

Platino Properties
11/20 Young Street
Neutral Bay NSW 2089

Attention: Paula Mottek

16 June 2022

Dear Paula,

1. Introduction

Platino Properties have applied for a Planning Proposal to rezone the industrial site at 67-75 Lords Road, Leichhardt to mixed residential use. Platino Properties have requested a flood risk and impact assessment based on the Council requirements as specified in their DCP and the State government requirements as specified in the Floodplain Development Manual (2005) and the Section 9.1 Directions for flooding. They have provided a site survey plan and a flood certificate (refer Attachment A) from Council which provides the 100 year and PMF flood levels at the western end of the site and in the adjacent Hawthorne Canal.

2. Site Description

The site consists of two lots being Lot 1 DP 940543 and Lot 1 DP 550608 with a total area of approximately 10,617m². The western boundary of the site is adjacent to the former freight line embankment which separates the area from the Hawthorne Canal which is located on the western side of this embankment. The area along the site western boundary has existing ground levels varying from RL 2.44m AHD at the drainage inlet pit near the southern end of this boundary rising to RL 4m AHD at the northern end. Most of this area is above RL 3.5m AHD. The drainage inlet pit drains to a drainage pipe running under the embankment to the Canal.

The eastern part of the site has significantly higher existing ground levels varying from RL 5m AHD to RL 8.5m AHD. The majority of this area is above RL 6.8m AHD.

Lords Road (along the southern boundary) and the local catchment drains to the pedestrian access tunnel under the former freight rail embankment and to a point adjacent to the south western corner of the subject site. There is a stormwater pipe drainage system in Lords Road which is piped under the embankment to the Canal. Overland flows in excess of the Lords Road pipe capacity would overtop the kerb and drain to the canal via a pedestrian tunnel provided through the embankment. This 3m wide by 3m high tunnel is located adjacent to the south western corner of the site.

3. Flood Behaviour

The flood levels provided by Council from the Cardno 2017 report are presented in Table 1.

Based on the flood levels quoted by Council, the 100 yr flood extent on the site is limited to a narrow section along the western boundary. The existing ground levels in this area range from RL 2.44m AHD around the drainage inlet pit to RL 4m AHD. Lambert Park at the northern boundary of the site is elevated with the playing field and embankment out to the rail embankment at levels from RL

4.5m AHD to RL 5.25m AHD. This embankment would block the 100 year ARI flood flows at RL 4.1m AHD and as such, would not be an overland flow path for the 100 year ARI floods. The flood inundated area along the site western boundary is therefore a flood storage area and not a flow path.

The extent of the PMF flood would be up to the eastern extent of the existing buildings on the site.

Table 1 – Council Flood Levels

Location	Ground level	100 yr flood depth	100 yr flood level	PMF level
Entry to site	3.21	0.89	4.1	6.8
Canal – opp site entry			3.65	5.6
Northern end of site	3.90	0.2	4.1	6.8
Canal – opp northern end			3.6	5.45

The flood hazard in the 100 yr ARI flood at the south western end of the site is recorded by Council as high due to the ponding depth of 0.89m at one point on the site. This is a small area in the south western portion of the site and should not define the flood hazard over the entire site. Elsewhere the flood hazard on the site is low which means the site can be redeveloped without adverse impact on the flooding behaviour and risk to life and flood damages subject to appropriate design of the development. The Council flood hazard plans show that there is only a small area of high flood hazard on the site with the majority of the site being designated as low flood hazard.

4. Proposed Development Concept

The proposed mixed residential development concept will include five buildings which will be based on the following flooding requirements:

- a. Have a minimum habitable floor level at the FPL level of RL 4.6m AHD;
- b. All building surfaces below the FPL would consist of flood compatible materials to reduce the flood damages;
- c. The basement entry driveway crest will be at or above the PMF level at RL 6.8m AHD;
- d. There will be no loss of flood storage on the site due to the development and as such, there would be no adverse impact on flood levels for adjoining developments;
- e. Any sensitive uses such a senior housing will be located at a flood free level (at or above RL 6.8m AHD) and will also have the entry/exit at a ground level at or above

- the PMF at RL 6.8m AHD so that they can access flood free land immediately and proceed eastwards to even higher ground;
- f. The flooding is flash flooding and as determined in the Leichardt Floodplain Risk Management Study and Plan, regional flood evacuation is not possible and the emergency flood response plan is to shelter in place (for less than 2 hours). Residents in apartments/commercial floor space with levels below the PMF level (RL 6.8m AHD) would move upstairs when requested to a flood refuge on floors above the PMF level;
 - g. The flood emergency response plan would include water level activated alarms to initiate flood evacuation to higher levels in each building once the flood level reaches RL 3.5m AHD. There would also be dedicated flood wardens who would undertake door knocking of those apartments with floor levels below RL 6.8m AHD;
 - h. The flood refuge in each building would need to allocate 2m² to each of the people likely to evacuate and have access to drinking water and toilets;
 - i. The buildings would have flood signs providing information and directions for the internal evacuation.

The development concept will have a minor number of residences and commercial floor areas below the PMF flood level but at or above the FPL. There would be approximately seven apartments, four terraces and non residential floor areas below the PMF flood level requiring evacuation in a flood. Therefore, there would be a limited number of people who would have to be evacuated to the flood refuges at higher levels in the buildings during any floods. The vast majority of people in the development would not need to be evacuated in a flood but could shelter in place in their own apartment or terrace.

5. Flood Policy Requirements

The flood policy requirements for the subject site include:

- a. NSW State Government Floodplain Development Manual 2005;
- b. NSW State Government Considering Flooding in Land Use Planning, 2021;
- c. NSW Section 9.1 Ministerial Directions Section 4.1 Flooding, 2021;
- d. Inner West Council Leichardt Floodplain Risk Management Study and Plan, Cardno 2017;
- e. Inner West Council LEP 2013 Section 5.21; and
- f. Inner West Council DCP 2013 Appendix E Water Guidelines Section 2 Flood Risk Management Report.

6. NSW State Government Floodplain Development Manual 2005

The State government requirements for development on flood prone land are outlined in the NSW Government Flood Prone Land Policy and the Floodplain Development Manual 2005.

The policy and manual have been formulated to minimise the flood risk to property and lives without unduly sterilising land for development. They propose a merit based approach to any assessment of

the flood risk and acceptability of development. The Leichhardt Council DCP has been formulated based on the State government flood policies and so adherence to the DCP will generally mean conformance with the State government policies.

The Manual provides a merit based assessment process for development in the floodplain which requires that the risk to life and property damage from floods is managed by adoption of the Flood Planning Level (100yr ARI flood level plus 0.5m freeboard) as the minimum habitable floor level and effective flood emergency response for all floods up to the Probable Maximum Flood (PMF).

The proposed development concept complies with the requirements of this Manual.

The proposed development concept conforms to the State government flood policies and guidelines by having:

- a. the minimum habitable floor level at or above the Flood Planning Level (100 yr ARI flood level plus 500mm freeboard);
- b. no adverse impact on the flood behaviour at adjoining sites;
- c. no adverse impact on the development by the flooding – floor levels meet guidelines and building to have a structural design to resist hydraulic loads imposed by flooding;
- d. flood proofing of the development below the flood planning level to minimise flood damages;
- e. no significant adverse impact on the flood evacuation capacity for the area;
- f. flood free areas only a short distance from the development and within the development;
- g. fail safe vertical evacuation option to shelter in place in flood dedicated refuges above PMF levels in the building; and
- h. a low potential for structural damage to the building in all floods.

7. NSW State Government Considering Flooding in Land Use Planning 2021

This guideline introduced landuse controls on developments above the FPL requiring special flood considerations (SFC) relating safe occupation in a flood and possible adverse environmental impacts during a flood. It identifies important infrastructure such as hospitals and emergency services which need to continue to operate in severe floods, uses requiring high levels of assistance to evacuate during a flood (child care and educational facilities) and hazardous industries that require containment of materials. The recommendation is to give consideration to adoption of a more severe flood than the 100yr ARI event when designing these facilities.

Any senior housing in the proposed development concept would have a floor level at or above the PMF level at RL 6.8m AHD and access to an exit/entry with ground levels at or above the PMF level. In this way, the proposed development concept complies with the requirements of this guideline.

8. NSW State Government Section 9.1 Ministerial Directions Section 4.1 Flooding

- a. Clause (4) requires the proposed planning proposal to be consistent with the NSW Flood Prone Land Policy Floodplain Development Manual, Considering Flooding in Land Use Planning Guideline and the Leichardt Floodplain Risk Management Study and Plan. The discussion in Sections 4, 6, and the following sections of this report discuss the consistency of the proposed development with these policy documents;
- b. Clause (5) is not relevant to the proposed rezoning from industrial to residential;
- c. Clause (6a) – the proposed development concept complies because it does not permit development in a floodway;
- d. Clause (6b) – it complies as there will be no adverse flooding impacts on adjacent properties;
- e. Clause (6c) – it complies because there is no accommodation in high hazard areas;
- f. Clause (6d) – it is inconsistent with the Direction in that the dwelling density would increase on the site, however, in Clause (9), the Direction allows inconsistencies which comply with:
 - i. Clause 9a - in this case it complies with the Leichardt Floodplain Risk Management Study; and
 - ii. Clause 9c – in this case it complies and is supported by this flood and risk assessment report as required in Clause (9c);
- g. Clause (6e) – it complies in that any special considerations landuse such as senior housing would have its own dedicated flood refuge in the building, would have an evacuation entry/exit to site ground levels at or above the PMF level and as such, would effectively evacuate the premises to flood free land without adversely impacted on other people in the development evacuating to dedicated flood refuges in the buildings;
- h. Clause (6f) – it complies because there is no part of the development concept to be carried out without development consent;
- i. Clause (6g) – it complies because there will be no increased requirement for government spending on flood related measures;
- j. Clause (6h) – it complies because there are no hazardous industries or storage facilities proposed;
- k. Clause (7a) - the proposed development concept complies because it does not permit any special flood consideration landuse development in a floodway;
- l. Clause (7b) – it complies as there will be no adverse flooding impacts on adjacent properties;
- m. Clause (7c) – it does not comply in that the dwelling density is increased however, in Clause (9a), it allows inconsistencies which in this case the proposed development concept complies with the Leichardt Floodplain Risk Management Study and Plan and is supported by this flood and risk assessment report as required in Clause (9c);
- n. Clause (7d) – it complies in that any special considerations landuse such as senior housing could effectively evacuate to upper flood refuges in the development (shelter in place due to the flash flooding nature on the site) or off the site to flood free land;

- o. Clause (7e) – it complies because these special consideration landuses will have their own shelter in place facility located above the PMF flood level (flood free) and their own access to flood free land on and off the site so that it would not adversely impact on the safe occupation of or the efficient evacuation of the remaining people in the development concept;
- p. Clause (7f) – it complies because the development would not require any government spending on infrastructure or emergency services because the flooding behaviour is flash flooding which means that evacuation off the site is not recommended in a flood. The recommended emergency flood response is to shelter in place for between 15 to 120 minutes in dedicated refuges or their own apartments which are above the PMF flood level. The development would have all the necessary alarms, signs, wardens and flood procedures in place and not need for any outside assistance in severe floods. This complies with the recommended approach in the Leichardt Floodplain Risk Management Study and Plan 2017;
- q. Clause 8 – it complies because the proposed planning proposal is consistent with the Floodplain Development Manual and the Leichardt Floodplain Risk Management Study and Plan.

9. Council Flooding Requirements

The Leichardt Floodplain Risk Management Study and Plan 2017 provided the predicted flood levels for the site and also identified that the flooding within the catchment would be flash flooding with the PMF flood lasting between 15 to 45 minutes and for the 100 yr ARI flood lasting between 15 to 120 minutes. This means that evacuation of residents and workers to regional refuges would not be possible and as such, the recommended emergency flood response plan is to shelter in place where possible. Also, it was identified that future sea level rises would be dissipated along the canal such that they could be accommodated in the 0.5m freeboard required above the 100 yr ARI flood level for minimum habitable floor levels.

The Council DCP 2013 requirements related to flooding for the proposed redevelopment concept on the site have been derived from Appendix E Water Guidelines Section 2 Flood Risk Management Report of the Council's DCP 2013. The development concept would meet all the requirements as follows:

1. Adoption of a flood planning level (FPL) which is 500mm above the 100yr flood level – FPL=RL 4.6m AHD;
2. All habitable floors to be at or above the FPL;
3. In a mixed use development, non residential floors can be below the FPL provided they are flood proofed;
4. Any entrances or flood evacuation routes have to be at or above the FPL;
5. Basement carparks are required to have an entry at the higher of the FPL or PMF – this will require an entry level of RL 6.8m AHD;
6. Access to the basement from residential apartments has to be controlled such that flood waters can only enter the basement when flood waters exceed the PMF level;

7. All residential dwellings/apartments with floor levels below the PMF flood level (RL 6.8m AHD) will require an evacuation route internally to flood refuges in the development above the PMF;
8. The development would provide compensatory flood storage to offset any loss of 100 year flood storage below RL 4.1m AHD on the site due to the development. This compensatory storage is capable of being incorporated into the development design and will mitigate the need for upgrading any of Council's drainage system between the site and the canal. Any upgrading of Council's drainage pipes to the canal are likely to cause adverse flooding impacts on properties along the canal; and
9. The development would not have a significant impact on the flood behaviour or the flood levels in adjacent properties.

Other stormwater related issues noted from the Council's DCP are:

1. Onsite detention is generally required by Council but as this site already consists entirely of impermeable surfaces, then no detention is necessary;
2. Requires incorporation of stormwater water quality treatment facilities to achieve the stated extent of pollutant removal;
3. Any development should not compromise the existing Council stormwater pipe drainage under the railway embankment from the western boundary of the site.

The proposed development satisfies all these flood related requirements specified by Council.

10. Leichardt LEP 2013

The proposed development complies with Clause 5.21 Flood Planning in the Leichardt LEP as follows:

Clause (1a) - Minimise risk to life and property – the proposed development concept complies with all the NSW and Council flooding policies and as such, complies with this objective;

Clause (1b) – the proposed development concept complies with this clause as it has been designed to be compatible with the flood function and behaviour without loss of flood storage and the climate change rise in water levels can be accommodated in the FPL freeboard;

Clause (1c) – the proposed development concept will not cause any adverse impacts on flooding/flood storage and hence will not have any cumulative impacts on flooding of adjacent properties;

Clause (1d) – it complies in that the flooding on site is flash flooding and Council's Floodplain Risk Management Study and Plan recommends shelter in place as the appropriate safe response to flooding. Evacuation of people off the site is not recommended by Council however, the proposed development concept has a safe pedestrian evacuation route to flood free land for the senior housing component if required in a medical emergency.

Clause (2a) – see response to Clause 1b above;

Clause (2b) – see response to Clauses 1b and 1c above;

Clause (2c) – see response to Clause 1d above;

Clause (2d) – it complies because the development concept would not require any government spending on infrastructure or emergency services because the flooding behaviour is flash flooding which means that evacuation of the site is not recommended in a flood. The recommended emergency flood response is to shelter in place for between 15 to 120 minutes while flood waters recede in dedicated refuges or their own apartments which are above the PMF flood level. The development concept would have all the necessary alarms, signs, wardens and flood procedures in place and not need any outside assistance in severe floods. This complies with the recommended approach in the Leichardt Floodplain Risk Management Study and Plan 2017;

Clause (2e) – it complies because the flooding on the site is flood storage which ponds on the site and does not have any considerable velocity and as such, the proposed development concept will not change this behaviour. The flood waters will continue to pond and not cause any significant erosion, siltation, destruction of river banks. The site does not adjoin a river bank and the existing flood area is a bitumen carpark;

Clause (3a) – it complies with climate change impacts on water levels at the site and on predicted flood levels are accounted for in the freeboard allocated for setting the FPL and minimum habitable floor levels. This is supported in the Leichardt Floodplain Risk Management Study and Plan 2017;

Clause (3b) – it complies as the proposed development concept will not change the flood behaviour or adversely impact on the flood behaviour on adjacent properties;

Clause (3c) – it complies as it adopts the shelter in place response to flooding as recommended in the Leichardt Floodplain Risk Management Study and Plan. This shelter in place approach would involve the majority of residents staying in their apartments which will be flood free. The minor number with floor levels below the PMF level will be evacuated to flood refuges at higher levels. Alarms, signs and flood wardens would manage this minor evacuation. Flood evacuation training would occur similar to fire training with trial evacuations. Any special consideration uses such as senior housing would be located on floor levels above the PMF level so that they would not need to be evacuated. Access from the senior housing to ground levels on site above the PMF level would be available in case of an evacuation required for a very rare medical emergency during a flood event.

Clause (3d) – it complies because the proposed development concept has been designed to accommodate flooding.

11. Conclusions

The proposed Planning Proposal has complied with all the following flood requirements/policies for residential development on the floodplain and in particular, the flooding considerations on the subject site. These requirements and policies include:

- NSW Government Flood Prone Land Policy;
- NSW Government Flood Plain Development Manual 2005;
- NSW Government Considering Flooding in Land Use Planning Guideline 2021;
- NSW Section 9.1 Ministerial Directions Section 4.1 Flooding, 2021;
- Leichardt LEP 2013;
- Leichardt DCP 2013; and

- Leichardt Floodplain Risk Management Study and Plan 2017.

Hence, it is considered that the proposed development and rezoning meets all the flood requirements of Council and the State government.

Yours sincerely



Mark Tooker

Director

ATTACHMENT A
COUNCIL FLOOD CERTIFICATE



INNER WEST COUNCIL

Contact: James Ogg
Phone: (02) 9392 5641

24 October 2018

Richard McLachlan
C/o Platino Properties
Suite 11, Level 2, 20 Young Street
Neutral Bay NSW 2089

Flood Certificate

As requested, attached is the Flood Level Information Report for the following address:

- **67-75 Lords Road, Leichhardt**

The information contained in the report is derived from the Leichhardt Flood Study (November 2017 prepared by Cardno).

The information is provided in good faith and in accordance with the provisions of s.733 of the Local Government Act.

Should you have any questions please call Council's Stormwater & Emergency Planning Section on 9392 5000.

Yours faithfully

James Ogg
COORDINATOR – STORMWATER & EMERGENCY PLANNING

Property Flood Level Information Report

Applicant Name	Richard McLachlan	Our Ref	648
Property Address	67-75 Lords Road, Leichhardt		
Date of Issue	24 October 2018		

About this Report

This report provides flooding information for the area in the vicinity of the above property. This information can be used to assist in understanding the extent of flooding affecting this property and can be used to assist in preparation of a Flood Risk Management Report in accordance with Section E1.1.4 of Council's Development Control Plan (DCP 2013). It is recommended that the information in this report be interpreted by a suitably qualified professional.

This report includes two pages; this cover page with an explanation of the information provided, and the second page is a figure providing information on the flooding behaviour in the area. The figure includes peak water levels, depths and flow rates for the 100 year ARI and peak water levels for the Probable Maximum Flood event.

The flood levels provided are based on available information including numerical modelling results prepared by Cardno for Leichardt Council. Further details are available in the *Leichardt Flood Study* (Cardno, 2017). All flood levels and depths are provided to the nearest 0.05 metres.

Definitions

The following provides a brief definition of some of the key terms utilised in this report:

Average Recurrence Interval (ARI)	The long-term average number of years between the occurrences of a flood as big as or larger than the selected event. The 100 year ARI flood event can be expressed as having a 1% chance of occurrence in any given year or as the flood that could occur once every 100 years.
Probable Maximum Flood (PMF)	The PMF is the largest flood that could conceivably occur at a particular location. This event is used to determine what might occur in events larger than a 100 year ARI.
100 year ARI Flow Path/Extent	The area of land expected to be inundated by either a flow path or mainstream flooding during a 100 year ARI flood event. The extents are limited to the areas where depths of flow are greater than 150mm.
100 year ARI High Hazard	Areas within the 100 year ARI flood extents where the depth and/or velocity of flow is likely to represent a possible danger to personal safety; evacuation by trucks is difficult; able-bodied adults would have difficulty wading to safety; and/or potential for structural damage to buildings.
Flood Planning Level (FPL)	The Flood Planning Level is calculated by adding a 500 mm freeboard onto the 100 year ARI flood level.
Freeboard	The freeboard is incorporated into the Flood Planning Level to provide a factor of safety to the flood levels. It accounts for a number of factors, including wave action, localised obstructions to flows, and model uncertainty.
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level.

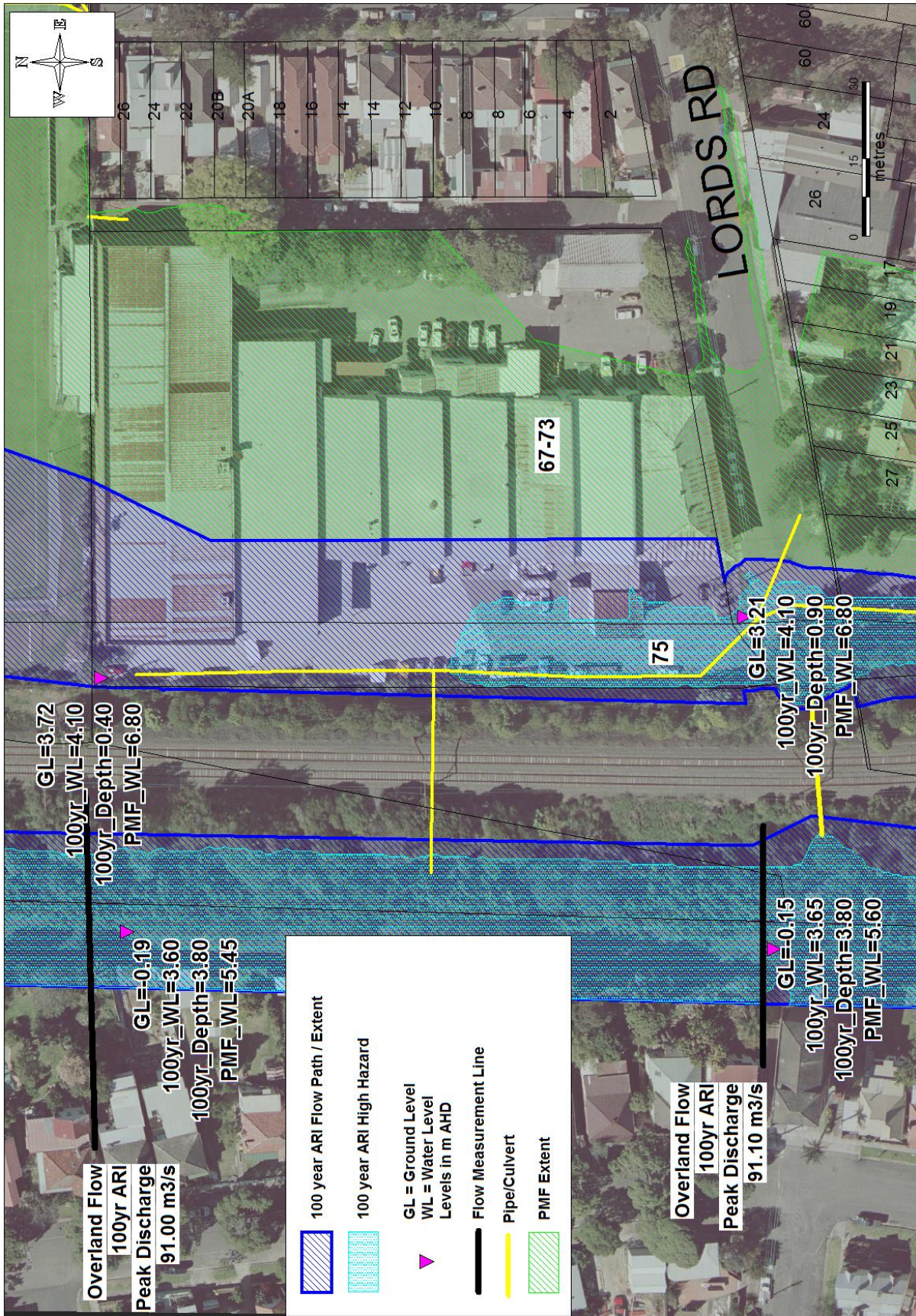
Notes

The ground levels shown on the attached figure are based on aerial survey data undertaken by AAM Hatch on behalf of Council. The ground levels should be verified by a suitably qualified surveyor.

The location of stormwater pits and pipes on the attached figure are indicative only. The location and dimensions of pipelines should be verified by a suitably qualified surveyor.

The water depths shown are provided at the location shown and are indicative only. They do not necessarily represent the maximum depth in the area. For example, where a point is located on the centreline of a road, the depths will be higher within the road gutter.

The information is provided in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.



The information provided is in good faith and in accordance with the provisions of s.733 of the *Local Government Act*.

The aerial photo was taken by AAM Hatch and is dated at 2006.