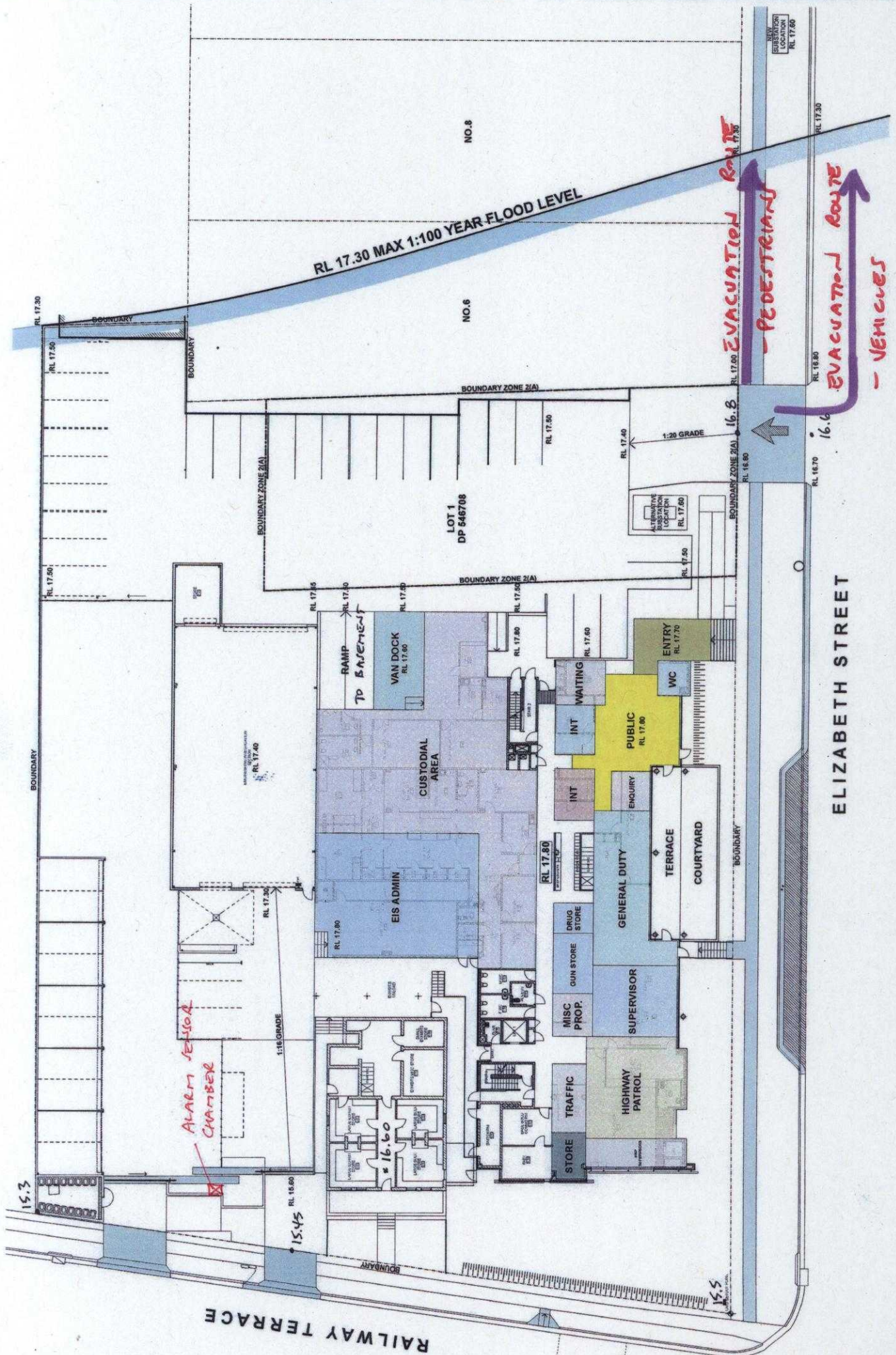
Police will still operate on the same radio channel.

As previously stated, unsworn staff will be relocated and work out of surrounding North West Metropolitan Region Police Stations, depending on their home locations.

In the case of an emergency – only those officers required would be rostered.

APPENDIX A

Site Plan



ATTACHMENT 5
To
Report to JRPP on 27/1/11



UGL Limited
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Ground Floor, 40 Miller Street
North Sydney NSW 2060
Australia
Telephone: +61 2 8925 8925
Facsimile: +61 2 8925 8926

www.ugllimited.com

Blacktown City Council
62 Flushcombe Road
Blacktown 2148

UGL Ref: 201010024

Attention: Perry Bezzina

8th November, 2010

Dear Perry,

RE: Riverstone Police Station Development – JRPP-09-3146

Blacktown City Council has requested additional information to support the proposed development of the NSWPF property at Riverstone. In particular advice has been sought regarding the following;

- Emergency Management
- Development of an Evacuation Management Plan
- Strategic Planning and flooding considerations

The Regional Area Command have reviewed your concerns regarding emergency response procedures and have provided a written response to the issues raised (refer attached).

Please also find attached a copy of the Evacuation Management Plan for the site.

As previously advised the decision to locate the new police station on this site was based on a strategic planning workshop held 18th January, 2006 and supported in the approved Business Case dated 24th January, 2008. Neither of these documents identifies the site as flood prone land however the building has been designed to address the flooding issues, and NSWPF have advised that they have procedures in place to respond to any threat including flooding.

The current Police Station has served the local Riverstone community for over 100 years and is ideally located to service the future community needs within the planned growth centres through the North West Growth Corridor as identified by the NSW Department of Planning.

UGL Services request that Blacktown City Council provide approval for this development and a recommendation to the JRRP that the development proceed.

Yours Sincerely

Andrew Simms
Project Manager



**NSW POLICE
NORTH WEST METROPOLITAN REGION**

Level 10, 130 George Street
PARRAMATTA NSW 2150
Tel: (02) 9689 7035 (Eagle net 79035)
Fax: (02) 9689 7003 (Eagle fax 79003)

Blacktown City Council
62 Flushcombe Road
Blacktown.
NSW 2148

Attention Glennys James.

Construction of a new Police Station at Riverstone

Thank you for giving me the opportunity to discuss concerns previously raised by Council over the planned construction of a new Police Station on the existing Police site at Riverstone. As I indicated at the meeting, the procedures for the evacuation of Police Stations are covered within the Business Continuity Plans prepared by all sections of the New South Wales Police Force. These plans incorporate the arrangements to be implemented for the relocation of a Local Area Command and its function to an alternative location. This would include staff, equipment and any prisoners being held in the cells at the time of the emergency. Commanders are required to certify each year that their Business Continuity Plans have been reviewed and exercised within the previous 12 months and are maintained in a state of readiness.

In relation to emergency management issues, it was indicated at the meeting that in the case of an emergency as defined in the State Emergency Service Act 1989, the new Quakers Hill Police Station is unlikely to be used as an Emergency Operations Centre (EOC) as it is generally accepted that an Emergency Operations Centre should not be located in a police station as there is a risk to occupational health and safety from interaction between prisoners and members of external agencies. In addition to this, there are operational limitations as the majority of incidents/emergencies requiring the opening of an EOC, will involve a significant policing response with a resulting need to command that response from a police station. This command function can be exercised from any police station and if required, from a mobile command vehicle.

A handwritten signature in black ink, appearing to read 'D.I. Clifford'.

D.I. Clifford APM
Assistant Commissioner
North West Metropolitan Region Commander
29 September 2010



Office of Minister for Police

Governor Macquarie Tower
1 Farrer Place
Sydney NSW 2000

Phone: 02 9226 5665
Fax: 02 9226 5699
E-mail: office@daley.minister.nsw.gov.au

ATTACHMENT 6

To
Report to JRPP on 27/1/11

32

107-5-2/36 F

Mr Ron Moore
General Manager
Blacktown City Council
P O Box 63
BLACKTOWN NSW 2148

REFER TO:		M106001
REC'D		B.C.C.
08 NOV 2010 - 3 NOV 2010		
FILE WITH:	LETTER NO:	
BECCIP JEREME	10-43908	

Dear Mr Moore,

Thank you for your correspondence to the Minister for Police, Mr Michael Daley MP, regarding Quakers Hill Police Station. The Minister has asked me to reply on his behalf.

NSW Police Force advises me that there are in fact no plans to sell or close Quakers Hill Police Station.

The NSW Police Force is also building an additional brand new police station at Riverstone designed to accommodate general duties police, the Crime Management Unit and detectives along with Highway Patrol, Anti-Theft Squad and staff of the Quakers Hill Local Area Command.

I am also advised by the NSW Police Force that as at 31 August 2010, the authorised strength of the Quakers Hill Local Area Command was 106 officers, an increase during the term of this government of 40 officers or more than 60%.

These numbers include the addition of two new probationary constables following their attestation in May 2010 from the NSW Police College in Goulburn.

The boost in police numbers in the Quakers Hill Local Area Command is part of this Government's broader commitment to deliver record police numbers right across NSW.

The NSW Police Force has advised me that following the completion of the Riverstone Police Station in 2012, the staffing levels of both Riverstone and Quakers Hill police stations will be reviewed. However I am advised that any reallocation of Police numbers within the Quakers Hill Local Area Command will be made in a manner which preserves a robust Police presence in Quakers Hill.

Priority 4
Reply Optional

Across NSW there are another 400 authorised positions being delivered by December 2011. This is part of our commitment in March 2007 to establish an additional 750 authorised positions, of which we have already delivered 350. This will bring the NSW Police Force contingent to almost 16,000 by the end of 2011.

The new officers will be posted at Local Area Commands across NSW, bringing the number of police in rural and regional NSW to just over 30% of the force.

The NSW Government is also responding to law and order issues in the Quakers Hill Local Area Command and across NSW by ensuring that police have the powers and resources they need to make our society a safe place in which to live.

The Government has given the NSW Police Force a record budget of \$2.8 billion for 2010-2011 to support police in their work of driving down crime and creating safer communities.

Commands across NSW employ intelligence-based policing strategies that are proving effective in reducing crime and anti-social behaviour. An analysis of crime trends and the behaviour of repeat offenders allows commands to deploy officers at those times and to those places where crime is most reasonably expected to occur.

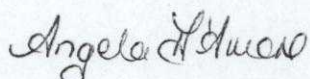
These officers have strengthened current programs and supported new initiatives to reduce crime, violence and community fears and allow a continued focus on frontline policing.

The NSW Police Force continually monitors and analyses workloads and other policing data to ensure the equitable distribution of policing strengths across the State. The needs of the Quakers Hill Local Area Command will be taken into consideration when determining the allocation of probationary constables from upcoming attestations.

Should you wish to discuss the police response to crime in the Quakers Hill area, you may contact the Crime Manager, Quakers Hill Local Area Command on telephone number (02) 9678 8999.

Thank you for Council's interest in this matter.

Yours sincerely,



Angela D'Amore MP
Parliamentary Secretary for Police