Planning Proposal

For 170 Russell Street, Emu Plains

(Formerly 1-4 Old Bathurst Road)

Proposed Rezoning of part of Lot 1 to E4 General Industrial

August 2022 – Revision E

PENRITH CITY COUNCIL

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Introduction

a) Purpose of Planning Proposal

Lot 1 parcel is subject to a split land use zoning and currently incorporates land which is a "deferred matter" under the Penrith Local Environmental Plan (PLEP) 2010.

The land use zones over the site are mapped as follows:

- The western portion of the land is currently zoned IN2 Light Industrial under the PLEP 2010.

  As per the recent employment land zone review – the land is to be transferred to an E4 general Industrial Zone.

- The eastern portion is zoned 1. Rural (d) Rural "D". (Future Urban) under the historic Interim Development Order No. 93.

The land holding is the last remaining land area under Penrith Interim Development Order (IDO) No.93 which has not been transferred to the PLEP 2010.

This land is required to be transferred into the PLEP 2010 through a Planning Proposal process, either by Council or the landowner.

Following a recent review of current updated flood modelling for the site and the approval of a two lot subdivision of the land, it has been identified that there is an opportunity to resolve the land use zoning over the Bathurst Road frontage of the site.

The purpose of this Planning Proposal is to rezone the eastern portion of Lot 1, at 170 Russell Street (formerly 1-4 Old Bathurst Road) as an extension of the existing zoning under the Penrith Local Environmental Plan (PLEP) 2010, addressing the land within Lot 1 which is currently a deferred matter.

This will provide a consistent zoning across Lot 1 and the land fronting Old Bathurst Road.

The Planning proposal will adopt and extend the land use zoning, building heights and provisions for the western portion of Lot 1 over the whole of the Lot 1 parcel.

There is no change to the land use provisions such as building heights, lot size mapping and the like for the existing zoned land along the western portion fronting Russel Street and Old Bathurst Road.

Lot 1 and Lot 2 to the north are owned by a single land owner. The Planning Proposal does not seek to amend the land use provisions over the balance of the land holding, being Lot 2, which will be addressed under a separate process at a later date.

The area of land to be rezoned does not include any land with a frontage or proximity to Russell Street along the western property boundary.

The rezoning of a small area of deferred land within Lot 1 will not impede or impact on the resolution of future land use outcomes over Lot 2 to the rear.

This Planning Proposal has been prepared following detailed liaison with Penrith Council staff and addresses all existing site conditions and potential traffic generation.

A plan showing indicative building envelopes and site design outcomes has also been prepared and accompanies this Planning Proposal. The concept building envelope plan has been prepared to inform the traffic review.

No approval is sought for the site at this stage. A detailed Development Application will be prepared and lodged with Council following resolution of this Planning Proposal.

As part of the Employment Zones Reform being undertaken across NSW, Penrith Council is transferring existing IN2 Light Industrial Land to an E4 General Industrial zone, with appropriate Additional Land Use local provision clauses included where appropriate to retain existing permissible land uses.

As such, this Planning Proposal adopts the E4 General Industrial zone for the existing portion of the site zoned IN2 Light Industrial and includes revision of the proposed Additional Land Use provisions clause mapping.

This will ensure that the Planning Proposal is consistent with likely future adopted zoning provisions.

Should the Employment Zones reform be delayed, the existing IN2 Light Industrial zoning will be retained and adopted for the land subject to this Planning Proposal.

b) Background

The current zone boundaries for Lot 1 were historically drawn generally reflecting flood mapping available at the time. The existing IN2 land reflects land mapped as being above the 1:100 year flood level at the time (approximately 15 years ago).

A Development Consent was issued in August 2020 to consolidate the land holding allotments, creating two lots.

Lot 1 was created as a future development parcel, comprising all of the IN2 zoned land along the Old Bathurst Road frontage. Lot 1 was required to be a 2 hectare land parcel under the current lot size provisions of the Penrith IDO 93.

Following approval of this application, Penrith Council completed and released more detailed flood modelling of Emu Plains overland flow catchments. This indicated that Lot 1 was not affected by overland flow in the 1:100 year storm event.

Further review of more detailed up to date flood modelling of Nepean River Catchment prepared by Penrith Council also identified flood planning areas had been modified and refined over Lot 1.

It was identified that the balance of Lot 1 could be rezoned to Industrial land. This provides a number of benefits as follows:

- Address the historic Penrith IDO 93 over part of the site and incorporate Lot 1 into the Penrith LPE 2010.
- Deliver a regular shaped parcel and zone boundary, removing the current “triangle” shaped zone boundary.
- Allow for the delivery of a minor increase in employment generating development along the Old Bathurst Road frontage.

c) The Subject Site

The subject site is 170 Russell Street (formerly 1-4 Old Bathurst Road).

The subject site is located in the north-western portion of Emu Plains, on the northern side of Old Bathurst road.

The site is situated approximately 1.7km west of the Emu Plains Train Station. The main Penrith Central Business District (CBD) is situated approximately 3.4m to the east.

There are a number of major road connections within the locality including the Great Western Highway (1.3km to the south) and the M4 Motorway (1.8km to the south).

The large scale Emu Plains Industrial Area is situated directly to the south, on the southern side of Old Bathurst Road, and forms a major employment area within the Penrith LGA. The Emu Plains Correctional Facility and operational milk bottling factory is situated to the east of the site.

The land holding occupies a total area of 23.444 hectares, extending from Old Bathurst Road along the southern boundary to the Nepean River on the northern boundary.

Russell Street forms the northern boundary of the site. Russell Street is a part formed road and part unformed road.

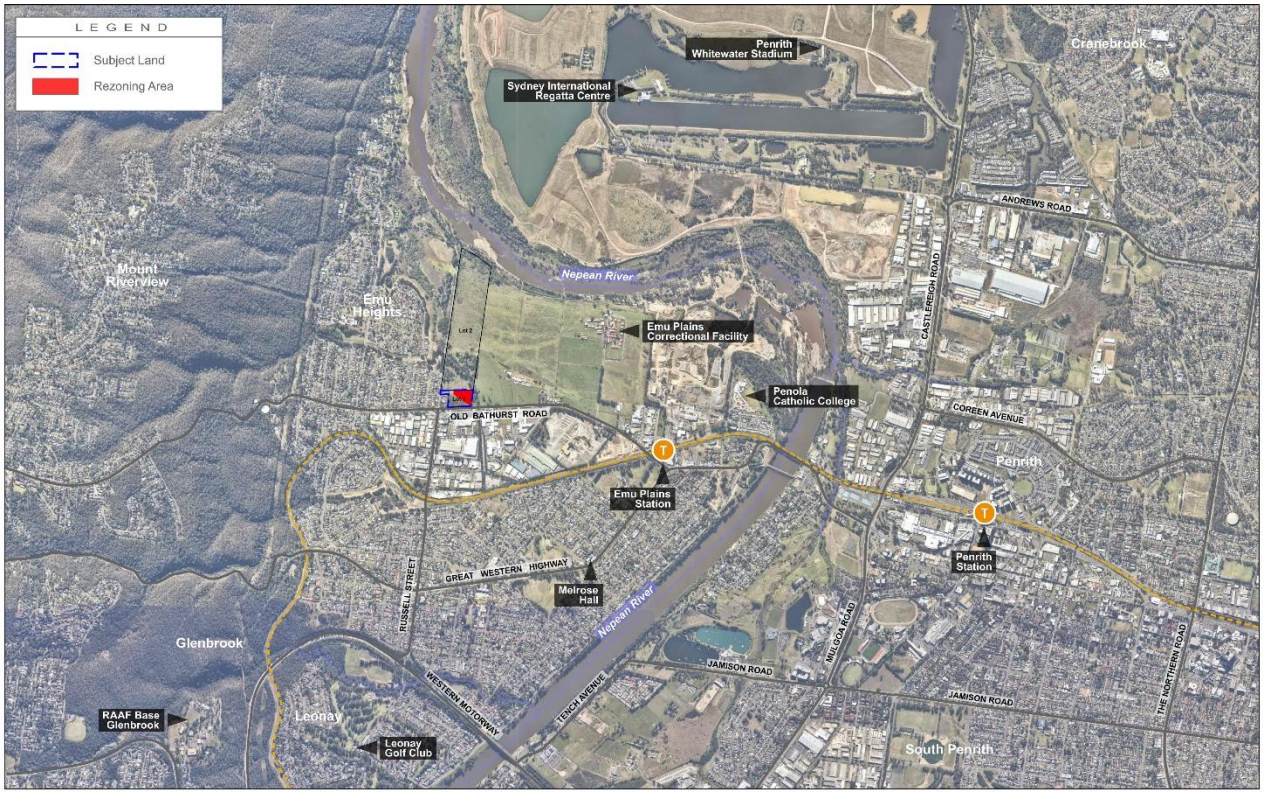
A former dairy associated with the Emu Plains Correctional Facility forms the eastern boundary of the subject land holding.

The land subject to this Planning Proposal is Lot 1 DP 1273251, which encompasses an area of 2.084 hectares

This rezoning proposal relates to the eastern portion of Lot 1 only.

Figure 1 below shows the subject land in its local context.

Figure 1 – Locality Plan



Site Overview

a) Lot 1 – Land to be Rezoned.

The Planning Proposal seeks to rezone the eastern portion of Lot 1, comprising a triangular portion of land which adjoins the eastern property boundary.

Lot 1 has an area of 2.084 hectares, with the existing IN2 zoned land occupying approximately 1.1 hectares. This Planning Proposal seeks to rezone the balance of Lot 1, being approximately 9,840m^2, which is currently deferred land under Penrith LEP 2010.

Figure 2 below provides a detailed site plan, identifying the subject property and the land within Lot 1 proposed to be rezoned.

b) Site Conditions

Vegetation:

The land proposed to be rezoned has been predominantly cleared of vegetation in association with historical agricultural uses.

Vegetation over the land to be rezoned comprises mainly exotic pasture grasses.

The rezoning will not generate any clearing of land or removal of vegetation over the existing allotment. At this stage, it is not possible to define the exact future development footprint.

A future Development Application of the subject land will address vegetation management and removal of any existing site trees if required.

Topography:

The land is described as being typically flat with a slight grade from south-west to north-east.

The natural ground level over Lot 1 transitions form RL 25 on Old Bathurst Road to RL 23.5 in the north-eastern corner.

The site drains to an existing stormwater drainage channel traverses Lot 2 to the north, bisecting the site in a north-westerly direction.

The topography is highly suited to accommodate land uses permissible within the IN2 Light Industrial zone.

A preliminary earthworks design has been provided as part of this Planning Proposal which demonstrates that the site is able to be developed in a manner which provide floor levels above current 1:100 year flood levels as discussed below.

Site Access:

Lot 1 has road frontage and access to both Old Bathurst Road to the south and Russell Street to the west.

Old Bathurst Road is the primary frontage of the site, with road frontage of over 160m.

We note that there is no modification of the land use provisions of the land along the Russell Street frontage. This area is currently zoned Industrial IN2.

The existing IN2 land will be transferred to an E4 General Industrial zone as required under the Employment Land zoning reforms.

Views:

There are no significant viewscape areas within, to or from the site.

The Old Bathurst Road interface is dominated by weed and invasive scrub / tree species on the site, and large scale industrial buildings and takeaway food restaurants on the southern side of Old Bathurst Road.

The south-western corner of the site adjoins an existing large scale zone substation which screen views to the site form Old Bathurst Road and Russell Street.

The Site topography and existing vegetation along Lapstone Creek drainage channel (which will be retained) fully enclose the views to the from the site. There are no views or relationship to the Nepean River.

The small portion of the land along Russell Street is already zoned IN2 Light Industrial. No change to the land use or building heights are proposed along this interface.

Figure 2 – Site Plan

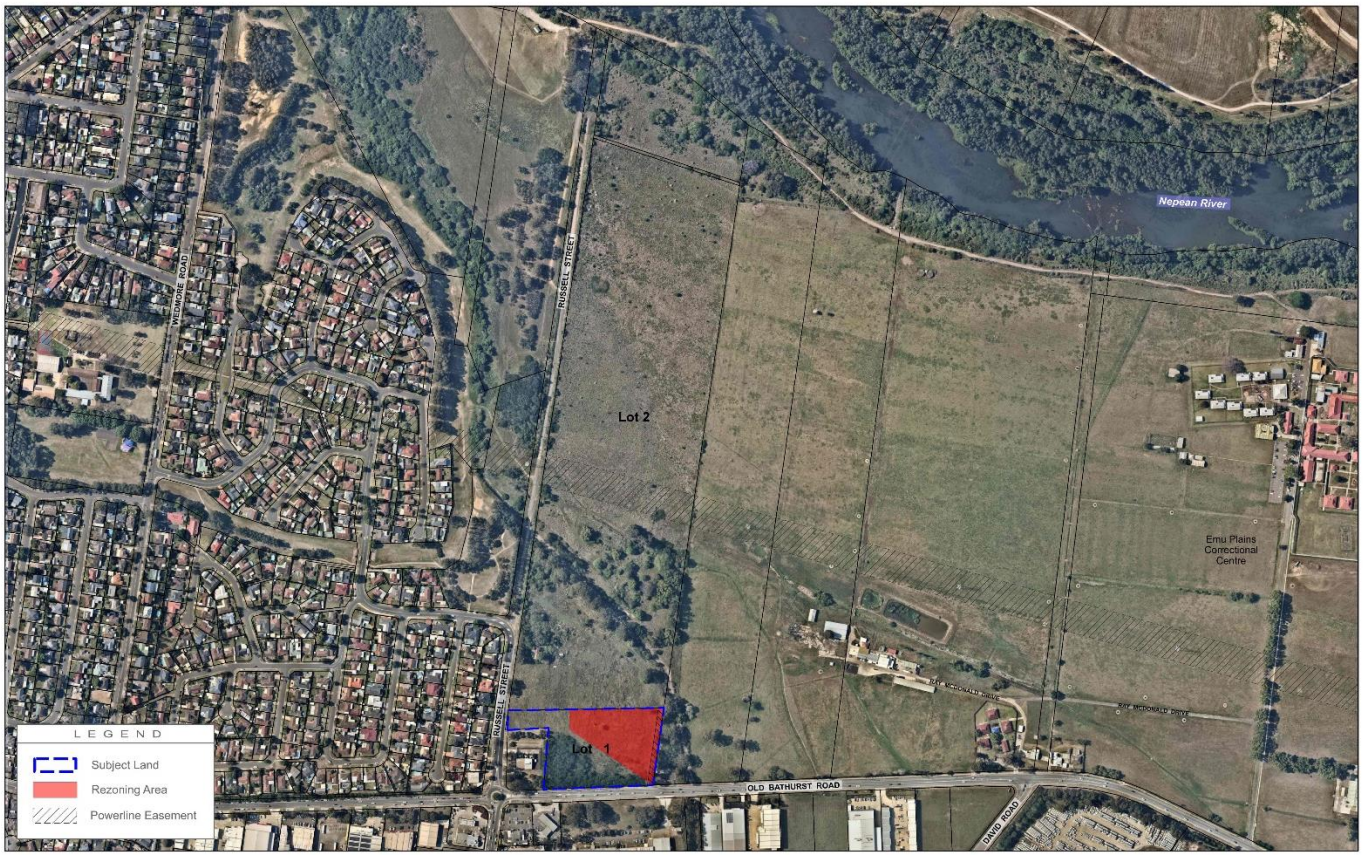


Figure 3 – Site Inset Plan

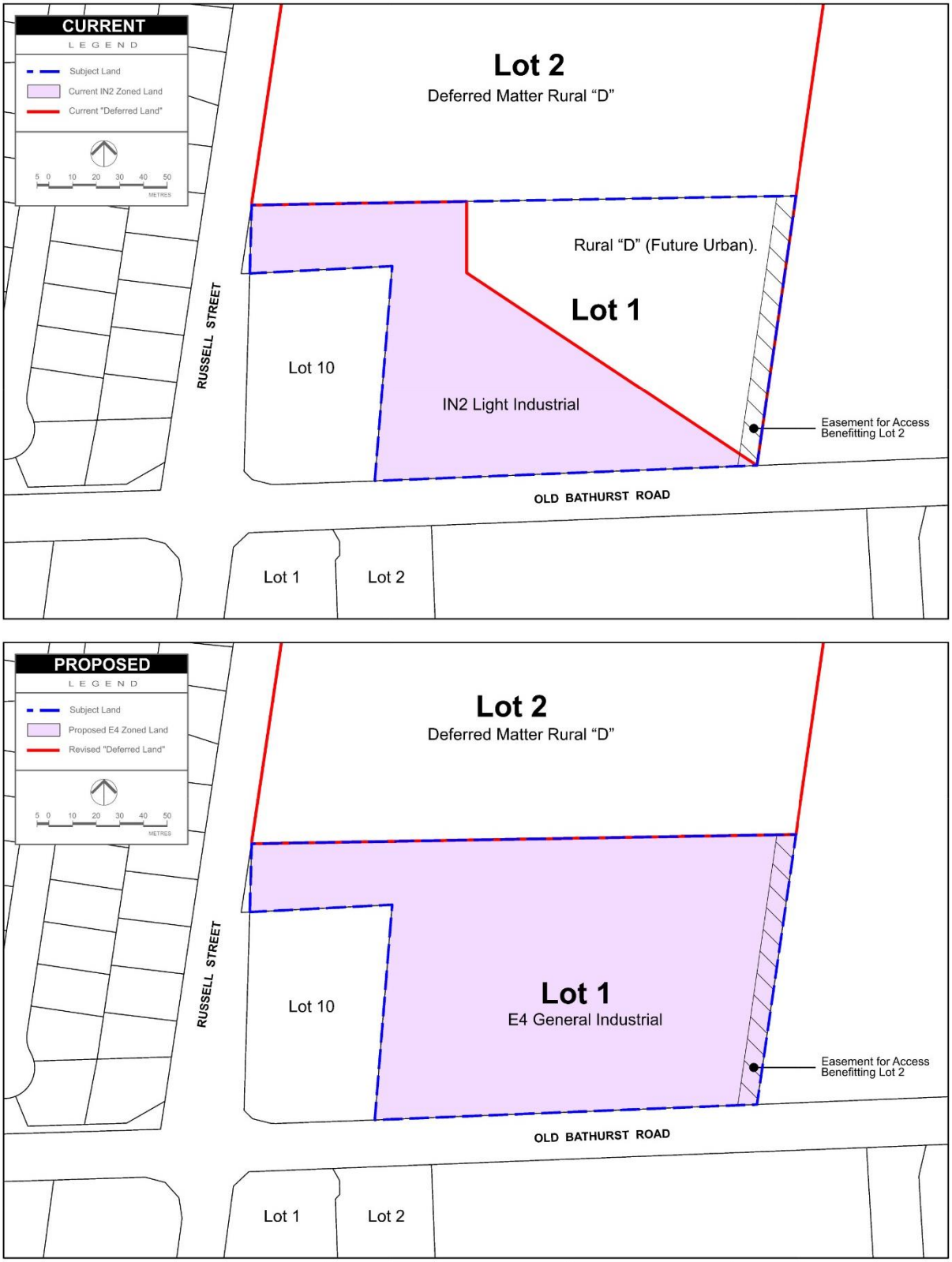
Site Photo 1: Site frontage looking East Along Old Bathurst Road

Site Photo 2: Old Bathurst Road Looking North (Weed / Exotic Vegetation) – Land to be Rezoned

Site Photo 3: Western Boundary Interface with Substation

Site Photo 4: Looking East over Existing Industrial Zoned Land

Figure 4 – Proposed Zoning Plan



Existing Flood Mapping:

Penrith Council have recently commissioned and completed more detailed flood studies which incorporate the subject site and surrounding land.

The whole of the existing industrial; zoned land and a significant portion of the land to be rezoned in flood free in the 1% flood event.

Recent flood studies completed have included:

- Nepean River Flood Study (2018) – prepared by Advisian.
- Emu Plains Overland Flow Flood Study (2020) – prepared by BMT.

These studies addressed different aspects of flood water behaviour over the catchment areas with varying degrees of impacts over Lot 1. We have provided a review of each of these studies below as they relate to Lot 1 and the land proposed to be rezoned.

These studies can be summarised as follows:

- The site is predominantly flood free in the 1% storm event.
- When considered in the context of the Nepean River Catchment (21,400 square kilometres) Lot 1 experiences a minor area of inundation in the north-eastern corner in the 1:100 year storm event – water depths of 0 to 30cm.
- When considered in the context of the Emu Plains Catchment, Lot 1 is considered to be flood free, with no overland flow in the 1:100 year event.
- When considered in the context of the Emu Plains Catchment, there is no overland flow including and up to the 1:500 year storm event.

A preliminary engineering design review has been completed by North Western Surveys which provides a site earth works plan for Lot 1 demonstrating that the land is able to be filled above the flood planning level and therefore be flood free in the 1 in 100 year storm event.

This is achieved through a balance cut / fill exercise which removes an existing historic stock pile on site adjacent to the drainage canal, which will achieve a minor increase in flood storage capacity. This is discussed in detail in the site investigations below.

Nepean River Flood Study (2018) – prepared by Advisian

The Nepean River Flood Study was prepared by Advisian in 2018. As noted in the study, *The Hawkesbury-Nepean River catchment is one of the largest coastal basins in NSW with an area of 21,400 square kilometres. The catchment at Penrith is 52% of the total area and of this portion, 80% is under the control of Warragamba Dam*.

The aim of the study is described as being *to produce information on flood flows, velocities, levels, flood extents, and hydraulic and hazard category mapping for a range of flood events under existing floodplain and catchment conditions. The study will also define and map the flood planning area for the study area, except for lands within the Penrith Lakes Scheme*.

The Flood Study provides detailed mapping of various storm events over the Nepean River catchment within the Penrith LGA, inclusive of the 1 in 20 year storm through to the 1 in 2,000 year storm event and the Probable Maximum Flood (i.e. exceeding a 1 in 2,000 year storm event).

The Flood Study provides modelling Flood Planning Areas, Flood Hazard, Flood Depths, and water velocities across these storm events.

The Flood Planning Area has been mapped under based on the 100 year storm event plus a freeboard of 0.5m, reflecting a surface level 0.5m above the stormwater level.

Figures 4 & 5 below shows the current mapped 1 in 100 year storm event affectation over Lot 1.

The study and associated mapping indicate as follows for Lot 1:

- Flood affected land within Lot 1 is Flood Storage area and does not form part of the Floodway.
- Flood affected land within Lot 1 is Low Hazard H1 (lowest hazard) – H1 is noted as being Generally safe for vehicles, people, and buildings.
- Maximum water depth over Lot 1 is RL 23.8. The natural ground level over Lot 1 transitions form RL 25 on Old Bathurst Road to RL 23.5 in the north-eastern corner.

  Water depth therefore varies from 0 to a maximum depth of 30cm in the north-eastern corner based on natural ground levels.
- Water velocity is low, being mapped as less than 0.4m/s.

Emu Plains Overland Flow Flood Study (2020) – prepared by BMT

The Emu Plains Overland Flow Flood Study was prepared by BMT in 2020. The was prepared to define the existing flood behaviour of the Emu Plains area, including the suburbs of Emu Plains, Emu Heights, and Leonay.

As noted in the report, the objective of the study was to *define the flood behaviour under historical, existing, and future conditions (incorporating potential impacts of climate change) for a full range of design flood events.*

The Flood Study provides detailed mapping of various storm events over the Nepean River catchment within the Penrith LGA, inclusive of the 1 in 20 year storm through to the 1 in 500 year storm event and the Probable Maximum Flood (i.e. exceeding a 1 in 500 year storm event).

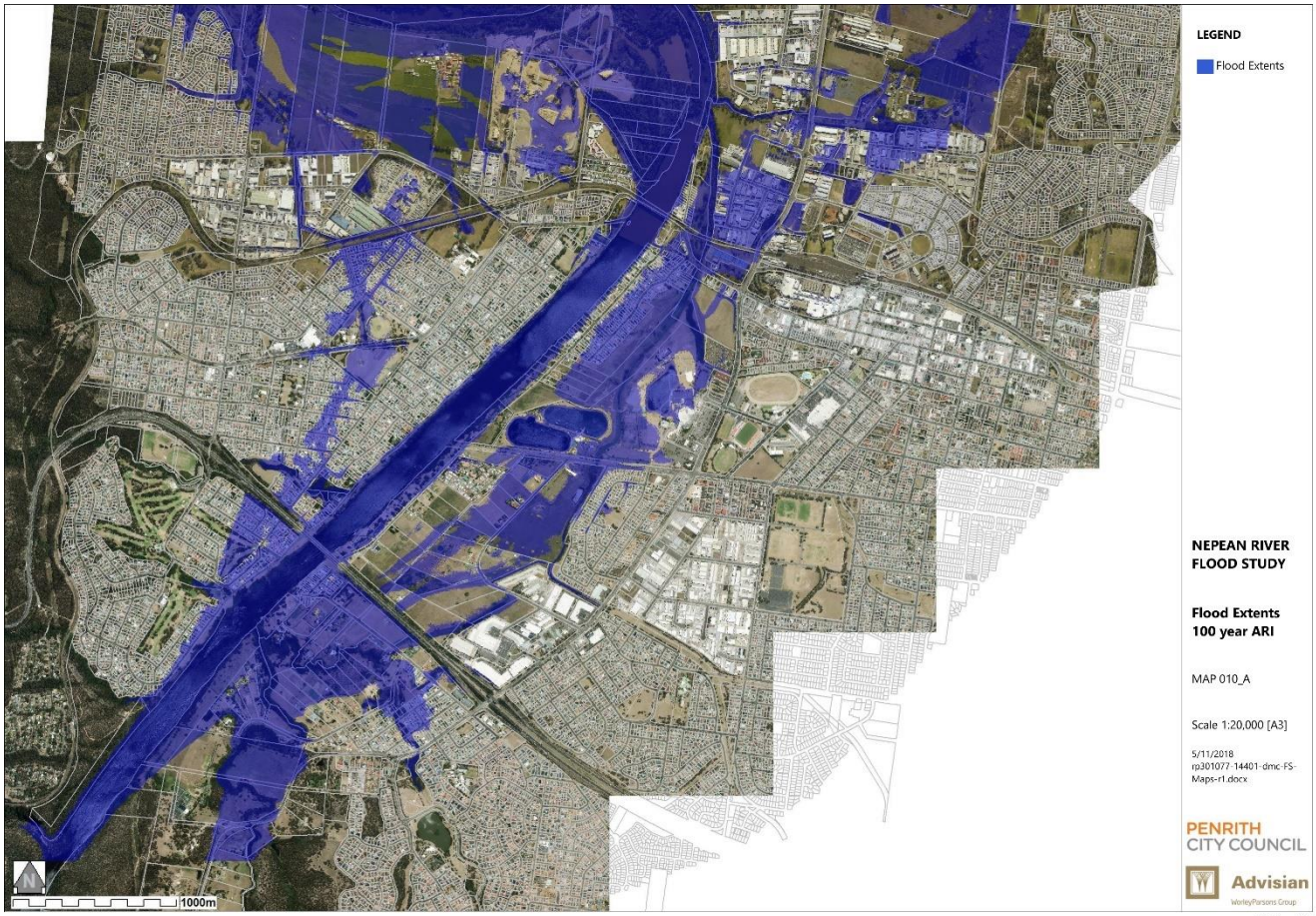
The Flood Study provides modelling Flood Planning Areas, Flood Hazard, Flood Depths, and water velocities across these storm events.

Figure 6 below shows the current mapped 1 in 100 year storm event overland flow, demonstrating that there is no affectation of Lot 1.

The study and associated mapping indicate as follows for Lot 1:

- Lot 1 is not flood affected by overland flow in the 1:100 year storm event.
- Overland flow is fully contained within the existing drainage canal.

Figure 5 – Nepean River Flood Study 2020 – 1:100 Year Flood Map



Final 30

Figure 6 – 1:100 Year Flood Extent Provided by Council

FLOOD PRONE LAND
1-4 OLD BATHURST ROAD
EMU PLAINS

NOTES
Base data supplied by NSW LPI
Projection MGA Zone 56
Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.
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CLIENT : Le Bursicot
SCALE : A2 @ 1:1,000
DATE : 10/01/2021
PLAN No : 056.EP.009
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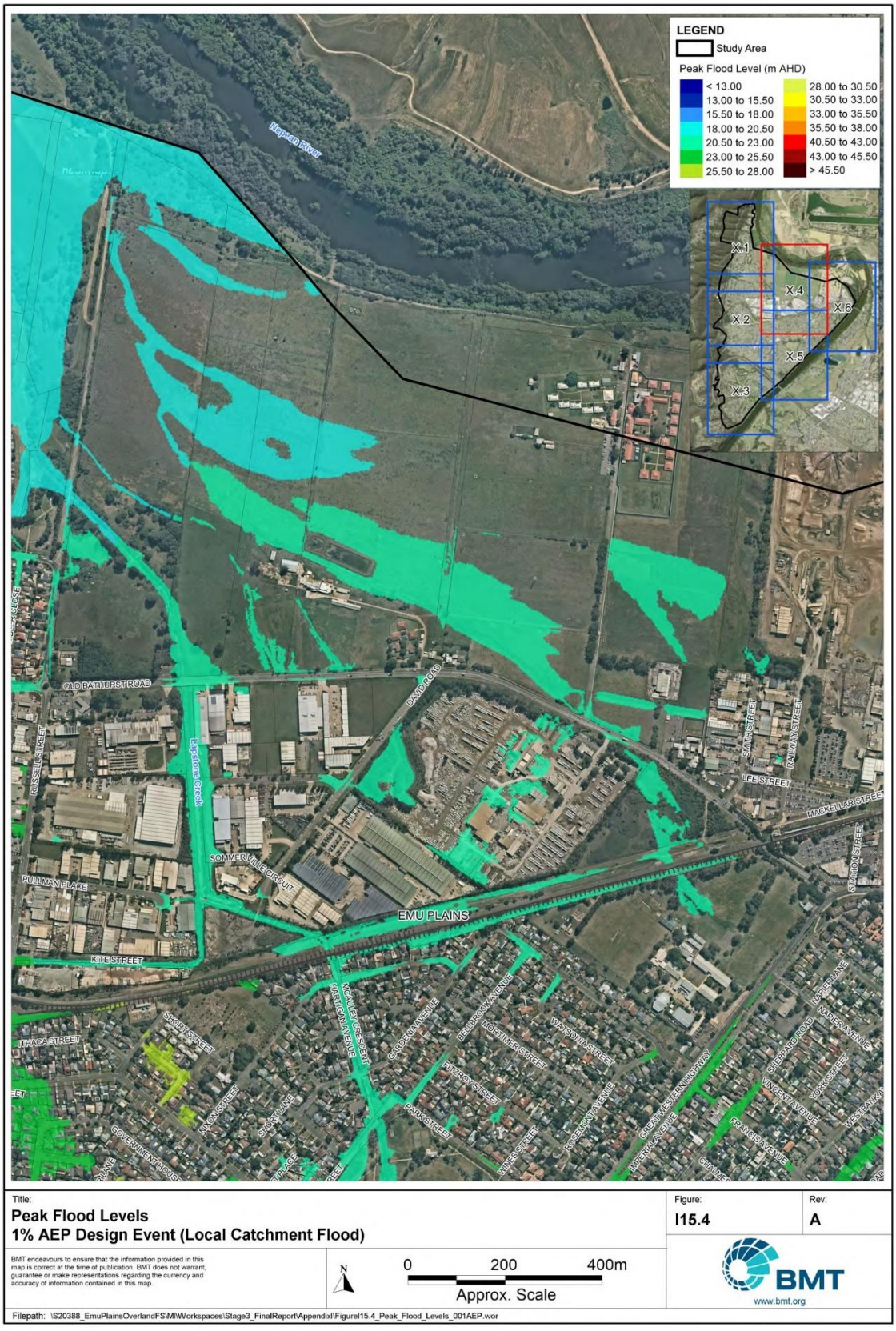
Figure 7 – Emu Plains Overland Flow Study 2020 – 1:100 Year Flood Levels Map



Site Investigations

a) Engineering Review

A detailed engineering review has been undertaken over Lot 1 to address the flood prone land portion of the site and demonstrate that the landform is able to be modified to be flood free.

A preliminary cut and fill design plan has been prepared and is shown in Figure 7 below.

The cut and fill plan demonstrates that minor filling of Lot 1 (less than 0.5m at its highest point) can be undertaken, which will result in Lot 1 being flood free in the 1 in 100 year storm event.

The minor filling of the land is offset by the removal of an existing soil stockpile located on Lot 2 to the north adjacent to the drainage channel.

The plans provided demonstrate an increase in flood storage of 550m^3 through the removal of the stockpile, with a corresponding decrease in flood storage of 500m^3 through filling of Lot 1.

This results in an increase of 50m^3 of flood storage across the land holding.

Furthermore, the stockpile currently acts as a blockage land from to flood water overtopping the drainage channel. Removal of the stockpile will enhance stormwater flows by removing the blockage.

In this regard, the proposed cut and fill will provide a positive community benefit through increasing flood storage volumes within the land holding and removing an artificial land form blockage.

The cut and fill plan prepared shows no filling over the right of access along the eastern property boundary. The majority of this land is flood free at present and is intended to accommodate a driveway to Lot 2. As such, this portion of the site is not required to be filled. The existing site levels are able to be retained within the right of access handle, ensuring there is no impediment to overland flows.

We note that the cut and fill plan has been provided to demonstrate how the land form can be managed to address flood levels with no impacts on surrounding properties or flood storage.

The Planning Proposal itself does not authorise the works. A detailed Development Application will need to be lodged separately for the development of the site and incorporate relevant site earthworks.

Figure 8 – Indicative Cut and Fill Plan (North Western Surveys)

b) Site Material

As outlined in the detailed cut and fill plans provided, it is intended that the fill material utilised will be the existing stockpile material within the site. There will be no importation of fill required as a result of this proposal.

We note that there are six existing stockpiles located adjoining the drainage line which bisects the property. We also note that there is excess material in the stockpile.

We acknowledge that no detailed geotechnical or contamination assessment of the stockpile has been undertaken at this stage. However, the stockpiles are not imported material. The stockpiles are considered to be on-site material excavated during construction of the existing drainage line.

In this regard, the geotechnical profile of the soil is likely to be consistent with the balance of the site. Any topsoil stripped during earthworks will be replaced over the earthworks area, ensuring a like for like top soil placement.

Detailed geotechnical and contamination assessment of the stockpile will be completed as required prior to any earthworks application. This will include required compaction rates, top soil stripping and replacement, soil testing, contamination review and the like.

Should these studies indicate that the stockpile is unsuitable for the intended use, the material will be removed from site.

In this scenario, alternate fill material will be sourced wholly from within the subject site. Given the low volume of material required (500m^3) and the size of the land holding (over 22 hectares) this will be easily achievable.

In this regard it is proposed to include a clause in the DCP which requires fill to be sourced wholly form within the land holding.

c) Drainage Review

A preliminary drainage review has been completed by North Western Surveys civil engineers which addresses possible future drainage connections from the site.

As part of the drainage review, the engineers have prepared a Concept drainage plan / drainage strategy for the site based on an indicative possible layout.

We note that a detailed drainage plan and strategy will be prepared with any future Development Application for the site.

The drainage concept identifies potential points of for stormwater from the site and outlines how the discharge is able to comply with Council's DCP.

The drainage concept provides for a concept OSD system and demonstrates that the concept is appropriate in relation to the downstream discharge point.

The drainage concept demonstrates that the receiving system has capacity to cater for additional flows from the site and that the proposal will not have any local flooding impacts at the discharge point.

The drainage concept also addresses water quality and outlines potential measures to be implemented to meet Councils guidelines.

We note that detailed drainage design and assessment will be provided as part of any future Development Application.

d) Flood Study

A detailed Flood Study has been prepared in association with this Planning Proposal by Rienco and is included as Appendix 6.

The Flood Study provides:

a) Review of existing flood information available for the site, as quantified in:

i. Nepean River Flood Study (2018)

ii. Emu Plains Overland Flow Flood Study (2020)

b) Prepare a detailed hydraulic model that replicates as best as practical the worst case 1% AEP design flood behaviour at the site under pre-development conditions.

c) Determine the potential impacts of the proposed development, and the associated flood hazard categorisation, by way of additional hydraulic modelling.

d) Review the proposed development, together with the hydraulic model results, and assess it against Clause 4.3 of the Section 9.1 Directions relating to flooding.

The flood study has been prepared taking into consideration the cut / fill design prepared as part of the engineering review discussed above.

As such, a hydraulic model was required to quantify the impacts of the proposed cut and fill in the standard design flood event – the 1% AEP design flood modelling the Nepean River system.

A small sub-scale model of the Nepean River was constructed to as best as practical replicate the results of PCC's 2018 modelling. TUFLOW was the model chosen to carry out this task. The model grid was established as a 5m grid across the entire model domain.

Pre-Development Modelling

The model indicates that currently existing the peak 1% AEP flood depths vary across the site but are however relatively shallow across Lot 1, with peak flood depths reaching 250 mm along the northern boundary. Average peak flood depths across the lot in the 1% AEP design flood are less than 200 mm (Refer Figure 8 Below).

The entire area of Lot 1 is denoted as Low Provisional Hydraulic Hazard when assessed in accordance with Figure L-2 of the NSW Government's Floodplain Development Manual (2005).

Post Development Modelling

The model post development modelling accounted for the removal of the existing stockpile and distribution of material over Lot 1 as shown in the preliminary engineering plans.

The modelling demonstrated that the proposed earthworks will facilitate a materially flood-free lot, and re-inundated the areas where the stockpiles were previously located in the 1% AEP flood (Refer Figure 9 below).

The flood affected area in the north-eastern corner is less than 10cm in depth and accommodates the right of access to Lot 2. This area is not proposed to be developed or filled at this time.

The flood study also demonstrates that there are no impacts on adjoining land holdings under the proposal.

Figure 9 – Existing Flood Mapping

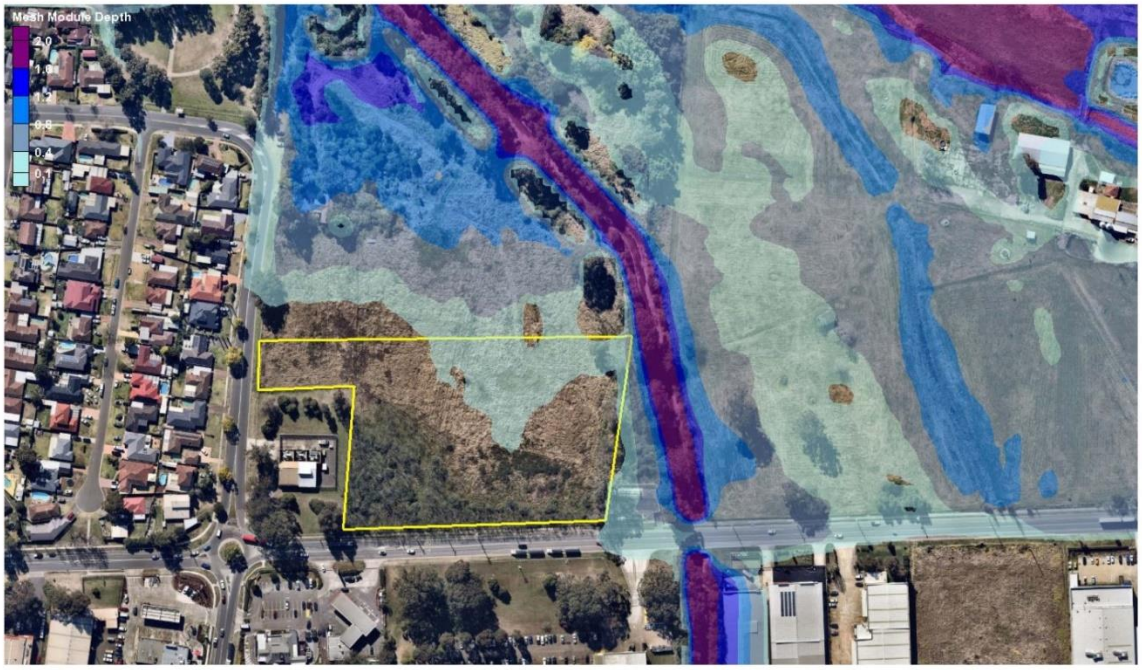


Figure B1.2: 1% AEP Flood Depths – Pre-Development

Note: Flood depths shaded from 0.1m (light blue) to 2.0m (dark blue). All depths over 2.0m shaded dark blue.

Figure 10 – Post Development Flood Mapping

Figure B2.2: 1% AEP Flood Depths – Post-Development

Note: Flood depths shaded from 0.1m (light blue) to 2.0m (dark blue). All depths over 2.0m shaded dark blue.

Evacuation

The flood study also addresses evacuation routes from the site.

We do note that once filled, the entire site is no longer flood prone and will be above the 1% AEP flood level.

Once filled, the land is readily able to be evacuated in an orderly manner, for all events up to and including the 1% AEP design flood. IN this regard, there is no flood evacuation required form the site up to and including the 1:100 year storm event.

Notwithstanding the flood study provides the following assessment of flood evacuation:

> *Depending on the future development layout of the site, flood-free access is available onto Russell Street or Old Bathurst Road. The preferred route on Russell Street would be south as it is flood free, however a northerly route is also available but would require trafficking through flood water at some (brief) point. The floodwater at this location, even at the peak, is relatively shallow and safe for vehicles and pedestrians.*
>
> *In rarer events, such as the Probable Maximum Flood, evacuation can still be facilitated via the same routes, where warning times and evacuation orders are provided by the SES. This is no different to the normal evacuation procedures for Emu Plains, or the residential areas to the west of the site.*
>
> *Any future development would be subject to a DA, and a flood emergency management plan could readily be developed as part of that DA, or as a condition of consent on the DA.*

Figure 11 – Evacuation Routes

Figure 5.3-1 1% AEP Post-Development Flood Evacuation Routes

Report Conclusions

The flood study concludes as follows:

- The subject site is located in Emu Plains and is affected by mainstream regional flooding of the Nepean River in a 1% AEP design flood.
- Penrith City Council adopted catchment-wide flood studies quantifying pre-development design flood behaviour at the site, being:
    - Regional Flooding – Nepean River Flood Study (2018)
    - Local Catchment Flooding - Emu Plains Overland Flow Flood Study (2020)
- A detailed 2D TUFLOW model has been prepared for the subject site and surrounds. The model was run for the 1% AEP design flood event and replicates the design flood behaviour published in Council's Nepean River Flood Study (2018).
- The proposed development, specifically the cut and fill, was modelled as the 'post-development' scenario and the impact of the development was quantified by the hydraulic model.
- Flood behaviour for a range of design floods has been considered for the subject site and surrounds, from the 20 year ARI design flood up to and including the probable Maximum Flood.
- The proposal meets the requirements of the NSW Governments Section 9.1 Direction Clause 4.3. Where the proposal is considered inconsistent with this Direction, as per Clause 9 of the Section 9.1 Direction these inconsistencies are supported by this Floodplain Risk Management Plan.
- The requirements of the NSW Government's Floodplain Development Manual (2005) have been considered. There are no specific additional requirements stemming from the application of the Floodplain Development Manual, as the S9.1 Directions are consistent with the Floodplain Development Manual.

e) Traffic Report

A detailed Traffic Report has been prepared to accompany this rezoning proposal by Positive Traffic and is included in Appendix 3.

The traffic report has been prepared taking into consideration potential development of Lot 1 for employment and industrial use. The indicative site Concept Plan was provided to assist in determining potential traffic generation and access, noting that a detailed Development Application will need to be prepared for the site.

To gauge existing traffic flows on the surrounding road network an intersection count was undertaken on Wednesday 28th April 2021 at the intersection of Old Bathurst Road / Russell Street between the hours of 6:30am – 9:30am and 3:30pm – 6:30pm to capture both the expected peak periods of an industrial use and road network peak.

The study has assessed existing traffic conditions, parking demands, access arrangements, future traffic conditions and design compliance.

The traffic report provides a review of road capacity based on Austroads 2020 and provides a review of the Old Bathurst Road / Russell Street intersection operation.

As requested by Council staff, the existing site is assessed as a greenfield site and does not generate any traffic.

The Traffic Report has been prepared taking onto consideration the following key development sites and intersection upgrades:

- Upgrade of the intersection of Russell Street / Old Bathurst Road to provide a signalised intersection at the location in place of the existing single lane roundabout.

  The intersection upgrade is listed as Item T2 in the works schedule Table A1 of the Penrith Section 7.12 Contributions Plan.

- Recent construction of the new commuter car park for Emu Plains Station on Old Bathurst Road

- Recent Development Application lodged by Penrith Council for the redevelopment of 158-164 Old Bathurst Road as a light industrial development.

Traffic Generation

The traffic report states that Applying the Transport for NSW Technical Direction TDT2013/04a rate to the potential total GFA industrial development yield of 11,940m^2, the total site generation of Lot 1 would equate to 62 AM Peak trips two way and 67 PM Peak trips two way.

The traffic report has adopted a conservative estimate of future year traffic conditions with the full traffic generation of the site added to the road network.

No allowance for the existing zoned land has been included.

Traffic Impacts – Old Bathurst Road / Russell Street Intersection

As noted above, the traffi9c report has undertaken a detailed analysis of the operation of the future signalised intersection at the Old Bathurst Road / Russell Street intersection.

This has taken into consideration the recently constructed commuter car park and Penrith Council's development proposal on Old Bathurst Road.

The assessment has demonstrated that the additional traffic generated by the proposal will not impact the level of service of the intersection.

At present, based on the additional traffic projected from Council's development site, the intersection is modelled to be operating near capacity (Level of Service D) in both the AM and PM peak, with a maximum average delay of 52.0 seconds in the PM peak.

With the additional traffic generated form the proposal there is no change to the operation of the intersection, with the intersection is modelled to be still operating near capacity (Level of Service D) in both the AM and PM peak. There is a very minor increase in the average delay to be 54.3 seconds in the PM peak.

The traffic report concludes that no additional upgrade of the intersection arrangements as identified in the SCT traffic report would be necessary to accommodate the traffic generation of the development through the intersection of Old Bathurst Road / Russell Street.

Active Transport

The traffic report provides a summary of Active Transport measures and connections within the locality, both existing and planned to be delivered.

Active Transport measures outlined include the following:

- A 'Priority Pathway' footpath along Old Bathurst as identified in the Penrith Accessible Trails Hierarchy (2009).
- A new footbridge over Old Bathurst Road will be provided to ensure safe and direct pedestrian access between the new Emu Plains Commuter Car Park (neighbouring site to the east) and the station.
- The Planning Proposal offers the opportunity to facilitate delivery of an upgraded pedestrian and cycle path in conjunction with a future Development Application for the site along the site frontage.
- A future Development Application will incorporate the construction of kerb and gutter along the Old Bathurst Road frontage, and streetscape works including pedestrian / cycle path, and verge landscaping.
- The existing footpath connection along Russell Street is situated on the western side of the roadway, servicing the residential areas to the west, and providing a direct linkage to the Emu Green Reserve open space area.
- The Planning Proposal is able to assist in the delivery of a pedestrian pathway as part of a "green grid" link along Russell Street in conjunction with a future Development Application for the site.

Traffic Impacts Conclusion

The traffic report concludes as follows:

1. *The potential traffic generation of the development would be very low in the context of existing traffic demands on the immediate surrounding road network.*
2. *The future year (2033) intersection operating conditions at Old Bathurst Road / Russell Street would be similar to that which is estimated to occur in 2033 without the rezoning proposal additional traffic.*
3. *The forecast 2033 traffic conditions which incorporated the traffic generation of all known developments including the subject site and a 2% per annum growth till 2033 at the upgraded intersection of Old Bathurst Road / Russell Street would be similar to that which was estimated without the development proposal.*
4. *The proposed parking provision of the proposal is expected to comply with the requirements of Penrith City Council's DCP.*

f) Indigenous Heritage

Comber Heritage consultants prepared a detailed Aboriginal Archaeological Assessment in 2020 in association with the subdivision application to create Lot 1. A copy of the assessment is provided in Appendix 5 of this report.

During preparation of the report a site inspection was undertaken by David Nutley, Rivers McEwen, and Christopher Jones of Comber Consultants on Tuesday 7 July 2020, in consultation with the Deerubbin Local Aboriginal Land Council. The Land Council's letter of support for the findings of the report are included in Appendix C of the assessment.

The report notes that despite an intensive site inspection, no Aboriginal objects, artefacts, or sites were located during the survey.

Notwithstanding, the report notes that there was high possibility that subsurface Aboriginal objects will exist within the study area, comprising both Lot 1 & Lot 2.

In this regard, the report advises that as the subdivision application did not involve any building works or ground disturbance it was not be necessary or appropriate to undertake testing or apply for an Aboriginal Heritage Impact Permit (AHIP). The report advises that unless there is to be ground disturbance, the guidelines do not permit testing and Heritage NSW will not issue an AHIP.

However, once redevelopment (construction works) or any ground disturbance to the site is to occur it will be necessary to undertake subsurface testing.

The report recommended that once the subdivision plans have been approved, if it is proposed to undertake building works or any ground disturbance on the property it will be necessary to undertake Aboriginal testing in accordance with the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW. Such testing is limited to determining if Aboriginal objects exist on the property and if so, their nature and extent. If Aboriginal objects are uncovered, it will then be necessary to apply for an AHIP. If no objects are uncovered redevelopment of the site can proceed without an AHIP.

A condition of consent was included in the subdivision approval which required this notation to be included on the 88b for Lot 1 & 2. This has been incorporated in the subdivision certificate and 88b instrument for the site addressing this issue.

We note that the Planning proposal does not approve, facilitate, or involve any construction works. This will be addressed as part of any future Development Application lodged with Council.

g) European Heritage

Comber Heritage consultants prepared a detailed Historical Archaeological Assessment in 2020 in association with the subdivision application to create Lot 1. A copy of the assessment is provided in Appendix 6 of this report.

During preparation of the report an archaeological site inspection was undertaken by David Nutley, Rivers McEwen, and Christopher Jones of Comber Consultants on Tuesday 7 July 2020.

The report and investigation concluded that there are no constraints, upon historical archaeological grounds, to the redevelopment of the site.

No further historical archaeological assessment, monitoring, testing, or salvage is required in respect of the future redevelopment.

h) Servicing

Preliminary site investigations have confirmed services are provided to the land holding in association with the existing dwelling located within Lot 2.

A servicing feasibility review was undertaken by North Western Surveys and is included as Appendix

Extension and / or augmentation of services surrounding the site will be delivered as part of any future Development Application once detailed requirements are able to be determined.

Services currently available and servicing the land holdings include:

- Sewer mains and service lines along Old Bathurst Road and Russell Street, with a residential connection to Lot 2.
- Sydney Water mains and service connections along Old Bathurst Road and Russell Street.
- Electrical services are provided to the land holdings.
- Gas mains long Old Bathurst Road and service connection to the correction centre
- NBN services along Old Bathurst Road and existing site connections

Adequate services are available to allow rezoning of the land as proposed.

District and Local Strategic Planning

a) Western City District Plan

The Greater Sydney Region Plan and associated Western City District Plan were prepared by the Greater Sydney Commission in March 2018.

The plans outline a vision for Greater Sydney as a metropolis of three cities, incorporating the Western Parkland City, the Central River City, and the Eastern Harbour City.

The Western City District Plan incorporates a range of Planning Priorities for the region addressing areas including Infrastructure and Collaboration, Liveability, Productivity, Sustainability, and Implementation.

The rezoning of the site will deliver both enhanced employment and housing as part of an existing industrial / employment area.

We note that the land is identified as forming part of the *Urban Area* under the Western city District Plan.

Key priorities supporting the Planning Proposal include:

> *Planning Priority W1 - Planning for a city supported by infrastructure*
>
> Support for this Planning Proposal will allow for the delivery of additional employment land within close proximity of transport infrastructure including the Emu Plains Railway Station and existing bus services.
>
> *Planning Priority W11 - Growing investment, business opportunities and jobs in strategic centres*
>
> As noted in the District Plan, employment growth is the principal underlying economic goal for metropolitan and strategic centres.
>
> Support for this Planning Proposal will allow for the delivery additional employment opportunities as part of the Emu Plains employment land precinct.
>
> The proposal is consistent with the Actions of the District Plan which require that Councils Review current planning controls and create capacity to achieve the job targets for the District's centres.

The Planning Proposal is consistent with the Western City District Plan.

b) Penrith Local Strategic Planning Statement

The Penrith Local Strategic Planning Statement (LSPS) was finalised in March 2020.

The LSPS outline Penrith's broad economic, social, and environmental land use needs over the next 20 years.

The Penrith LSPS does not include any specific planning priorities or actions which relate the Emu Plains.

Consistent with the Western City District Plan, the subject land holding is mapped as forming part of the *Urban Area* under the LSPS. Map 7: Penrith's Economic Triangle of the LSPS also

identifies an industrial zone over the land holding, extending to the southern edge of the Nepean River. (Refer to Figures 10 & 11 below).

The LSPS notes that there is a need to ensure that the number of jobs in Penrith continues to grow. Many residents travel out of Penrith for work, and there is a need to plan for the right types of jobs to match the workforce.

Action 12.1 of the LSPS is to Prepare an Employment Lands Strategy, which has now been released for public exhibition and is discussed below.

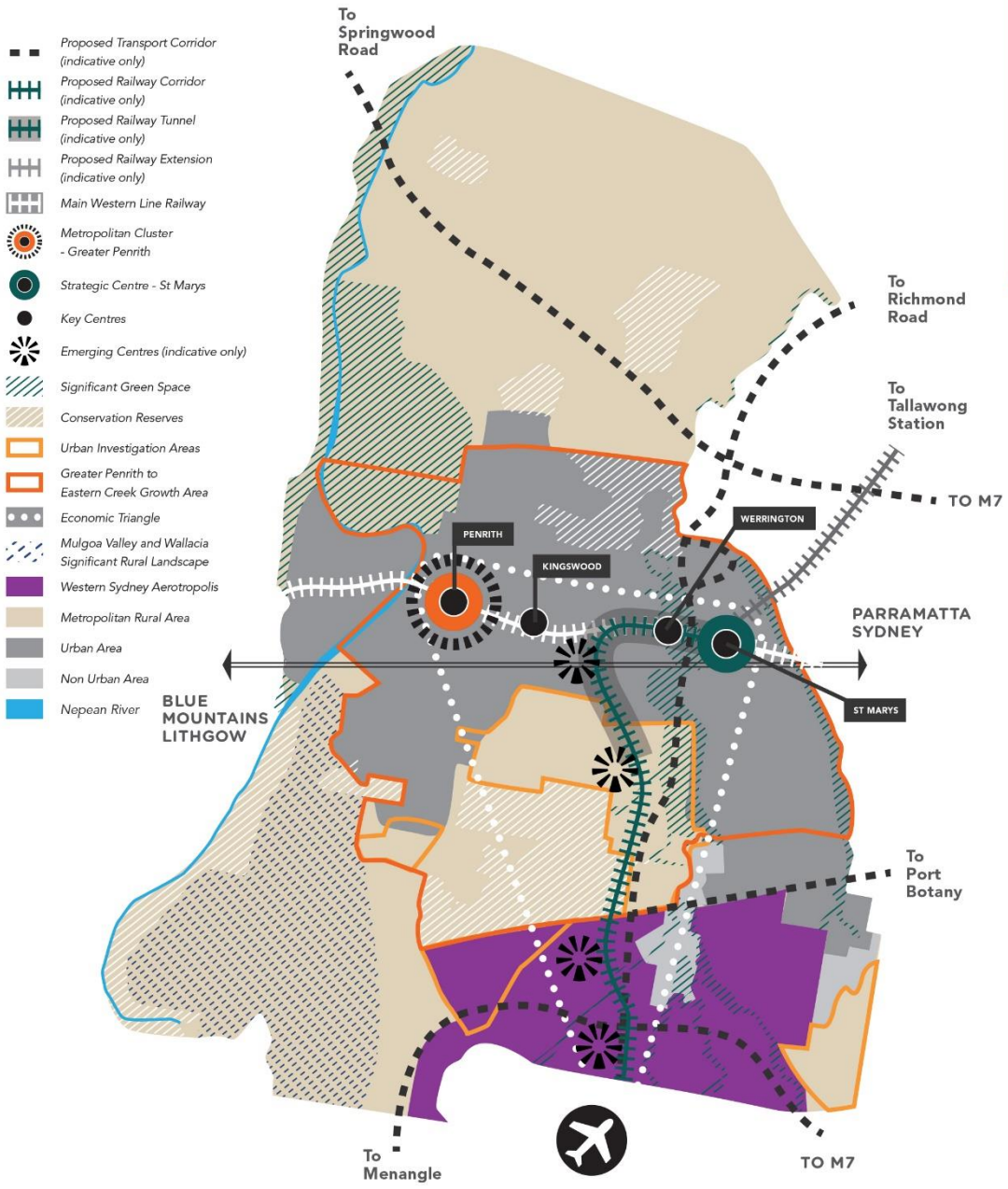
The LSPS notes that *The management of existing and future industrial and urban services land will be important to ensure our communities have jobs and services close to home, to satisfy the long-term demand for employment lands and to ensure timely and cost-effective infrastructure delivery.*

The Planning Proposal is generally consistent with the objectives of the Penrith LSPS and meets Planning Priority 12 being to Enhance and grow Penrith's economic triangle.

The Planning Proposal will deliver additional employment land and opportunities as part of an identified industrial hub on the western edge of the Economic Triangle.

Figure 12 – Penrith LSPS Structure Plan

MAP 2: Structure Plan



Note: Committed NSW Government transport initiatives and routes throughout the LSPS are indicative only and subject to a final business case. This map reflects Council's advocacy position for the location of emerging centres.

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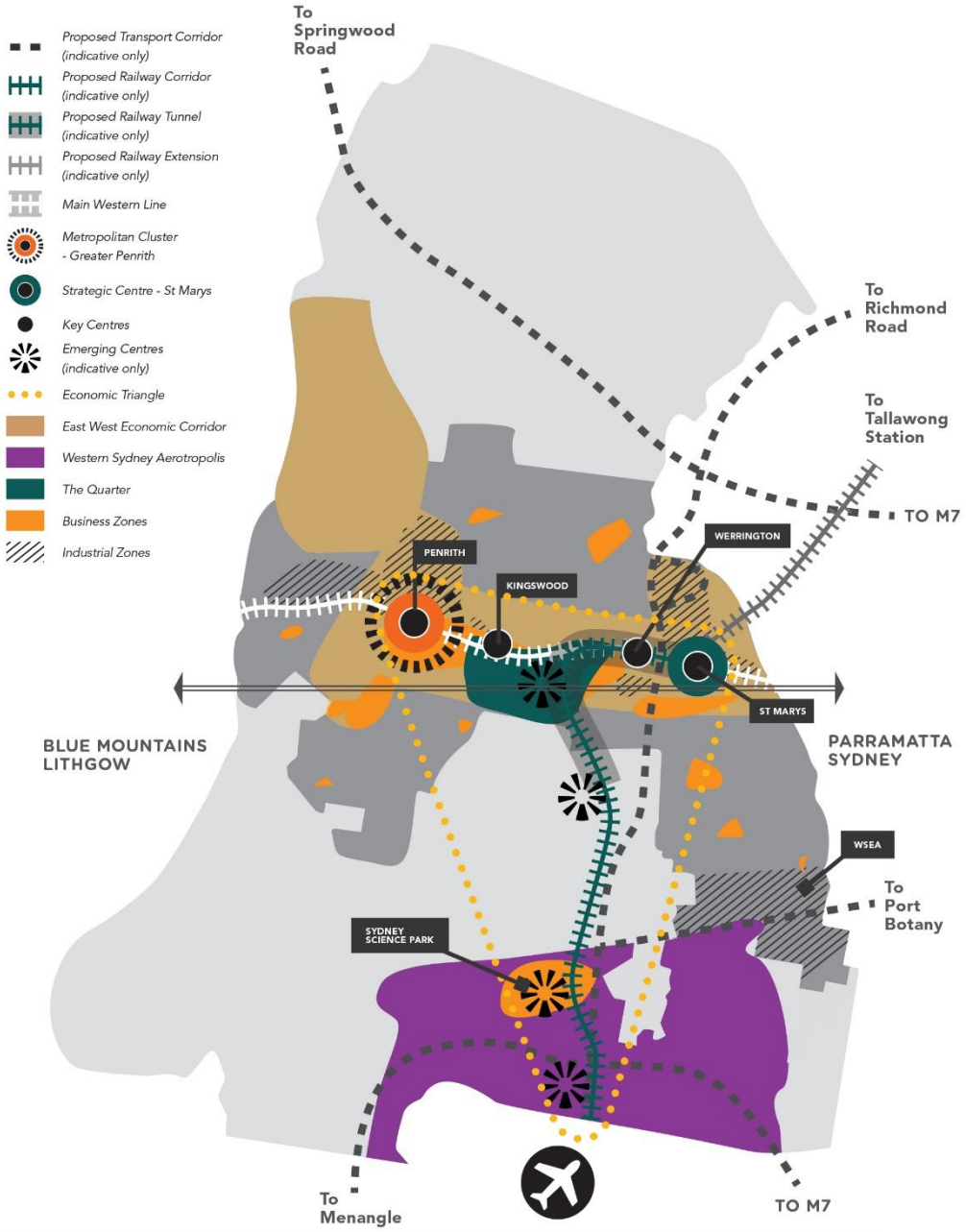
Figure 13 – Penrith LSPS Economic Triangle

MAP 7: Penrith's Economic Triangle



Note: This map reflects Council's advocacy position for the location of emerging centres. The corridors identified in this map are adapted from Transport for NSW's Future Transport Strategy 2056 and may be subject to change.

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c) Penrith Council Green Grid Strategy

The Penrith Council Green Grid Strategy was adopted 2021. The Strategy provides the basis for recognising and highlighting the existing green infrastructure (bushland, waterways, open and recreation space), as well as developing opportunities to reinforce this network with new green links.

The Strategy addresses current and future challenges in prioritising urban greening and waterways, providing connections across existing and planned open space and transport infrastructure; and identifies implementation locations close to where people live and in locations where higher population growth will be experienced.

Penrith's Green Grid falls generally into three broad categories:

- Open space for recreation: Promote Green Grid for people for improved and accessible public open space
- Improved urban tree canopy: Green Grid for climate adaptation and resilience to increase urban tree canopy to support improved amenity, comfort for local park users, and for walking and cycling
- Emphasise connections to bushland and waterways: green-blue grid infrastructure for habitat and ecological health to improve the connectivity between bushland, recreation space and waterways to support habitat and the connection of people to nature within a sustainable environment.

The Strategy identifies project opportunities that consider the longer term strategic development goals identified in the West District Grid.

The West District Green Grid project opportunity clusters were identified as a starting point to ensure the more generalised district strategies and any future project delivery responds to the local strategic context and landscape conditions.

For mapping purposes in the Strategy, the site is located within *Precinct 6 Central West* which includes the suburbs of Emu Heights, Emu Plains and Leonay. *Figure 34. Precinct 6 Green Grid Strategy Plan* of the Strategy identifies *West District Green Grid Projects*.

As shown in Figure 12 on the following page, the Strategy incorporates the following Council Green Grid projects in the proximity of the site:

a) Old Bathurst Road – Proposed Active Transport Link (Pedestrian / Cycle Path)

There is an existing footpath along the Old Bathurst Road frontage of the site.

The Planning Proposal is able to facilitate delivery of an upgraded pedestrian and cycle path in conjunction with a future Development Application for the site.

A future Development Application will incorporate the construction of kerb and gutter along the Old Bathurst Road frontage, and streetscape works including pedestrian / cycle path, and verge landscaping.

b) Russell Street – Priority Future Connections (Pedestrian / Cycle Path)

The existing footpath connection along Russell Street is situated on the western side of the roadway, servicing the residential areas to the west, and providing a direct linkage to the Emu Green Reserve open space area.

The Planning Proposal is able to facilitate delivery of a green link along Russell Street in conjunction with a future Development Application for the site.

A future Development Application will incorporate the delivery of streetscape landscaping works, street trees and verge landscaping.

The verge on Russell Street is able to accommodate a new pedestrian and cycle link if required along the frontage of the site where the rezoning applies. This would be delivered as part of a future Development Application.

In this regard, the Planning Proposal is consistent with, and will enable delivery of the Green Grid Strategy as it applies to landscape and pedestrian connections surrounding the site.

Figure 14 – Green Grid Strategy

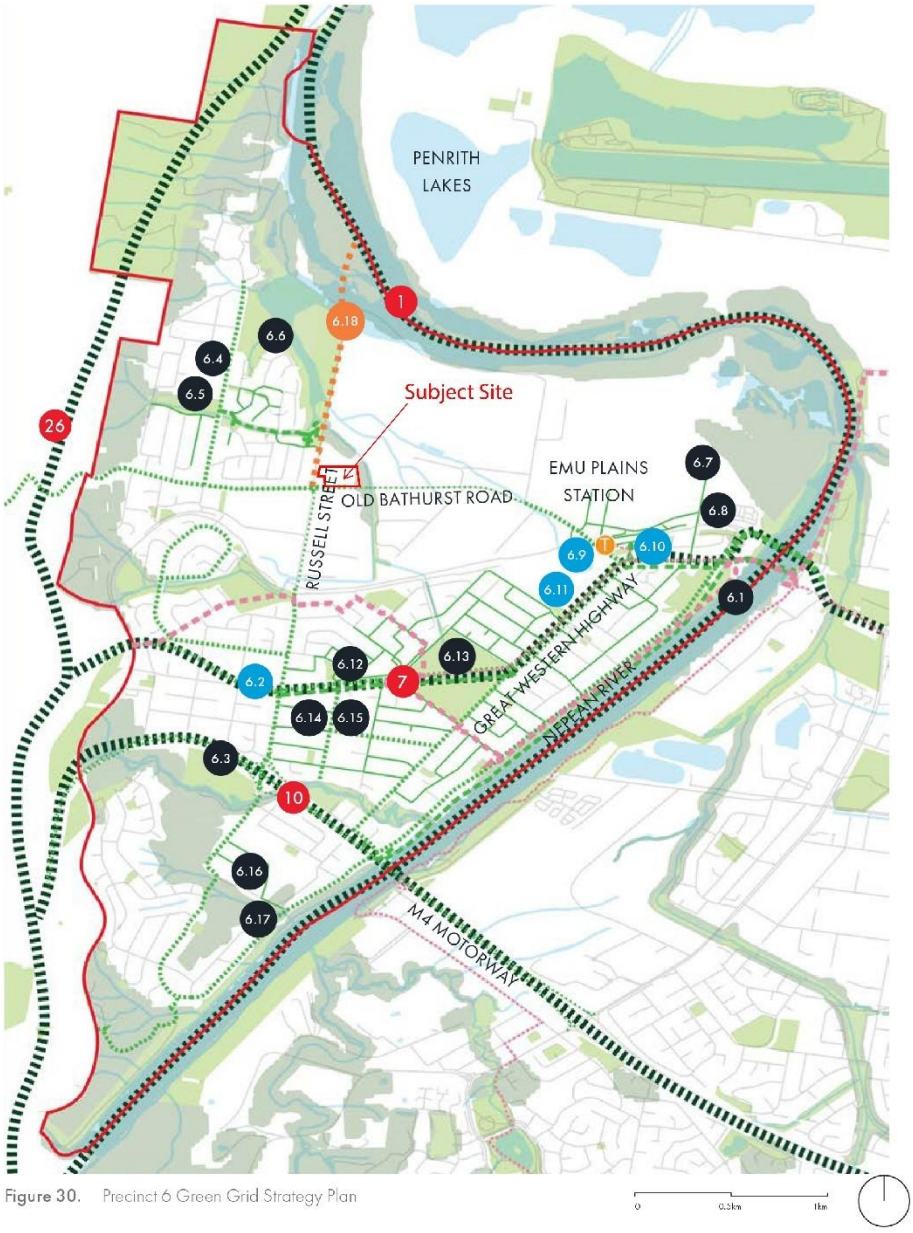

Figure 30. Precinct 6 Green Grid Strategy Plan

d) Penrith Council Cooling the City Strategy

The Penrith Cooling The City Strategy was adopted in August 2015. The Strategy aims to consolidate existing work by Council to cool the City, with a focus on tree planting and landscaping.

As noted in the Strategy, programs such as the Great River Walk, The Nepean River Vegetation Management Plan, the redesign of the Civic Arts Precinct, Council's Bushcare program, and the maintenance and renewal of parks, all contribute to cooling the City.

The topography of the area means that sea breezes from the east don't reach areas of western and south-western Sydney, including Penrith. This leads to consistently higher temperatures and lower rainfall in Penrith than in the more coastal parts of Sydney.

Further to this, the Urban Heat Island effect acts to intensify heat waves in cities, increasing health risks to the community and increasing the demand for air conditioning, which in turn emits more waste heat into the atmosphere, perpetuating the problem.

The Strategy specifically lists actions and responsibilities for Council to implement. Notwithstanding, we have provided a summary below outlining how the proposal and subsequent future Development Applications are able to contribute to the Cooling The City Strategy outcomes.

a) Green Infrastructure

The proposal and future Development Applications for built form are able to incorporate on-site Green Infrastructure including:

- Street tree plantings.
- Internal landscaping utilising species characteristic of the Cumberland Plain.
- Provision of green walls where possible.

b) Water Sensitive Urban Design

Water Sensitive Urban Design measures will be implemented where possible as part of a future Development Application for the site to address Council water quality targets.

c) Increased albedo (reflectivity)

Any future Development Application will adopt development provisions of Council's recent policy framework relating to roof colours, landscaping and site coverage to reduce reflectivity.

In this regard, the Planning Proposal is consistent with, and contribute to of the Cooling The City Strategy outcomes.

e) Penrith draft Employment Land Strategy

The draft Penrith Employment Lands Strategy was released for comment in June 2021.

As outlined in the document, *The draft Employment Lands Strategy (ELS) is intended to help guide Council's future planning. The development of this strategy is an immediate action (Action 12.1) identified in the Penrith Local Strategic Planning Statement (LSPS) under Planning Priority 12 to 'Enhance and grow Penrith's economic triangle'.*

The draft ELS responds the Western City District Plan's principles to 'retain and manage' existing employment lands, and to 'plan and manage' new employment lands. The draft strategy aims to 'enhance and grow' Penrith's Economic Triangle to strengthen Penrith's economic resilience and improve community wellbeing in an environmentally responsible way.

The draft Employment Lands Strategy addresses land that across a range of employment uses including:

- Industrial and urban services or similar purposes
- Commercial and business purposes
- Land for employment generating special purposes such as health and education, tourism, entertainment, infrastructure, or other special purposes.

Emu Plains is identified as a major industrial land precinct forming part of the East-West Corridor in Penrith's Economic Triangle.

The strategy recognises that there are significant new employment land areas within the LGA to be delivered such as the Mamre Road and the Aerotropolis precincts. Critically however, the report notes that these new employment precincts will take time to become available and serviced. Furthermore, the strategy indicates that these precincts will mainly cater for large floorplate, global transport, logistics and warehousing seeking proximity to Western Sydney Airport.

The draft strategy specifically discusses the need to retain and manage existing industrial areas which lie along our East-West Corridor, such as the subject site, to deliver higher job density and greater business diversity compared to larger scale industrial precincts like Erskine Park.

The draft strategy indicates that based on population projections, Penrith will need to attract and enable businesses to grow the number of local jobs for local people by between 85,000 and 109,000 jobs to support the growing population and workforce.

The strategy states that *at an LGA level, it would seem there is ample supply to meet demand for jobs, even under a high growth scenario. However, the Aerotropolis is not necessarily the solution for businesses that have a particular need to be located close to centres, other supply chains, or markets and/or servicing population and local businesses. Existing primary industrial sites, located near this infrastructure, is in high demand with low vacancy rates.*

The Employment Land Use Study prepared by Hill PDA states that *There is currently 19 hectares of vacant land within the precinct accounting for 13% of the total land area. This shows there is little are to expand existing industrial uses. While there is limited available vacant land the Special Purpose lands to the north could be rezoned in the future to accommodate industrial lands demand.*

In this regard, the proposal is consistent with the intent and objectives of the employment Land Strategy and its background studies as follows:

- The proposal will deliver opportunity for smaller and more diverse employment generating businesses in comparison with the large scale floor plate warehouses anticipated around the airport.
- The proposal will enhance local employment generating land uses for residents living in proximity of Emu Plains.
- The proposal will assist in achieving the employment target of up to 109,000 additional jobs.
- The proposal provides opportunity for additional employment land in the Emu Plains Precinct, which has a recognised shortage of future developable employment land.
- The rezoning will further assist in meeting the goal of achieving a "30-minute city".
- By supporting rezoning of the balance of Lot 1 to deliver more diverse employment generating land use opportunities for local residents.

The Proposal is consistent with the following Actions of the Employment Land Strategy:

Action 9

Considering zoning for more light industry for low impact businesses near centres and as a buffer between residential and industrial areas

The proposal will deliver an increase in the area of industrial use land within Emu Plains. There is a recognised shortage of industrial land with all other land in Emu Plains.

Action 13

Planning a mix of lot sizes to allow local businesses to start-up and scale-up

The proposal will deliver opportunity for smaller scale industrial sites and development consistent with this action.

Action 15

Reviewing zoning, height limits and development controls to offer greater flexibility for business operations while preventing land use conflicts, and ensuring controls are appropriate to lot size and location

The rezoning of the balance of Lot 1 is consistent with this principle to review zoning and development controls to deliver employment opportunities.

As such, the proposal is able to be supported.

DCP Amendments

Lot 1 incorporate a small frontage to Russell Street

As shown in the existing zoning plans and details outlined above, the small portion of land within Lot 1 which is situated along the Russell Street frontage is currently Zoned IN2 Light Industrial (to be transferred to the E4 General Industrial zone by Penrith Council.

There is no extension or increase in the industrial zoned land along Russell Street and the residential interface under this proposal.

There is also no intended change in the permissible land uses within the site.

In order to ensure any land use impacts are minimised, a number of amendments to the Penrith DCP are proposed to be adopted as part of this rezoning package.

The DCP amendments will assist in limiting the scale and type of land uses within the small area of existing industrial zoned land along Russell Street and manage future traffic movements to and from the site.

The proposed DCP amendments are described in Appendix 3 of this Planning Proposal and incorporate the following additional site specific development controls.

a) No driveway access is to be permitted to Russell Street for industrial vehicles, heavy vehicles, rigid vehicles and trucks.

   Driveway Access to Russell Street will be restricted to light vehicles only.

   The purpose of this control is to protect the nearby residential area from amenity impacts as a result of traffic movements generated by development on the subject site.

b) A detailed traffic study will be required as part of a future Development Application for the site.

   The traffic study will be required to address impacts on Russel Street traffic movement and parking management and Old Bathurst Road.

   The purpose of this control is to protect the nearby residential area from amenity impacts as a result of traffic movements generated by development on the subject site.

c) A restriction for a single Driveway Access only to the site from Old Bathurst Road, to be located midway or toward the eastern boundary of the site.

   The purpose of this control is to manage traffic impacts and access to / from the site onto Old Bathurst Road.

d) Construction of kerb and gutter along the Old Bathurst Road frontage is required by the developer.

   The purpose of this control is to address construction of Kerb & Gutter to Old Bathurst Road.

e) Insert a clause describing the intended land use arrangements, with any industrial activities or large floorplate buildings to be located along the Old Bathurst road frontage.

Smaller industrial lots or non-industrial uses if possible are to be positioned along the Russell Street frontage.

The purpose of this control is to deliver less intensive land uses and smaller lots at the frontage to the nearby residential area and thereby reduce land use conflict.

f) Larger industrial lots are to be positioned along the Old Bathurst Road frontage.

The purpose of this control is to deliver larger lots at the frontage to the nearby industrial area and thereby reduce land use conflict with the nearby residential area.

g) Landscaping within the site should, where possible, use species characteristic of the Cumberland Plain Woodland and / or River-flat Eucalyptus Forest

The purpose of this control is to deliver predominantly native species landscaping where possible / appropriate.

h) Filling of the land is to be completed in accordance the endorsed flood impact assessment report and the endorsed filling strategy.

Fill utilised to address flood levels is to be sourced from Lot 2 DP 1273251.

The purpose of this control is to ensure the use of existing stockpiles on site as proposed for filling works.

Part 1 – Objectives or Intended Outcomes

The objective of this Planning Proposal is to amend the Penrith Local Environmental Plan 2010 to rezone the eastern portion of Lot 1 E4 General Industrial, consistent with the zoning of the balance of the allotment. The existing IN2 zoned land will be transferred to an E4 zoning as part of this proposal.

In seeking to realise these objectives, the Planning Proposal aims to deliver the following outcomes:

- Rezoning of the land under the Penrith LEP 2010 to resolve the Deferred Matter land within Lot 1.
- Deliver a small area of additional industrial zoned land to facilitate employment generation for local residents.
- Provide for more regular shaped zoning boundaries which allow for the delivery of efficient land development outcomes.
- Adoption of Planning Controls relating to building height, lot size and the like which reflect the existing planning controls over the existing portion of Lot 1 zoned for industrial use.

Part 2 – Explanation of Provisions

To achieve the minor zoning and planning provision amendments, the following land use clause, local provision and LEP Map amendments will be made under this proposal.

a) LEP Mapping Amendments

The following LEP Maps will be amended as described below:

- Land Application Map: Sheet LAP_001
- Land Zoning Map: Sheet LZN_005
- Lot Size Map: Sheet LSZ_005
- Height of Building Map: Sheet HOB_005
- Scenic and Landscape Values Map: Sheet SLV-005
- Additional Permitted Uses Map: Sheet APU_005

Associated plans showing the current and proposed LEP mapping outcomes area provided in Figures 15 to 20 on the following pages.

Land Application Map

The eastern portion of Lot 1 is currently mapped as a “Deferred Matter” under the Penrith LEP 2010.

This portion of Lot 1 is subject to the provisions of the historic Penrith Interim Development Order (IDO) No.93.

The deferred land will be amended under this Planning Proposal, with all of Lot 1 proposed to be subject to the provisions of the Penrith LEP 2010 providing consistency in zoning and land use provisions.

Land Zoning Map

Lot 1 currently has a split Land Use zoning. The western portion of the is zoned IN2 Light Industrial under the Penrith LEP 2010 while eastern portion is zoned 1. Rural (d) Rural “D”. (Future Urban) under thew historic Interim Development Order No. 93.

The existing IN2 zoned land is being transferred to a an E4 General Industrial zone under the employment land zoning reforms.

This proposal seeks support to amend the land use zoning over the eastern portion of Lot 1 to provide a consistent zoning outcome.

The Planning Proposal extends the E4 General Industrial zone over Lot 1, utilising the Lot 1 cadastral boundary as the zone boundary.

This zoning arrangement will deliver a more appropriate long-term land use outcome, providing regular shaped zone boundaries which reflect cadastral boundaries.

Lot Size Map

The subject site currently has a split minimum lot size arrangement, reflecting the existing zone boundaries.

The IN2 zoned land has a minimum lot size of 6,000m^2 under Penrith LEP 2010. The land zoned Rural (d) Rural “D”. (Future Urban) has a minimum lot size of 2 hectares under Penrith IDO No. 93.

Council staff requested that a smaller minimum lot size be adopted to promote smaller scale industrial activities. This Planning Proposal seeks to adopt 1,000m^2 minimum lot size over Lot 1, consistent with the majority of Industrial land within Emu Plains.

Building Height Map

The subject site currently has a split permissible maximum building height, reflecting the existing zone boundaries.

The IN2 zoned land has a maximum building height of 12m under Penrith LEP 2010. The land zoned Rural (d) Rural “D”. (Future Urban) does not have a specified maximum building height under Penrith IDO No. 93.

This Planning Proposal seeks to adopt the 12m maximum building height over lot 1, consistent with the proposed amended zoning.

Detailed plans showing the current and proposed LEP Height of Building mapping are included in Part 4 below.

Additional Permitted Use Map

As noted above, the existing IN2 Light Industrial Land will be transferred to an E4 General Industrial zone under the Employment Land Zone reforms.

As part of this process, Council is implementing the inclusion of additional use local provisions and mapping to retain existing permissible land uses in the IN2 zones on a site specific basis.

This Planning Proposal adopts the proposed Additional Permitted Use provisions for the site.

As part of this Planning Proposal, the Additional Permitted Use Clause will also be amended to Prohibit Intensive Industrial uses on Lot 1.

This will minimise land use conflicts with the existing residential areas to the west of the site and better reflect the existing IN2 Light Industrial zone permissible land uses.

Scenic and Landscape Values Map

The subject site is currently partly mapped as being land which is required to be considered under Clause 7.5 of the Penrith LEP, being Land with Scenic and Landscape Values

This mapping does not indicate that the land has significant scenic or landscape value. Rather, the mapping is a DA requirement for consideration of visual impacts.

Currently, the IN2 zoned land which is subject to Penrith LEP 2010 is mapped as forming part of the Clause 7.5 scenic and landscape character area.

The eastern portion of the site is not subject to this clause or mapping.

This Planning Proposal will extend the Land with Scenic and Landscape Values mapping over the balance of Lot 1 under the Scenic and Landscape Values Map - Sheet SLV-005, consistent with the existing portion of Lot 1 which is subject to the provisions of Penrith LEP 2010.

Detailed plans showing the current and proposed LEP Scenic and Landscape Values mapping are included in Part 4 below.

Figure 15 – Amended Land Application Map

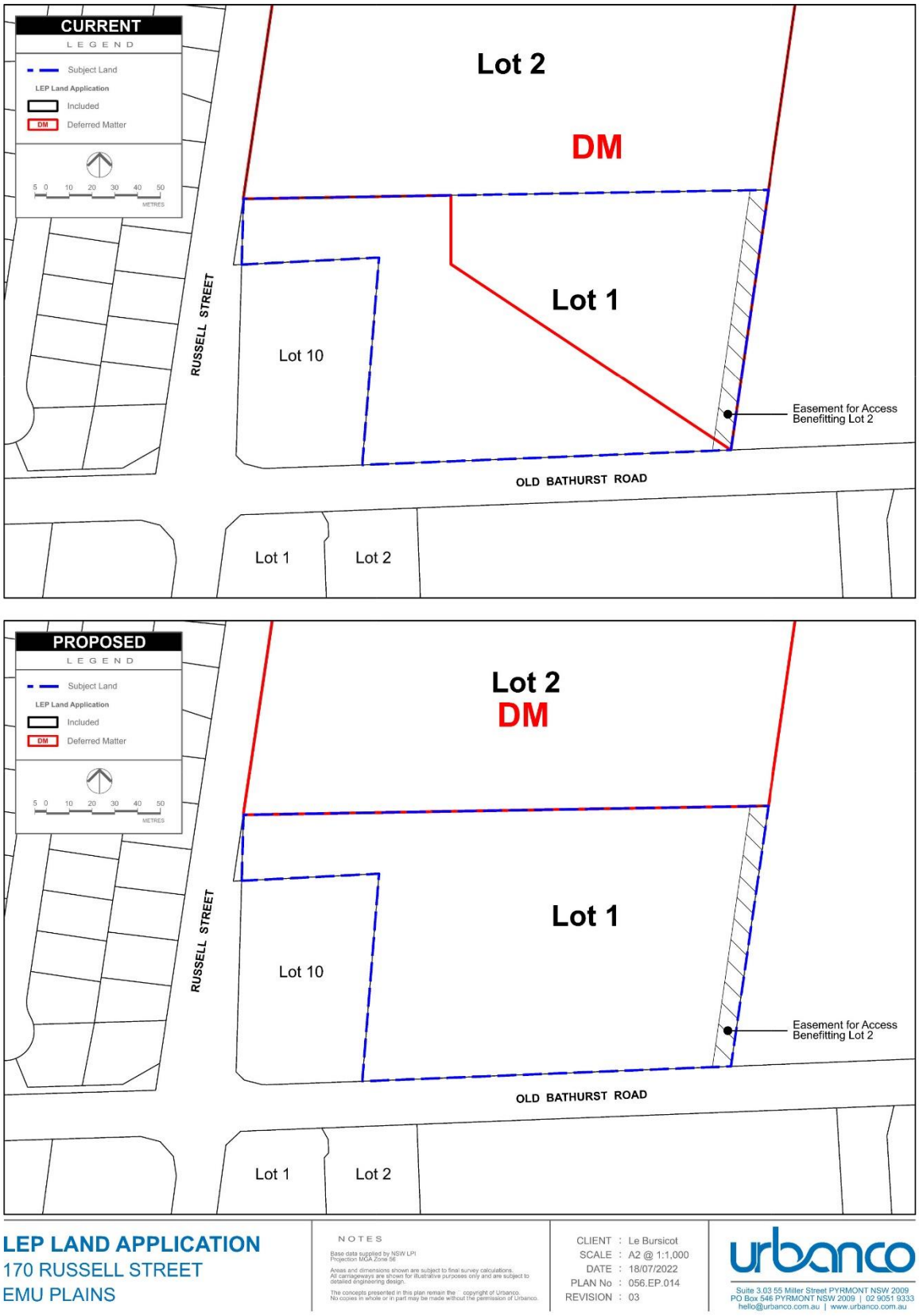

Figure 16 – Proposed Zoning Mapping

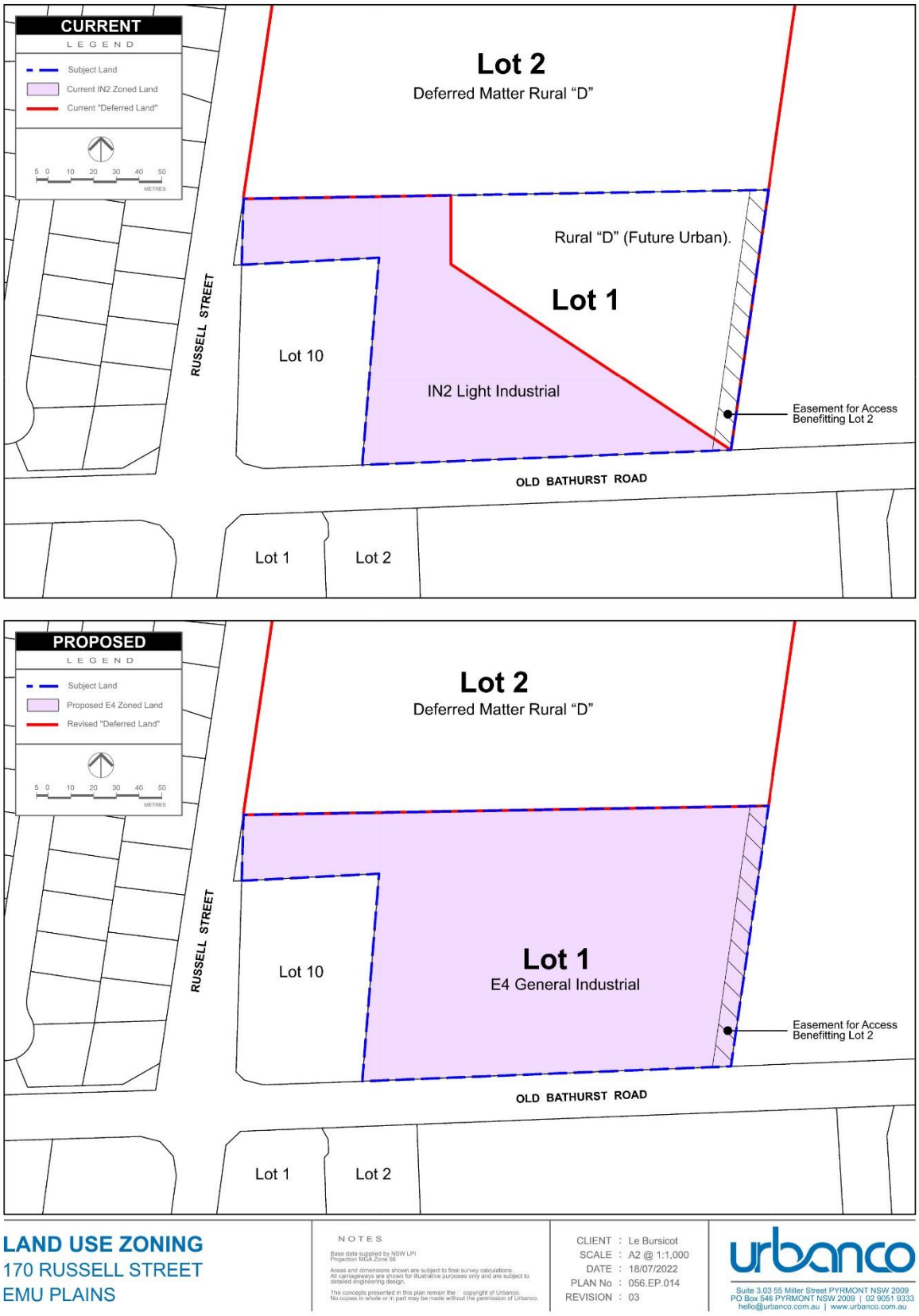

Figure 17 – Proposed Lot Size Mapping

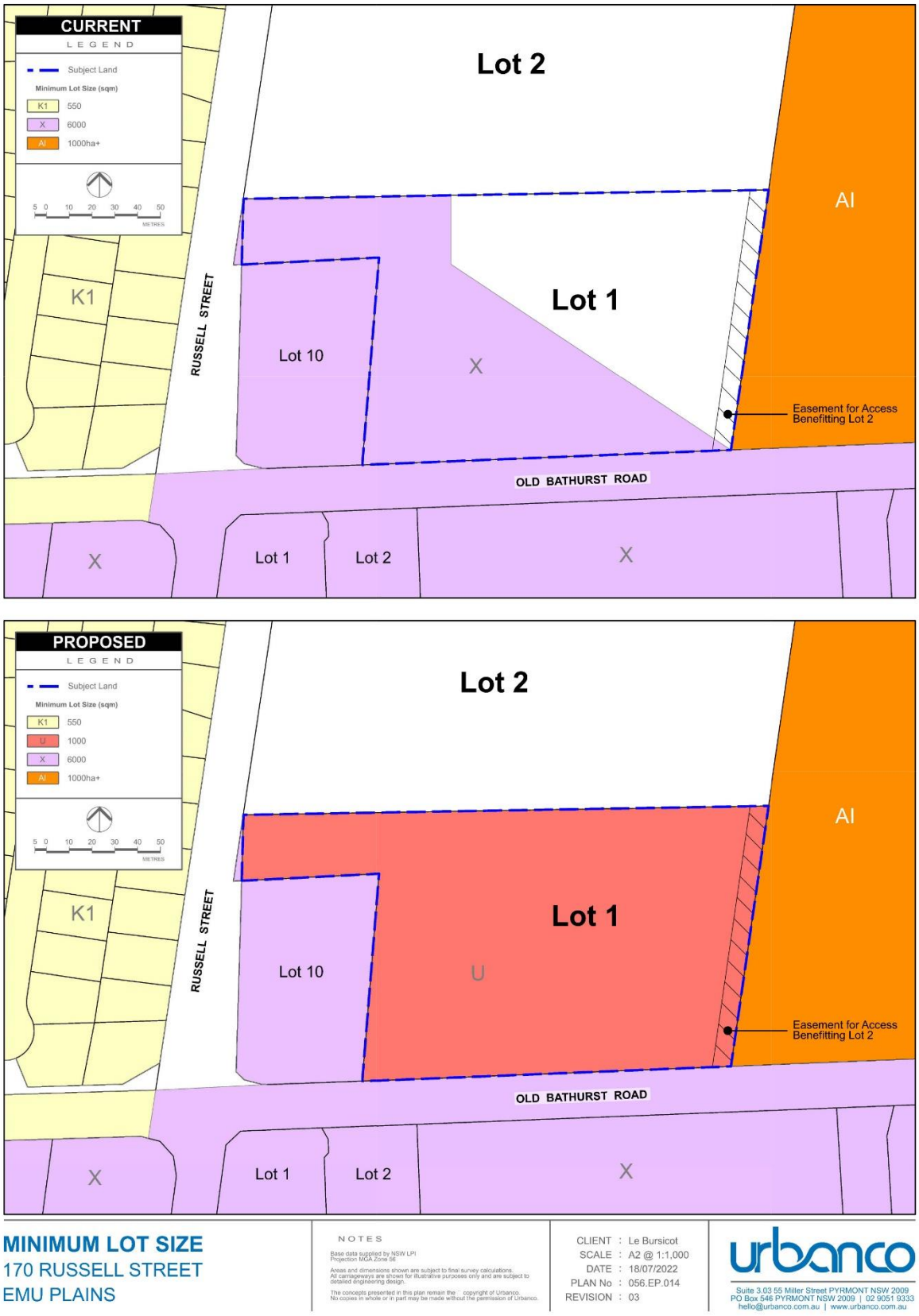

Figure 18 – Proposed Building Heights Mapping

HEIGHT OF BUILDINGS
170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

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CLIENT : Le Bursicot
SCALE : A2 @ 1:1,000
DATE : 18/07/2022
PLAN No : 056.EP.014
REVISION : 03

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Figure 19 – Proposed Additional Permitted Use Mapping

Figure 20 – Proposed Scenic and Landscape Values Mapping

SCENIC AND LANDSCAPE VALUES
170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

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b) Local Clauses and Land Use Provisions

Additional Permitted Use Clause

As required under the Employment Land zoning reforms, IN2 zoned land within the Penrith LGA area primarily being translated to the E4 General Industrial zone.

The IN2 zone will no longer exist.

As the new E4 zone will be a direct translation of the existing IN1 zone, Additional Permitted Uses will need to be added to Schedule 1 for the subject land to ensure existing permissible land uses are retained.

This will ensure a direct translation that provides continuity and certainty of permissibility for the land.

The Additional Permitted Use clause will read as follows:

1. *This clause applies to land at 170 Russell Street, Emu Plains, being Lot 1, DP1273251, that is identified as "36" on the Additional Permitted Uses Map.*
2. *Development for the purposes of amusement centres, centre-based child care facilities, community facilities, crematoria, educational establishments, electricity generating works, function centres, hotel or motel accommodation, medical centres, recreation facilities (indoor), resource recovery facilities, respite day care centres, service stations, vehicle sales or hire premises, veterinary hospitals and waste or resource transfer stations is permitted with development consent*

(Refer to Figure 19 – Proposed Additional Permitted Use above for associated map)

Local Provisions Clause

Council has required that an Additional LEP Local Provision be introduced in relation to filling of the site.

In Part 7 (Additional local provisions), a provision is to be introduced, being sub-clause 7.30 to read as follows:

> *7.30 Development on land at 170 Russell Street, Emu Plains (Lot 1 DP 1273251)*
>
> *Prior to the erection of buildings on the site, flood mitigation and filling works consistent with the endorsed flood impact assessment report and filling strategy, which support Planning Proposal PP-2021-4118, are to be completed to Council's satisfaction.*

Part 3 – Justification

Section A – Need for the Planning Proposal

Q1. Is the Planning Proposal a result of any strategic study or report?

This Planning Proposal has been prepared in response to revised Flood Studies prepared over the Emu Plains catchment and also responds to the Penrith Local Strategic Planning Statement and draft Penrith Employment Lands Strategy.

Review of these studies has identified that there is opportunity to review the current arrangements and provisions to achieve more regular shaped zone boundaries and achieve a more refined and site responsive zoning outcome.

Q2. Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The land proposed to be rezoned is currently subject to the provisions of the historic Penrith Interim Development Order (IDO) No.93.

An amendment to Penrith LEP 2010 through a Planning Proposal to amend the deferred land mapping and include the subject land within the LEP is considered the most appropriate manner in which to achieve the intended outcomes and address historic planning instruments.

Section B – Relationship to Strategic Planning Framework

Q3. Will the planning proposal give effect to the objectives and actions of the applicable regional, or district plan or strategy (including any exhibited draft plans or strategies)?

Consistency with the Western City District Plan has been addressed in detail above.

Support for this Planning Proposal will give effect to the objectives and actions of the Western City District Plan as follows:

Planning Priority W1 - Planning for a city supported by infrastructure

Support for this Planning Proposal will allow for the delivery of additional employment land within close proximity of transport infrastructure including the Emu Plains Railway Station and existing bus services.

Planning Priority W11 - Growing investment, business opportunities and jobs in strategic centres

As noted in the District Plan Employment growth is the principal underlying economic goal for metropolitan and strategic centres.

Support for this Planning Proposal will allow for the delivery additional employment opportunities as part of the Emu Plains employment land precinct.

The proposal is consistent with the Actions of the District Plan which require that Councils Review current planning controls and create capacity to achieve the job targets for the District's centres.

Q4. Will the planning proposal give effect to a council's endorsed local strategic planning statement, or another endorsed local strategy or strategic plan?

Consistency with the Penrith Local Strategic Plan and draft Employment Land Strategy has been addressed in detail above.

Support for this Planning Proposal will give effect to adopted LSPS and draft strategy as follows:

- The land holding is mapped as forming part of the Urban Area under the LSPS, consistent with the surrounding existing employment and residential lands.
- Map 7: Penrith's Economic Triangle of the LSPS also identifies the land holding as forming part of the Emu Plains Industrial Area
- The LSPS notes that there is a need to ensure that the number of jobs in Penrith continues to grow. Many residents travel out of Penrith for work, and there is a need to plan for the right types of jobs to match the workforce.
- The Planning Proposal is generally consistent with the objectives of the Penrith LSPS and meets Planning Priority 12 being to Enhance and grow Penrith's economic triangle. The Planning Proposal will deliver additional employment land and opportunities as part of an identified industrial hub on the western edge of the Economic Triangle.

The proposal is consistent with the intent and objectives of the employment Land Strategy and its background studies as follows:

- The proposal will deliver opportunity for smaller and more diverse employment generating businesses in comparison with the large scale floor plate warehouses anticipated around the airport.
- The proposal will enhance local employment generating land uses for residents living in proximity of Emu Plains.
- The proposal will assist in achieving the employment target of between 85,000 and 109,000 additional jobs.
- The proposal provides opportunity for additional employment land in the Emu Plains Precinct, which has a recognised shortage of future developable employment land.
- The rezoning will further assist in meeting the goal of achieving a "30-minute city".
- By supporting rezoning of the balance of Lot 1 to deliver more diverse employment generating land use opportunities for local residents.

The Proposal is consistent with the following Actions of the Employment Land Strategy:

Action 9

Considering zoning for more light industry for low impact businesses near centres and as a buffer between residential and industrial areas

The proposal will deliver an increase in the area of industrial land within Emu Plains. There is a recognised shortage of industrial land which provides for the permissible land uses on site.

Action 13

Planning a mix of lot sizes to allow local businesses to start-up and scale-up

The proposal will deliver opportunity for smaller scale industrial sites and development consistent with this action.

Action 15

Reviewing zoning, height limits and development controls to offer greater flexibility for business operations while preventing land use conflicts, and ensuring controls are appropriate to lot size and location

The rezoning of the balance of Lot 1 is consistent with this principle to review zoning and development controls to deliver employment opportunities.

Q5. Is the planning proposal consistent with applicable State Environmental Planning Policies?

The NSW Government has gazetted a range of State Environmental Planning Policies (SEPPs) and Sydney Regional Environmental Plans (SREPs or Deemed SEPPs) which guide land use and planning outcomes across the State and Sydney Metropolitan Region.

We have provided a detailed review of the Planning Proposal and its intended outcomes and objectives against all relevant SEPPs in the table below.

This review has demonstrated that the proposal is consistent with all relevant and applicable state environmental planning policies.

The Planning Proposal is not considered to be inconsistent with any adopted State Environmental Planning Policies.

State Environmental Planning Policies

SEPP Title	Applicable	Consistent
State Environmental Planning Policy (Biodiversity and Conservation) 2021		
Chapter 2 Vegetation in non-rural areas	Not Applicable	The proposal does not seek any clearing of vegetation under this SEPP.
Chapter 3 Koala habitat protection 2020	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies. The land is not mapped as either Koala Habitat or potential habitat.
Chapter 4 Koala habitat protection 2021		

SEPP Title	Applicable	Consistent
Chapter 5 River Murray lands	Not Applicable	The proposal does not incorporate any land to which this chapter Applies.
Chapter 6 Bushland in urban areas	Not Applicable	The subject site does not incorporate any land zoned or identified as urban bushland.
Chapter 7 Canal estate development	Not Applicable	The Proposal is not classified as a Canal Estate.
Chapter 8 Sydney drinking water catchment	Not Applicable	The Planning Proposal does not affect land within the Sydney Water Drinking Catchment.
Chapter 9 Hawkesbury-Nepean River	Yes Applicable.	The site is within the Hawkesbury-Nepean River Catchment. A preliminary drainage report has been provided which demonstrates how future development of the site may address water quality targets. Any future DA will need to consider the environmental and heritage requirements of Chapter 9.
Chapter 10 Sydney Harbour Catchment	Not Applicable	The proposal does not incorporate any land to which this chapter Applies.
Chapter 11 Georges Rivers Catchment	Not Applicable	The proposal does not incorporate any land to which this chapter Applies.
Chapter 12 Willandra Lakes Region World Heritage Property	Not Applicable	The proposal does not incorporate any land to which this chapter Applies.
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004	Not Applicable	The proposal does not relate to residential development.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008	Applicable	The proposal will not alter exempt or complying provisions.
State Environmental Planning Policy (Housing) 2021		
Chapter 2 Affordable housing	Not Applicable	The proposal does not relate to residential development or affordable housing.
Chapter 3 Diverse housing	Not Applicable	This SEPP is not applicable to industrial or rural land.

SEPP Title	Applicable	Consistent
State Environmental Planning Policy (Industry and Employment) 2021		
Chapter 2 Western Sydney employment area	Not Applicable	The subject site is not located within the Western Sydney Employment Area.
Chapter 3 Advertising and signage	Not Applicable	The proposal will not impede the ongoing assessment of signage applications under SEPP 64.
State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development	Not Applicable	The proposal will not impact delivery of Residential Flat Buildings.
State Environmental Planning Policy (Planning Systems) 2021		
Chapter 2 State and regional development	Applicable	The subject site does not incorporate State or Regionally significant development. Notwithstanding, the proposal will not impede the assessment or delivery of development under this SEPP. The proposal is therefore consistent with the objectives and provisions of the Infrastructure SEPP.
Chapter 3 Aboriginal land	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies.
Chapter 4 Concurrences and consents	Not Applicable	The Planning Proposal does not affect implementation of Chapter 4.
State Environmental Planning Policy (Precincts—Central River City) 2021	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies.
State Environmental Planning Policy (Precincts—Eastern Harbour City) 2021	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies.
State Environmental Planning Policy (Precincts—Regional) 2021	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies.

SEPP Title	Applicable	Consistent
State Environmental Planning Policy (Precincts—Western Parkland City) 2021	Yes Applicable	Refer to detailed discussion in the report above. The Planning Proposal is consistent with the planning principles and objectives of the SEPP.
Chapter 2 State significant precincts	Not Applicable	The subject site does not incorporate land to which this SEPP applies.
Chapter 3 Sydney region growth centres	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies.
Chapter 4 Western Sydney Aerotropolis	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies.
Chapter 5 Penrith Lakes Scheme	Not Applicable	The subject site is not located within the Penrith Lakes Scheme.
Chapter 6 St Marys	Not Applicable	The proposal does not incorporate any land to which this chapter Applies.
Chapter 7 Western Sydney Parklands	Not Applicable	The subject site is not located within the Western Sydney Parklands.
State Environmental Planning Policy (Primary Production) 2021	Applicable	The proposal will not impede the assessment or delivery of development under this SEPP. The proposal is therefore consistent with the objectives and provisions of the SEPP.
State Environmental Planning Policy (Resilience and Hazards) 2021		
Chapter 2 Coastal management	Not Applicable	The subject land is not mapped as Coastal Wetlands / Littoral Forests or Proximity Area for Coastal Wetlands / Littoral Forests. The Coastal Management SEPP contains provisions which are to be addressed in the assessment of a Development Application.
Chapter 3 Hazardous and offensive development	Not Applicable	The proposal does not seek approval for land uses classified as hazardous or offensive development.
Chapter 4 Remediation of land	Applicable	A Stage 1 Preliminary Site Investigation (PSI) has been prepared for the site.

SEPP Title	Applicable	Consistent
		The PSI concludes that the site is considered suitable or capable of being made suitable for the proposed development as per SEPP 55. The Proposal is consistent with the provisions and intent of the SEPP.
State Environmental Planning Policy (Resources and Energy) 2021	Applicable	The subject site does not incorporate any mining or petroleum industries or identified resources. Notwithstanding, the proposal will not impede the assessment or delivery of development under this SEPP.
State Environmental Planning Policy (Transport and Infrastructure) 2021		
Chapter 2 Infrastructure	Applicable	The subject site does not incorporate any identified infrastructure projects. Notwithstanding, the proposal will not impede the assessment or delivery of development under this SEPP.
Chapter 3 Educational establishments and child care facilities	Applicable	The Planning Proposal will not affect implementation of this SEPP.
Chapter 4 Major infrastructure corridors	Not Applicable	The proposal does not incorporate any land to which this SEPP Applies or land which is identified as a transport corridor.
Chapter 5 Three ports—Port Botany, Port Kembla and Newcastle	Not Applicable	The subject site does not incorporate land to which this SEPP applies.

Q6. Is the planning proposal consistent with applicable Ministerial Directions (s.9.1 directions)?

The Minister for Planning and Environment has issued Local Planning Directions that must be considered in the preparation of Planning Proposals. The directions cover a range of categories and land use considerations including:

- Employment and resources
- Environment and heritage
- Housing, infrastructure, and urban development
- Hazard and risk
- Regional planning
- Local plan making

A detailed review of the proposal against each Local Planning Direction is provided in the table below. This review demonstrates that the Planning Proposal is wholly consistent with all applicable Local Planning Directions.

Section 9.1 Ministerial Directions - Local Planning Directions

Direction	Applicable	Consistent	Comment
1 Employment and Resources			
1.1 Business and Industrial Zones	Applicable	Yes Consistent	The proposal retains the existing industrial zoned land and will not reduce the total potential floor space area for industrial uses.
1.2 Rural Zones	Applicable	Not Consistent	Addressed in detail below. The proposal is consistent with draft Employment Lands Strategy and Local Strategic Planning Statement. The proposal retains over 21 hectares of rural land and is of minor significance.
1.3 Mining, Petroleum Production and Extractive Industries	Not Applicable		The proposal will not amend any land use provisions relating to natural resources and does not affect any identified resources. Consultation can be undertaken with the Department of Primary Resources if required by the Gateway Determination.

Direction	Applicable	Consistent	Comment
1.4 Oyster Aquaculture	Not Applicable		The proposal will not have an impact on any identified aquaculture areas.
1.5 Rural Lands	Not Applicable		The direction is not applicable to the Penrith LGA.
2 Environment and Heritage			
2.1 Environment Protection Zones	Not Applicable		The proposal does not seek any amendments to the existing environmental protection zoned land or planning provisions.
2.2 Coastal Management	Not Applicable		The subject land is not located within an identified coastal protection zone area.
2.3 Heritage Conservation	Applicable	Yes Consistent	The proposal is consistent with this direction as the proposal will retain the existing LEP heritage provisions.
2.4 Recreation Vehicle Areas	Not Applicable		The proposal does not seek to introduce provisions for recreational vehicle areas.
2.5 Application of E2 and E3 Zones and Environmental Overlays in Far North Coast LEPs	Not Applicable		The subject land is not situated within a listed Local Government Area.
2.6 Remediation of Contaminated Land	Applicable	Yes Consistent	A Stage 1 Preliminary Site Investigation (PSI) was prepared for the site in 2006. The PSI concluded that the is suitable or capable of being made suitable for industrial development. The Proposal is consistent with the Direction. Detailed site testing will be undertaken as part of any future Development Application.

Direction	Applicable	Consistent	Comment
3 Housing, Infrastructure and Urban Development			
3.1 Residential Zones	Not Applicable		The proposal does not amend any residential zoned land.
3.2 Caravan Parks and Manufactured Home Estates	Not Applicable		The Planning Proposal does not seek support for any caravan or manufactured home estates.
3.4 Integrating Land Use and Transport	Applicable	Yes Consistent	The proposal is consistent with the objectives and principles of Improving Transport Choice – Guidelines for planning and development (DUAP 2001), and The Right Place for Business and Services – Planning Policy (DUAP 2001) through locating employment generating development in close proximity to existing residents as an extension of existing employment land.
3.5 Development Near Regulated Airports and Defence Airfields	Not Applicable		The subject site is not situated within proximity of an existing licensed CASA registered aerodrome.
3.6 Shooting Ranges	Not Applicable		No shooting ranges are located or proposed on the subject site.
3.7 Reduction in non-hosted short term rental accommodation period	Not Applicable		No amendments to short term rental accommodation provisions proposed.
4 Hazard and Risk			
4.1 Acid Sulfate Soils	Not Applicable		The land is not mapped as being subject to Acid Sulfate Soils.
4.2 Mine Subsidence and Unstable Land	Not Applicable		The subject land is not identified as being situated within a Mine Subsidence District.

Direction	Applicable	Consistent	Comment
4.3 Flood Prone Land	Applicable	Inconsistent	The proposal seeks to rezone a small portion of land within the Flood Planning Area. A detailed flood study has been provided with this application addressing this direction and is further discussed below.
4.4 Planning for Bushfire Protection	Not Applicable		No land is proposed to be rezoned which is mapped as having bushfire affectation.
5. Regional Planning			
5.2 Sydney Drinking Water Catchments	Not Applicable		The land is not located within a Local Government Area which forms part of the Sydney drinking water catchment.
5.3 Farmland of State and Regional Significance on the NSW Far North Coast	Not Applicable		The land is not within the identified area of State or Regional Significance Farmland.
5.4 Commercial and Retail Development along the Pacific Highway, North Coast	Not Applicable		The land is not within the identified commercial and retail development area.
5.9 North West Rail Link Corridor Strategy	Not Applicable		The site does not incorporate any land within the Northwest Rail Link Corridor.
5.10 Implementation of Regional Plans	Applicable	Yes Consistent	This proposal includes a detailed assessment of the planning outcomes under the Western City District Plan and Greater Sydney Region Plan. The assessment demonstrates that the proposal is consistent with the regional strategies.
5.11 Development of Aboriginal Land Council land	Not Applicable		No rezoning of Aboriginal Land Council land proposed.

Direction	Applicable	Consistent	Comment
6. Local Plan Making			
6.1 Approval and Referral Requirements	Yes Applicable	Consistent	The proposal does not introduce any provisions that require concurrence or referral of Development Applications.
6.2 Reserving Land for Public Purposes	Yes Applicable	Consistent	This Planning Proposal does alter create or alter any existing public recreation zones or land reservations. Accordingly, the proposal is consistent with this direction.
6.3 Site Specific Provisions	Not Applicable		The proposal does not include the introduction of any site-specific provisions.
7. Metropolitan Planning			
7.3 Parramatta Road Corridor 1.2 Rural Zones Urban Transformation Strategy	Not Applicable		The land is not located within the Parramatta Road corridor.
7.4 Implementation of Northwest Priority Growth Area Land Use and Infrastructure Implementation Plan	Not Applicable		The land is not located within Northwest Priority Growth Area.
7.5 Implementation of Greater Parramatta Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not Applicable		The land is not located within the Greater Parramatta Priority Growth Area.
7.6 Implementation of Wilton Priority Growth Area Interim Land Use and Infrastructure Implementation Plan	Not Applicable		The land is not located within the Wilton Priority Growth Area.
7.7 Implementation of Glenfield to Macarthur Urban Renewal Corridor	Not Applicable.		The site is not located within the Glenfield to Macarthur Urban Renewal Corridor.

Direction	Applicable	Consistent	Comment
7.8 Implementation of the Western Sydney Aerotropolis Interim Land Use and Infrastructure Implementation Plan	Not Applicable.		The site is not located within the Western Sydney Aerotropolis LUIP area.
7.9 Implementation of Bayside West Precinct Plan	Not Applicable		The land is not located within the Precinct Plan area.
7.10 Implementation of Planning Principles for Cookes Cove Preci.t	Not Applicable		The land is not located within the Precinct area.
7.11 Implementation of St Leonards and Crows Nest 2036 Plan.	Not Applicable		The land is not located within the Plan Area.
7.12 Implementation of Greater Macarthur 2040	Not Applicable		The land is not located within the Macarthur 2040 Area.
7.13 Implementation of Pyrmont Peninsula Place Strategy	Not Applicable		The land is not located within the Pyrmont Peninsula.

Direction 1.2 Rural Zones

This direction applies when a planning proposal that will affect land within an existing or proposed rural zone.

The proposal seeks to rezone land zoned under an historic rural zoning to industrial land under the Penrith LEP. The balance of the land holding will be retained under its current rural zone.

The Direction notes that a planning proposal must:

> *(a) not rezone land from a rural zone to a residential, business, industrial, village or tourist zone.*
>
> *(b) not contain provisions that will increase the permissible density of land within a rural zone (other than land within an existing town or village).*

The Direction states that a planning proposal may be inconsistent with this direction where the planning proposal is:

> *(a) justified by a strategy which:*
>
> *(i) gives consideration to the objectives of this direction,*
>
> *(ii) identifies the land which is the subject of the planning proposal (if the planning proposal relates to a particular site or sites), and*

(iii) is approved by the Director-General of the Department of Planning, or

(c) in accordance with the relevant Regional Strategy, Regional Plan or Sub-Regional Strategy prepared by the Department of Planning which gives consideration to the objective of this direction, or

(d) is of minor significance.

The land does not form part of any strategic key farming lands and is zoned Rural 1D "Future Urban". This indicates that the land proposed to be rezoned was intended to be considered for rezoning at the appropriate time.

The land is not currently utilised for any agricultural purposes.

Lot 1 has an area of 2.084 hectares, with the existing IN2 zoned land occupying approximately 1.1 hectares. This Planning Proposal seeks to rezone the balance of Lot 1, being approximately 9,840m^2, which is currently deferred land under Penrith LEP 2010.

The balance of the land holding being Lot 2 has an area of over 21 hectares and will retain the current "rural" zoning.

Therefore, rezoning of the land would have minor significance.

As such, the proposal is able to be supported.

Direction 4.3 Flood Prone Land

This direction applies when a relevant planning authority prepares a planning proposal that creates, removes, or alters a zone or a provision that affects flood prone land.

The proposal seeks to rezone a portion of Lot 1 which is partly mapped as being flood affected land.

The Direction notes that a planning proposal must:

(5) A planning proposal must not rezone land within the flood planning areas from Special Use, Special Purpose, Recreation, Rural or Environmental Protection Zones to a Residential, Business, Industrial, Special Use or Special Purpose Zone.

Notwithstanding, the proposal achieves consistency with Clause 6 of the Ministerial Direction as follows:

- There will be no development within the floodway based on the cut / fill plans.
- Development will not result in significant flood impacts to other properties.
- No development for the purposes of residential accommodation in high hazard areas
- No development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate
- No development to be carried out without development consent.
- No development which will result in a substantially increased requirement for government spending on flood mitigation measures, infrastructure or services.

- No development where hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.

The Direction states that the proposal is able to be supported where it addresses / satisfies Clause 9 of the Direction.

> *(a) the planning proposal is in accordance with a floodplain risk management study or plan adopted by the relevant Council in accordance with the principles and guidelines of the Floodplain Development Manual 2005, or*
>
> *(b) where there is no council adopted floodplain risk management study or plan, the planning proposal is consistent with the flood study adopted by the council prepared in accordance with the principles of the Floodplain Development Manual 2005 or*
>
> *(c) the planning proposal is supported by a flood and risk impact assessment accepted by the relevant planning authority and is prepared in accordance with the principles of the Floodplain Development Manual 2005 and consistent with the relevant planning authorities' requirements, or*
>
> *(d) the provisions of the planning proposal that are inconsistent are of minor significance as determined by the relevant planning authority.*

The flood study notes that:

- The Penrith City Council has not adopted a Floodplain Risk Management Study or Plan for the Nepean River.
- The Planning Proposal is supported by this report, which has been prepared in accordance with the principles of the Floodplain Development Manual 2005 and consistent with the relevant planning authorities' requirements.
- The flood study has adequately demonstrated that the development that will not result in significant flood impacts to other properties and are of minor significance.

The cut and fill plan demonstrates that minor filling of Lot 1 (less than 0.5m at its highest point) can be undertaken, which will result in Lot 1 being flood free in the 1 in 100 year storm event.

The minor filling of the land is offset by the removal of an existing soil stockpile located on Lot 2 to the north adjacent to the drainage channel.

The plans provided demonstrate an increase in flood storage of 550m^3 through the removal of the stockpile, with a corresponding decrease in flood storage of 500m^3 through filling of Lot 1.

This results in an increase of 50m^3 of flood storage across the land holding.

Given that the proposal will allow for an increase in Flood Storage, rezoning of the land would have positive outcome and is able to be supported.

Section C – Environmental, Social and Economic Impacts

Q7. Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?

There are no identified areas of critical habitat within the land to be rezoned, threatened species or ecological communities which would be impacted by the proposal.

The land to be rezoned has been extensively cleared and managed for an extended period of time in association with historic land uses.

Q8. Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

The Planning Proposal will not result in any environmental impacts or effects pertaining to the subject site.

Support for this proposal will result in an overall increase in flood storage within the catchment, benefitting the local community.

There are no significant areas of vegetation on site which would be impacted by the proposal.

Q9. Has the planning proposal adequately addressed any social and economic effects?

Support for this Planning Proposal will facilitate enhanced opportunity for local employment generating development within the locality.

This will have positive social and economic benefits as follows:

- Creation of additional employment opportunities for local residents.
- Reduce the number of residents needing to travel outside of the Penrith LGA for employment.
- Contribute to achieving the “30-minute city”.
- Provide additional job opportunities during construction.

Section D – State and Commonwealth Interests

Q10. Is there adequate public infrastructure for the planning proposal?

The site is situated in an area where existing services and facilities are provided to surrounding land. The land holding has existing services provided to the dwelling located within Lot 2.

Site services will be provided as part of any future development.

The proposal seeks to rezone a small portion of land along the Old Bathurst Road frontage and will not generate any significant servicing requirements.

Servicing of the site has been addressed earlier in this report. Adequate services are available to allow rezoning of the land as proposed.

Q11. What are the views of state and Commonwealth public authorities consulted in accordance with the Gateway determination?

The Gateway Determination will outline the State and Commonwealth public authorities to be consulted.

This matter will be addressed posit Gateway Determination.

Part 4 – Mapping

The following map tiles are proposed to be amended as part of the Planning Proposal.

Map	Tile Number
Land Application Map	Sheet LAP_001
Land Zoning	Sheet LZN_005
Lot Size	Lot Size Map: Sheet LSZ_005
Height of Buildings	Height of Building Map: Sheet HOB_005
Scenic and Landscape Values	Scenic and Landscape Values Map: Sheet SLV_005
Additional Permitted Uses	Additional Permitted Uses Map: Sheet APU_005

The proposed Penrith LEP 2010 map amendments are provided at Appendix 1.

Part 5 – Community Consultation

The Gateway Determination will outline the community consultation to be undertaken.

The planning proposal will be publicly exhibited at the Penrith Council Civic Centre, Penrith Library, Council's St Marys Office, and St Marys Library. All exhibition material will be available on Council's website.

Notice of the public exhibition will be given in the local newspaper and on Council's website. Notice of the public exhibition will also be provided by a letter to the land owners and occupiers of adjoining and affected properties.

Consultation with public authorities will be undertaken in accordance with the requirements of the Gateway Determination.

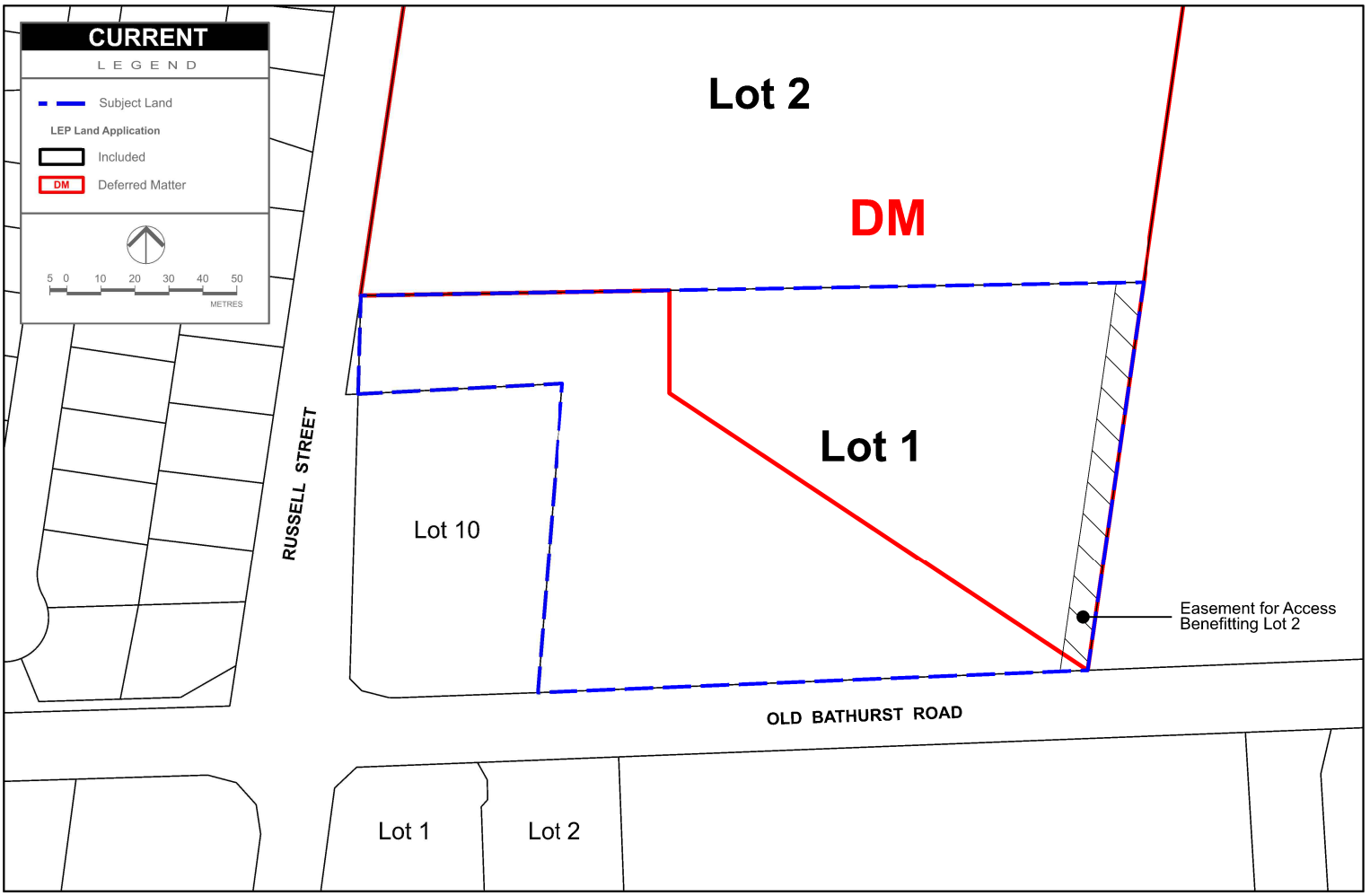
In responses to Section 9.1 Direction 4.4, Council will consult the NSW Rural Fire Service on the planning proposal, which will provide the information to demonstrate compliance with the provisions of this Direction.

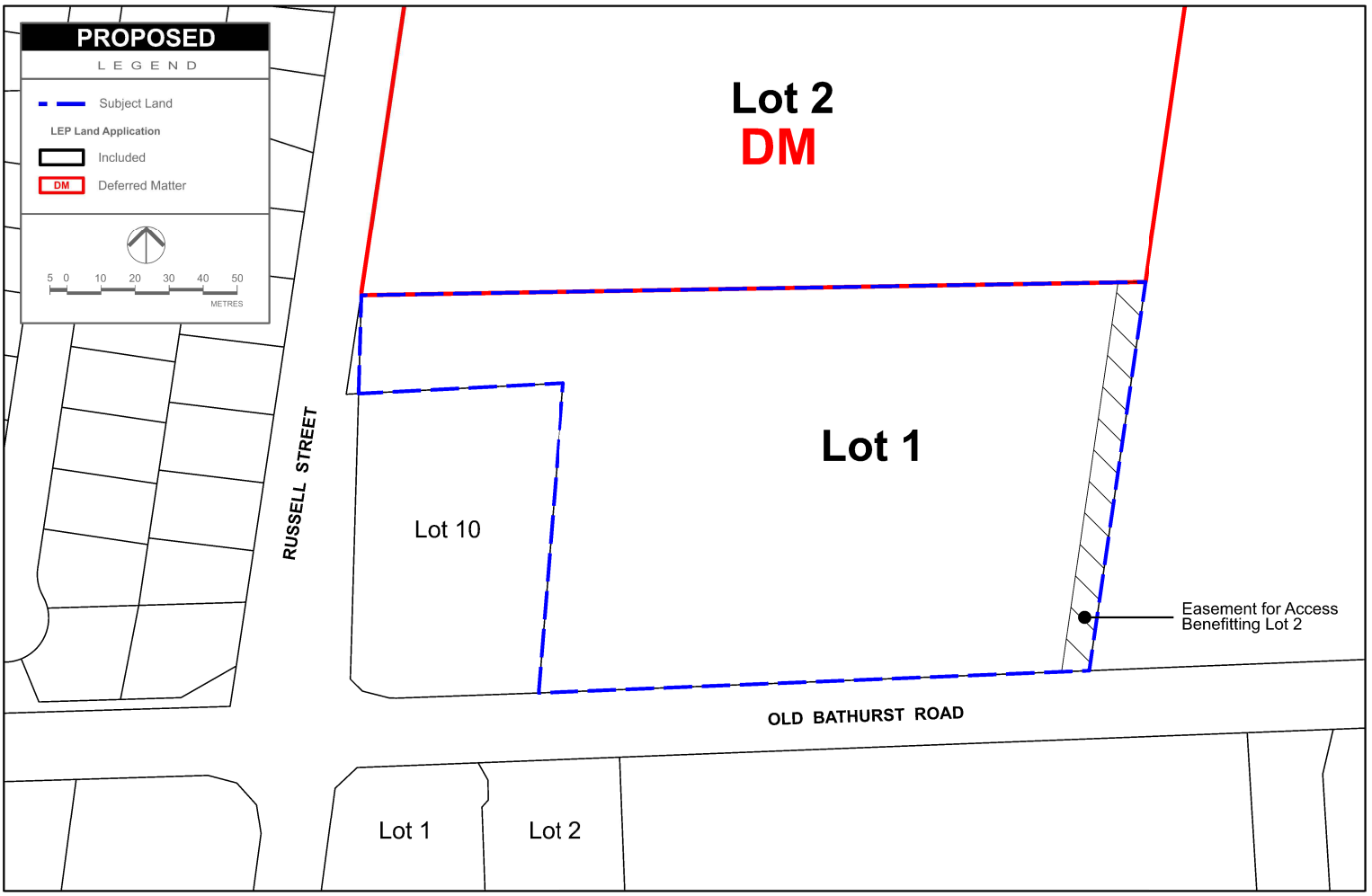
Part 6 - Project Timeline

Milestone	Timeframe
Council Assessment of Planning Proposal	October 2021 to March 2022
Local Planning Panel	December 2021
Council's sponsor of the Planning Proposal	September 2022
Submission to NSW Department of Planning, Industry and Environment	October 2022
Gateway Determination issued	October 2022
Public exhibition and public authority consultation	November 2022
Consideration of submissions	January 2023
Reporting of the Planning Proposal to Council	March 2023
Submission to NSW Department of Planning, Industry and Environment and Parliamentary Counsel Office	April 2023
Publication of LEP amendment	May 2023

Appendices

APPENDIX 1
Proposed Penrith LEP 2010 Maps





LEP LAND APPLICATION

170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

CLIENT : Le Bursicot
SCALE : A2 @ 1:1,000
DATE : 18/07/2022
PLAN No : 056.EP.014
REVISION : 03

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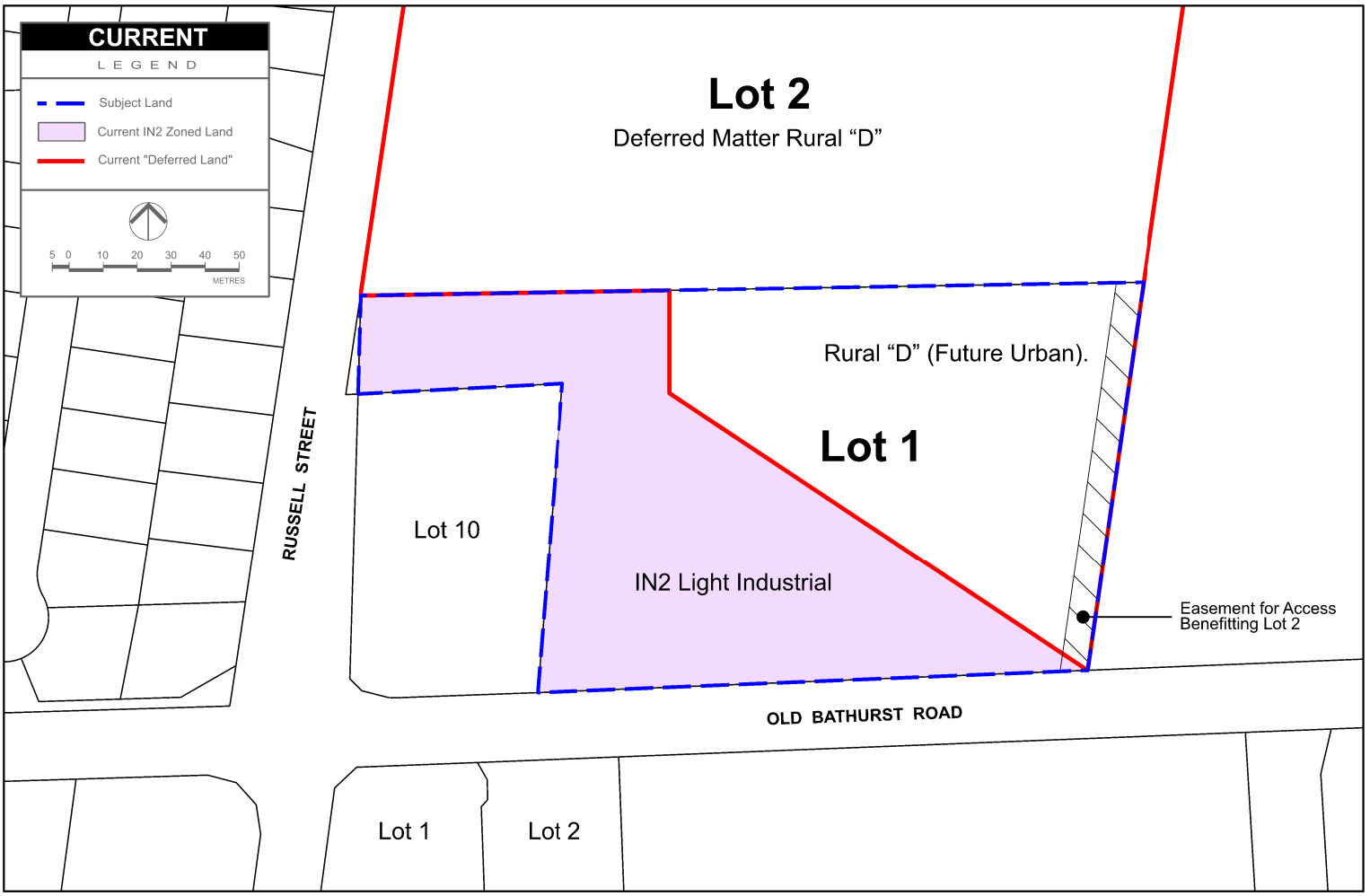

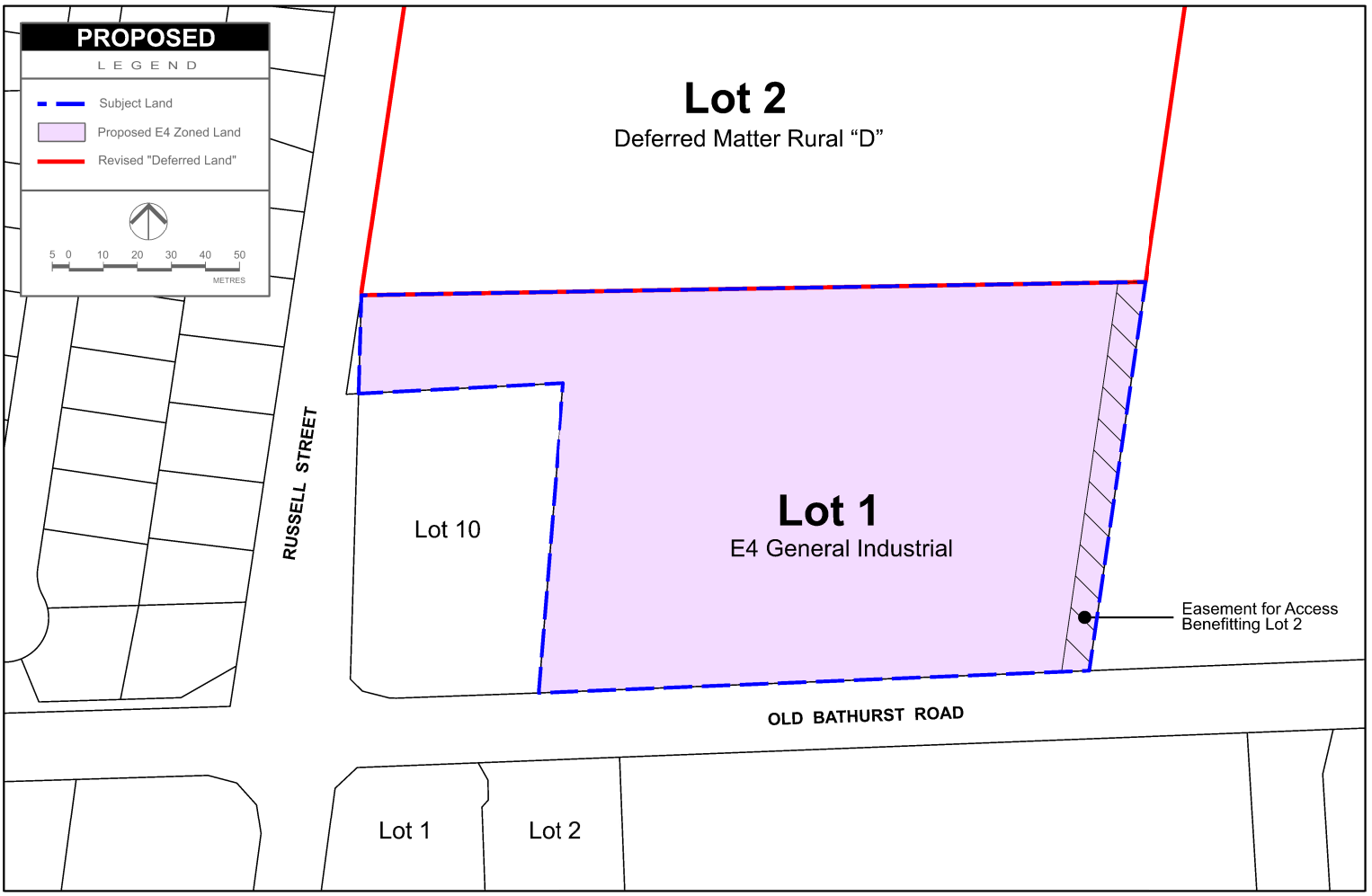

LAND USE ZONING
170 RUSSELL STREET
EMU PLAINS

NOTES

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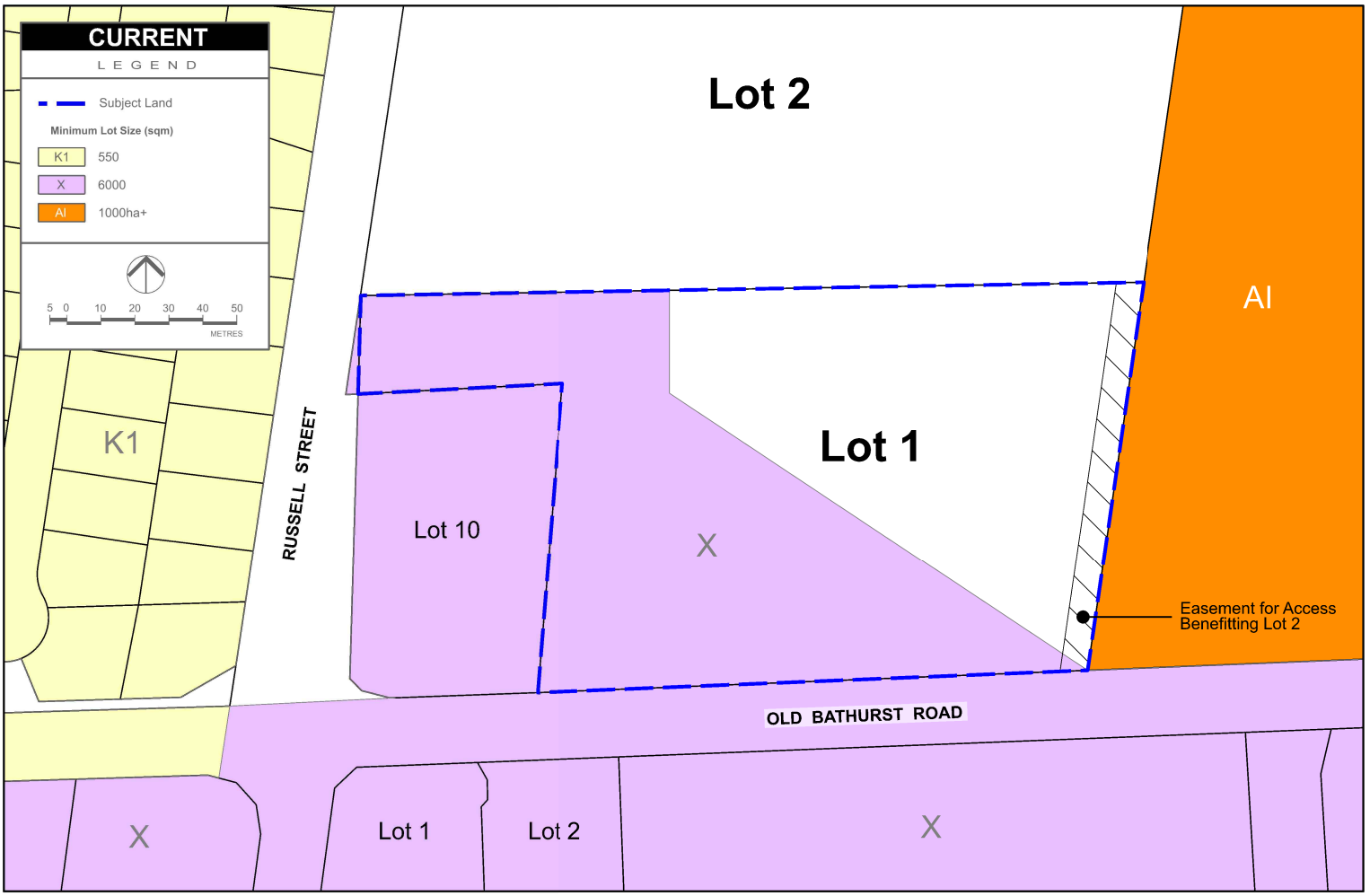

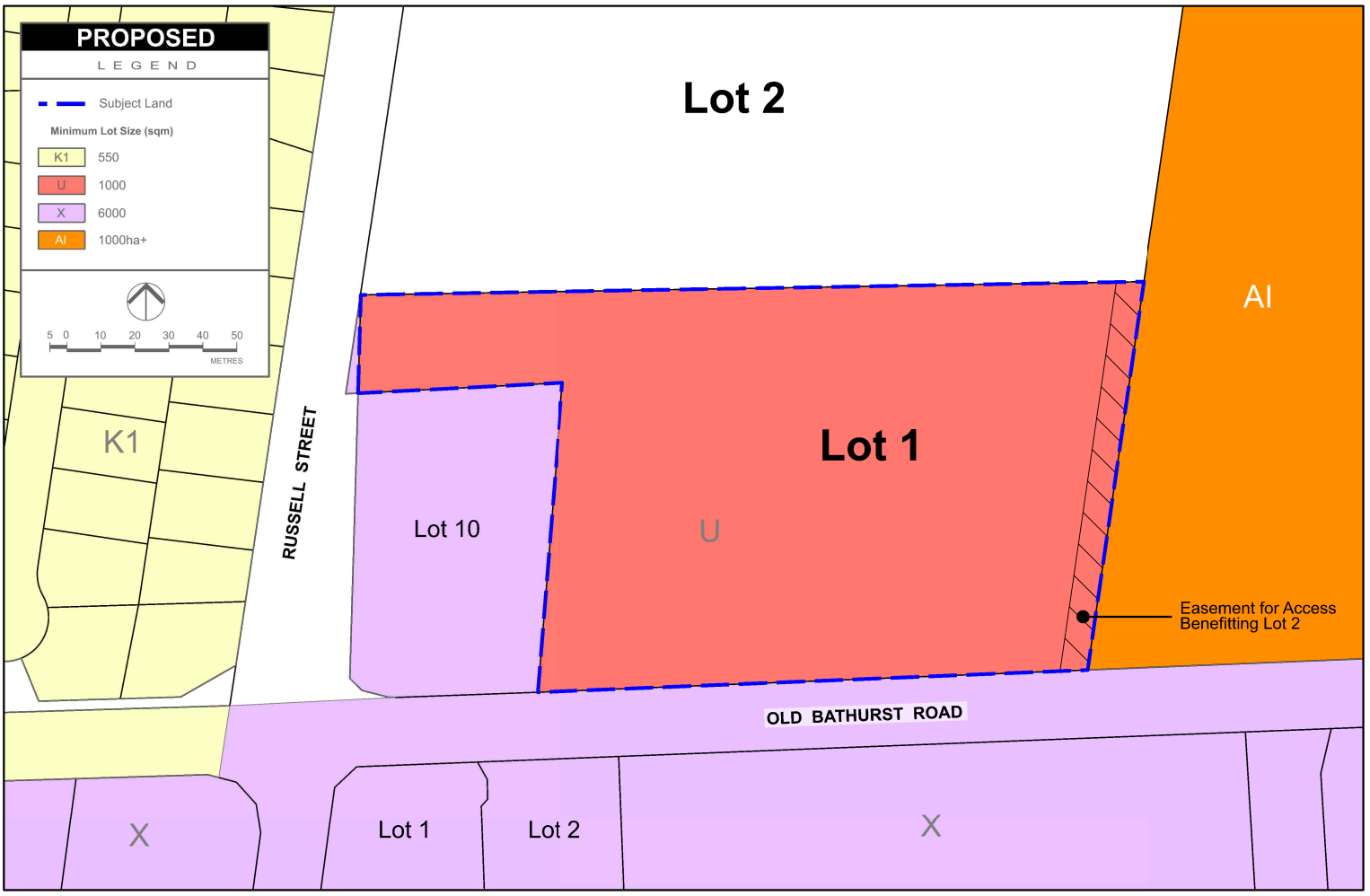

MINIMUM LOT SIZE
170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

CLIENT : Le Bursicot
SCALE : A2 @ 1:1,000
DATE : 18/07/2022
PLAN No : 056.EP.014
REVISION : 03

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Suite 3.03 55 Miller Street PYRMONT NSW 2009
PO Box 546 PYRMONT NSW 2009 | 02 9051 9333
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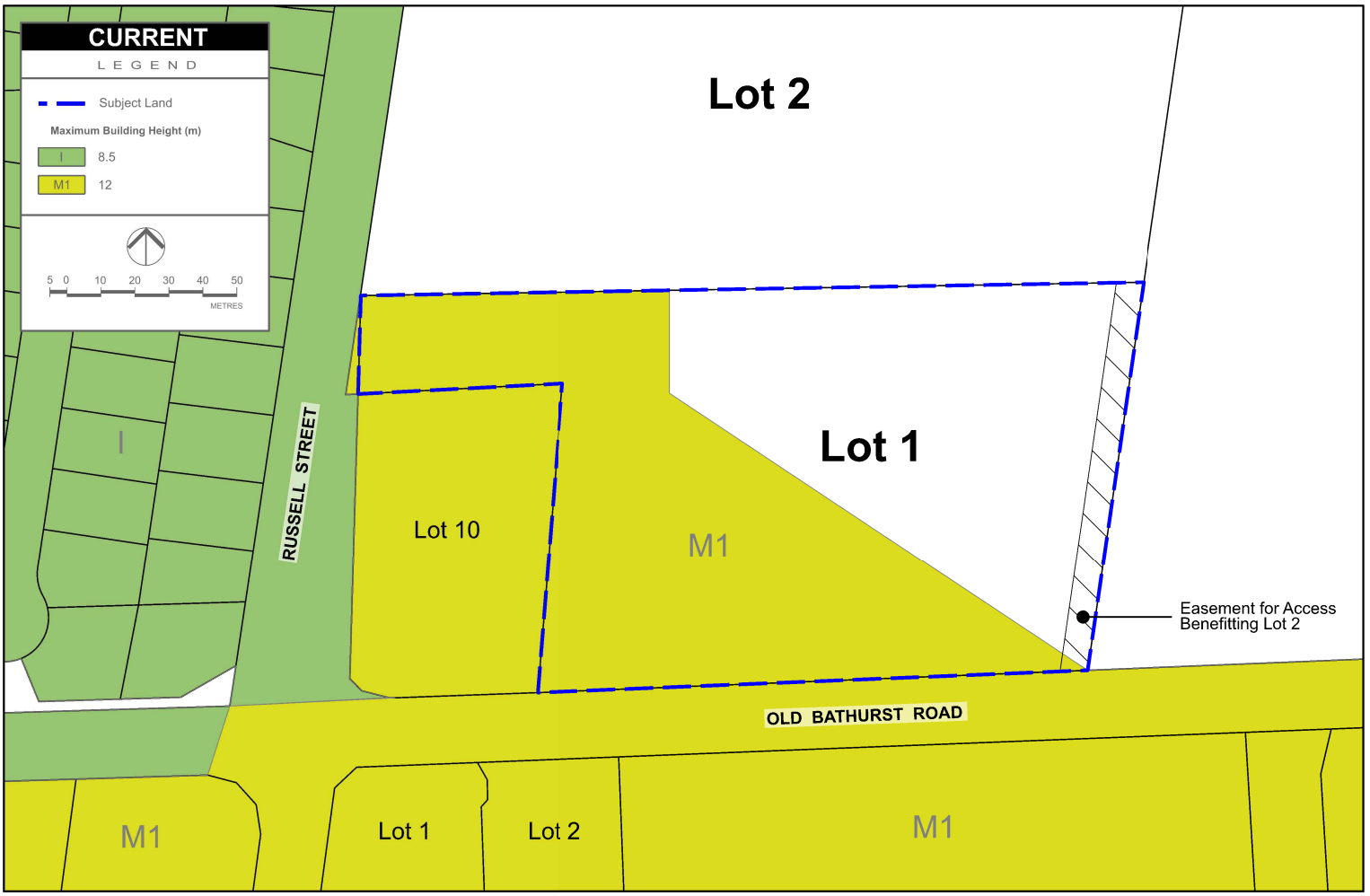

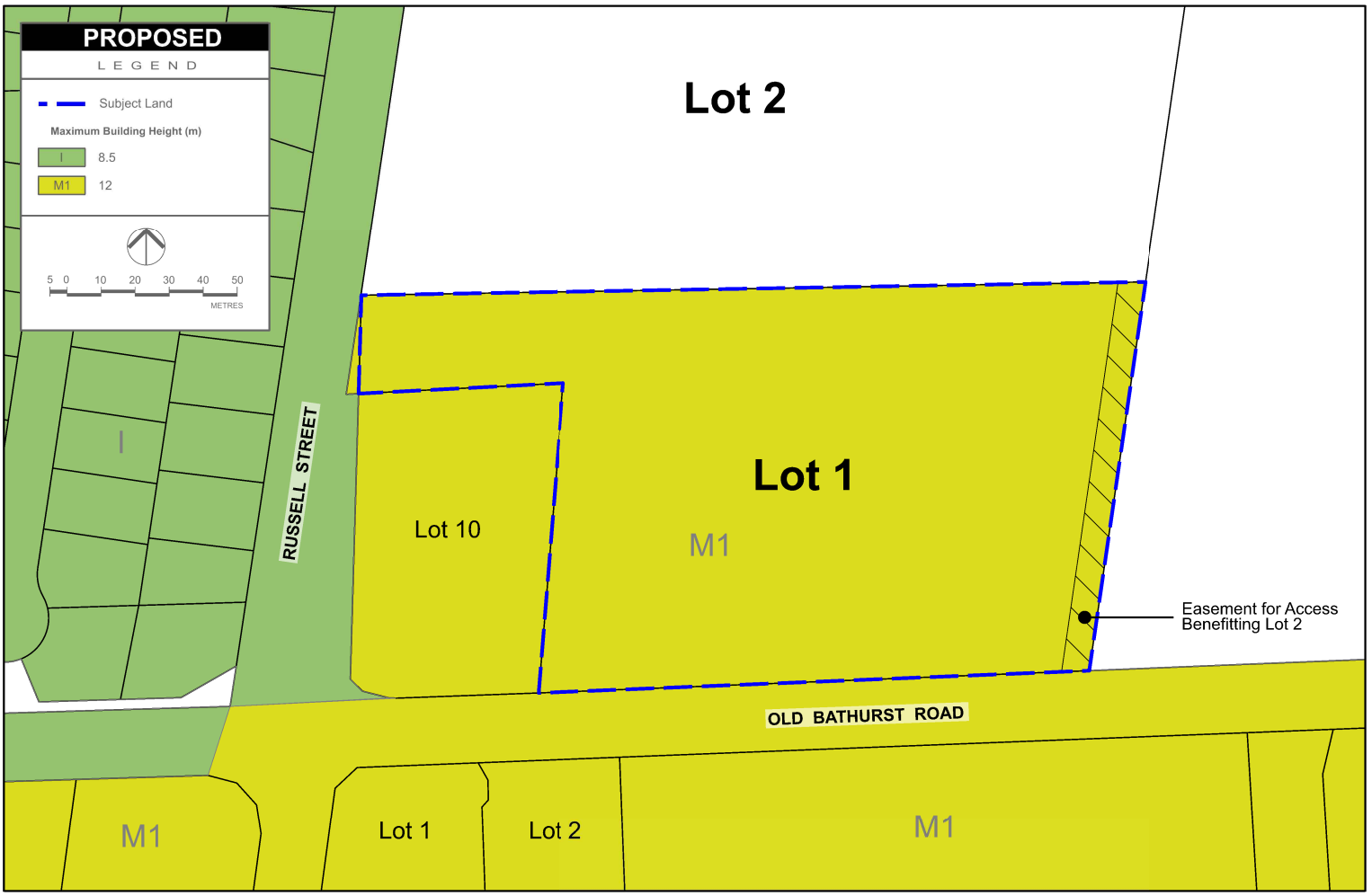

HEIGHT OF BUILDINGS
170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
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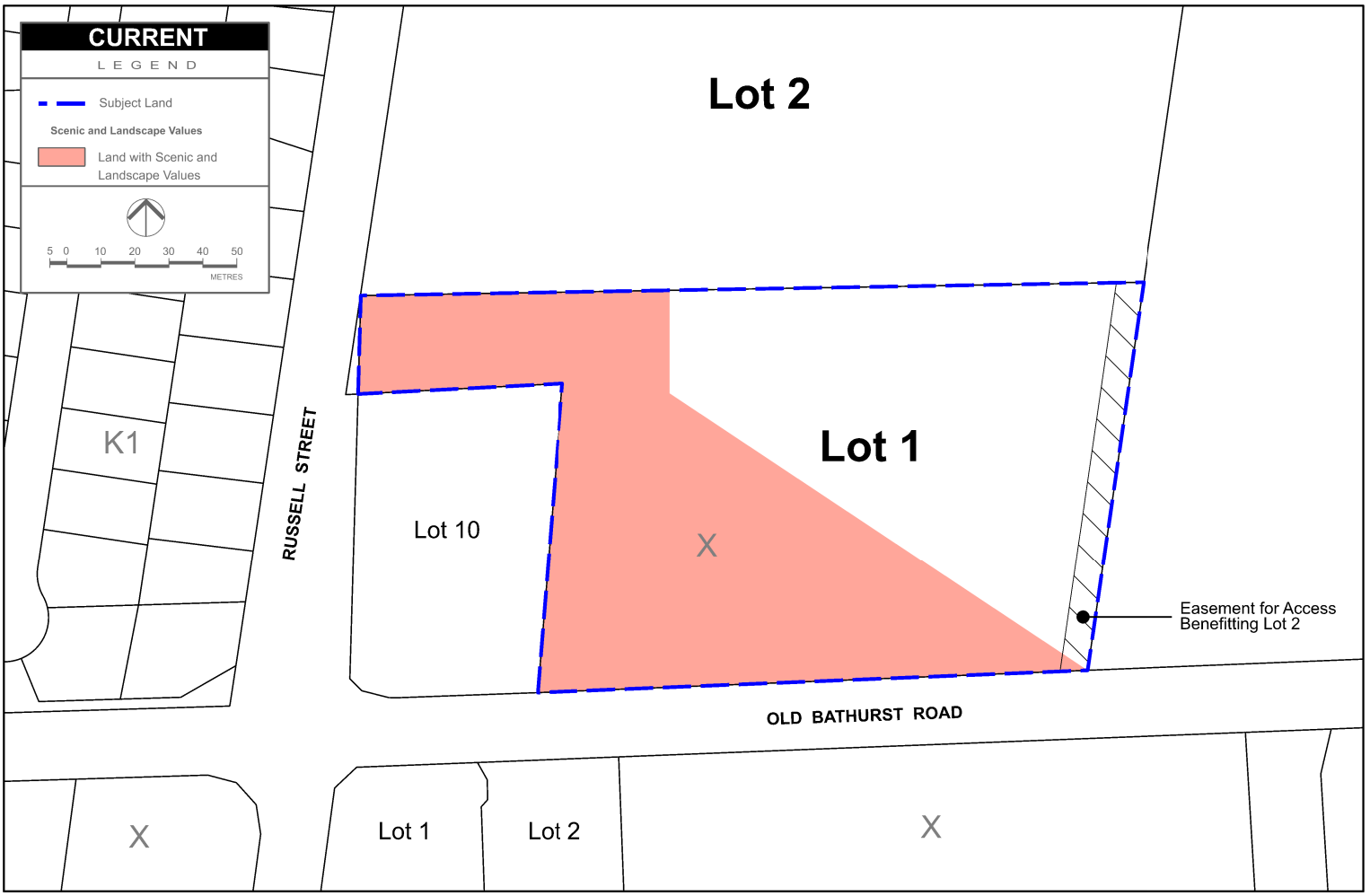

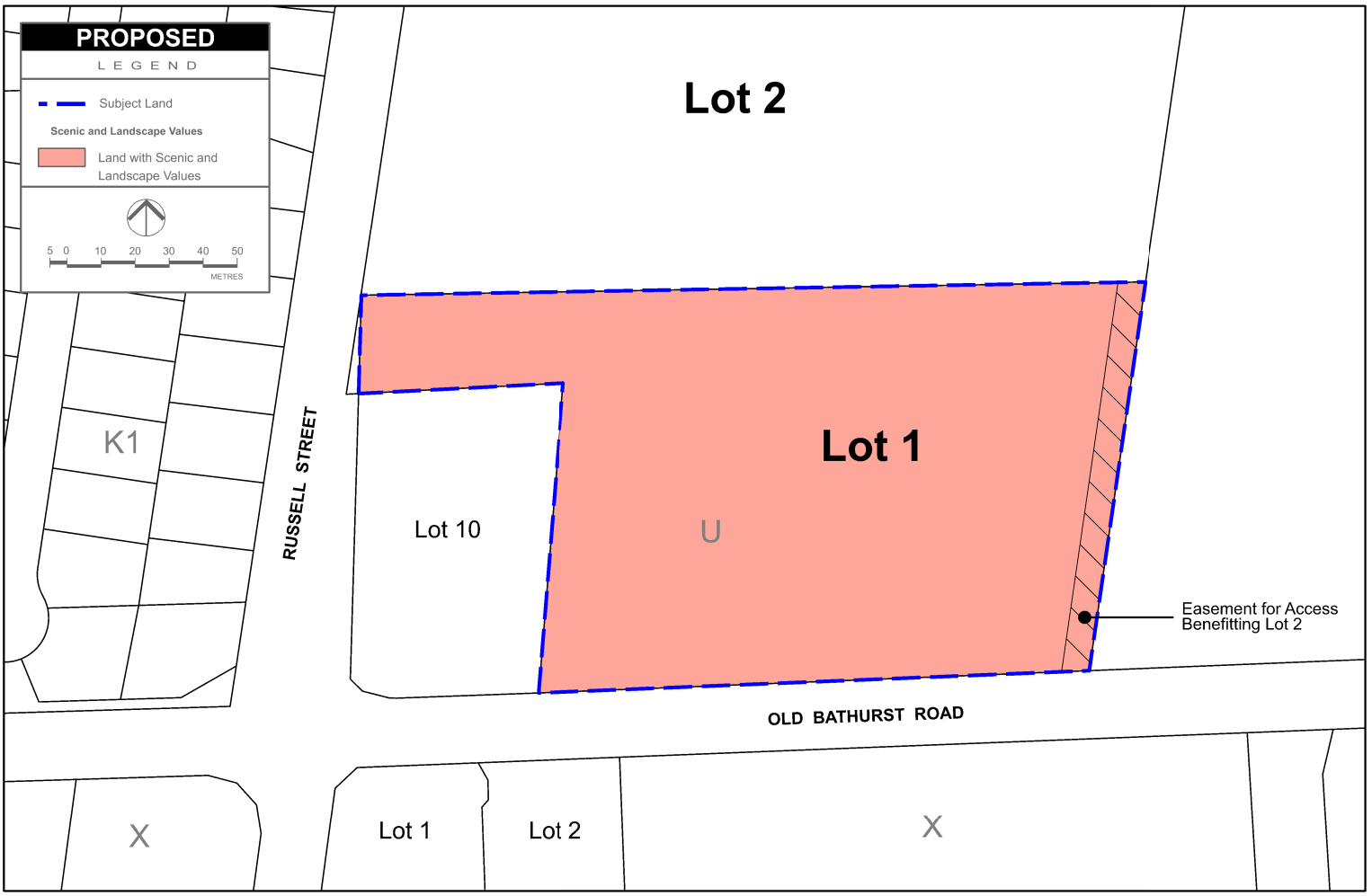

SCENIC AND LANDSCAPE VALUES
170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

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All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

CLIENT	:	Le Bursicot
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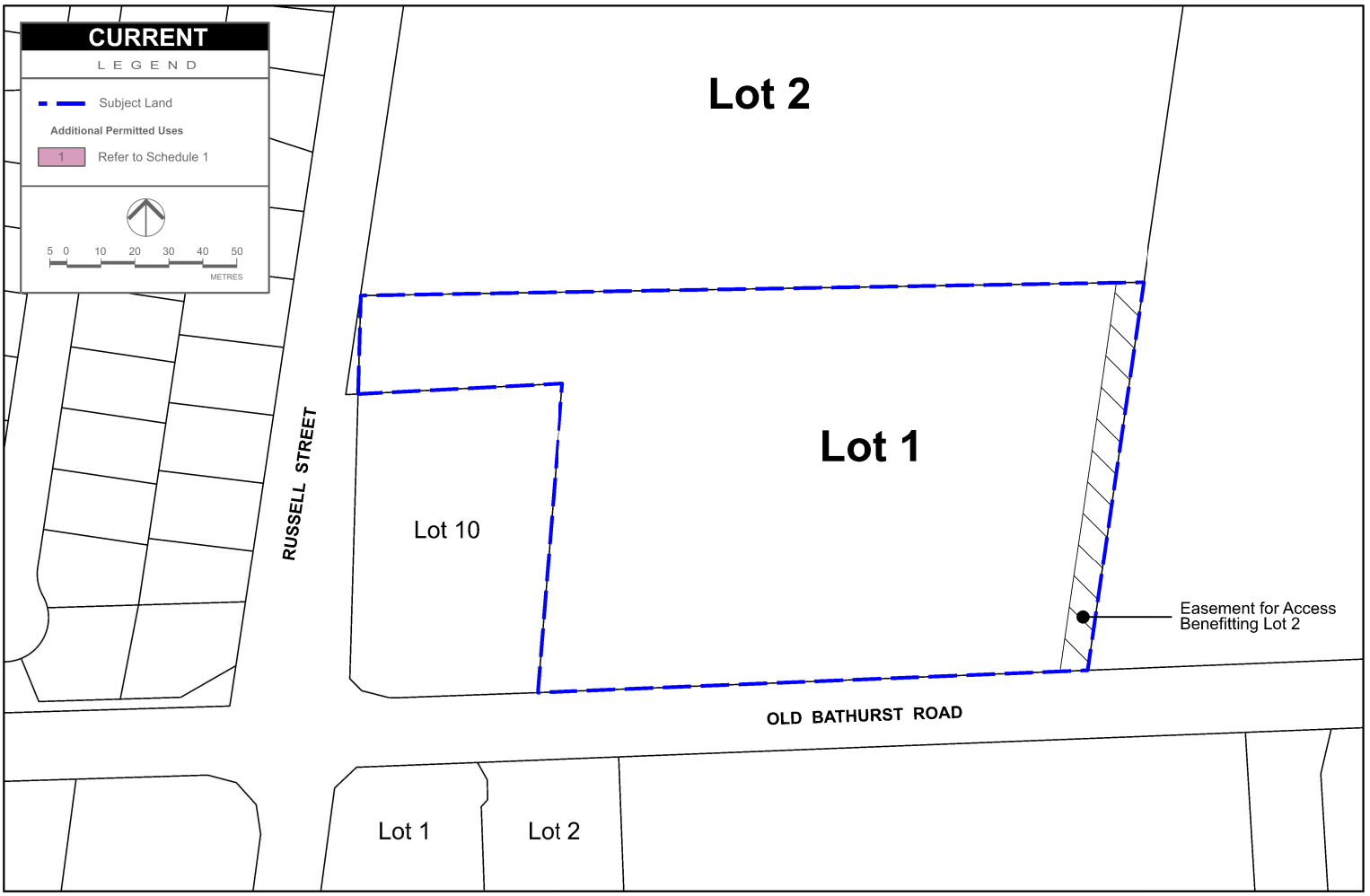

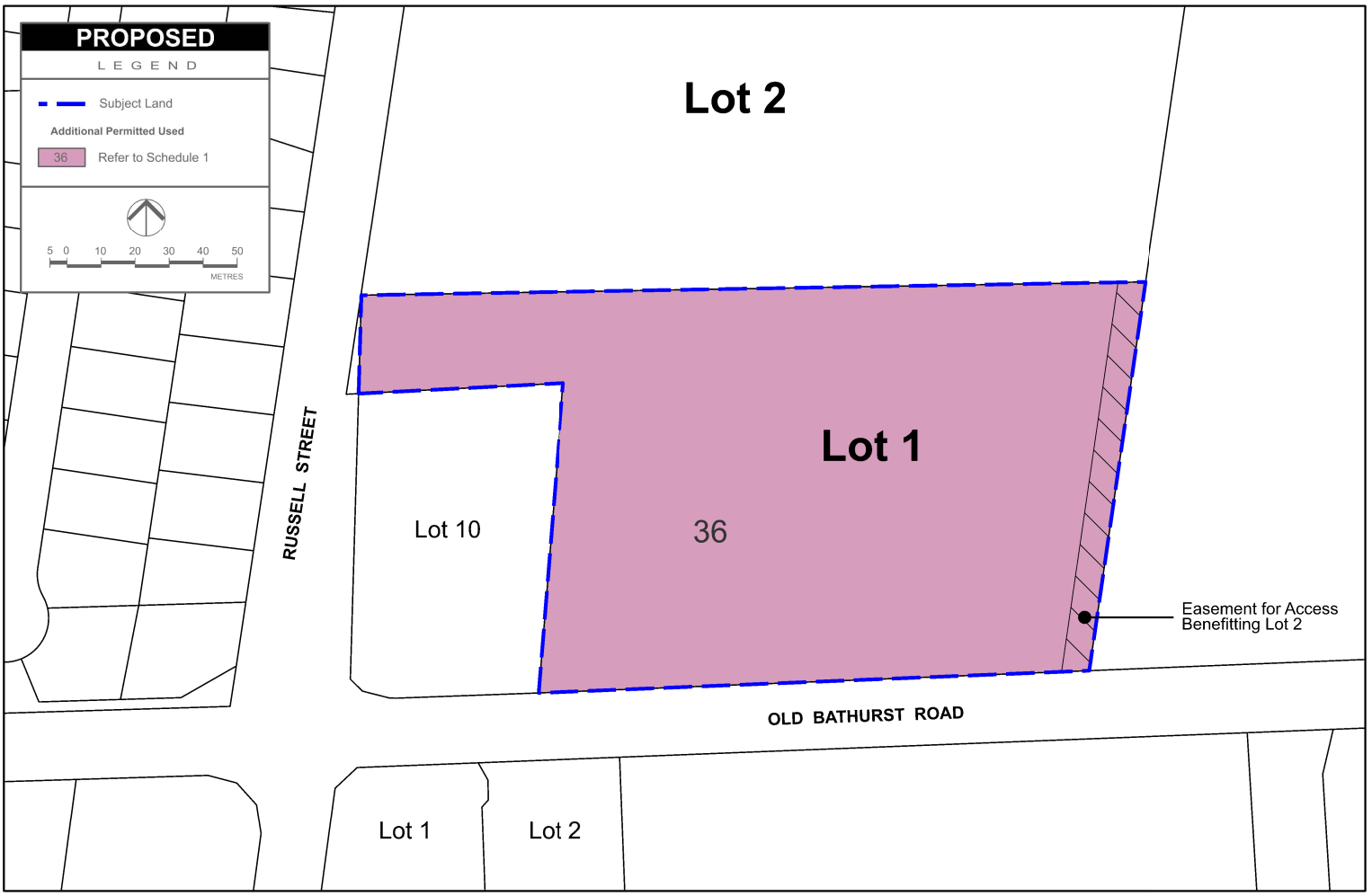

ADDITIONAL PERMITTED USES

170 RUSSELL STREET
EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

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APPENDIX 2
Proposed Penrith LEP 2010

Additional Permitted Use Clause Amendments

Appendix 2 - PP 2021 – 4118: 170 Russell Street Emu Plains (Old Bathurst Road)

Penrith LEP 2010 Additional Clauses Table

Additional Permitted Use Clause		
170 Russell Street Emu Plains Lot 1 DP1273251	**Use of certain land at 1 – 4 Old Bathurst Road, Emu Plains** 1. This clause applies to land at 170 Russell Street, Emu Plains, being Lot 1, DP1273251, that is identified as "36" on the Additional Permitted Uses Map. 2. Development for the purposes of amusement centres, centre-based child care facilities, community facilities, crematoria, educational establishments, electricity generating works, function centres, hotel or motel accommodation, medical centres, recreation facilities (indoor), resource recovery facilities, respite day care centres, service stations, vehicle sales or hire premises, veterinary hospitals and waste or resource transfer stations is permitted with development consent	As IN2 sites are being translated to E4, the IN2 zone will no longer exist. As the new E4 zone will be a direct translation of the existing IN1 zone, Additional Permitted Uses will need to be added to Schedule 1 for sites currently zoned IN2 Light Industrial to ensure their existing permissible land uses are retained. This will ensure a direct translation that provides continuity and certainty of permissibility for land currently zoned IN2, while minimising the potential for land use conflicts or compatibility issues in the new E4 zone.

Local Provisions Clause		
Council has required that an Additional LEP Local Provision be introduced in relation to filling of the site.	In Part 7 (Additional local provisions), a provision is to be introduced, being sub-clause 7.30 to read as follows: ***7.30 Development on land at 170 Russell Street, Emu Plains (Lot 1 DP 1273251)*** *Prior to the erection of buildings on the site, flood mitigation and filling works consistent with the endorsed flood impact assessment report and filling strategy, which support Planning Proposal PP-2021-4118, are to be completed to Council's satisfaction.*	This clause will ensure endorsed flood mitigation works are completed as endorsed under the Planning Proposal.

APPENDIX 3
Penrith DCP 2010 – Table of Amendments

Appendix 3 - PP 2021 – 4118: 170 Russell Street Emu Plains (Old Bathurst Road)

Penrith DCP 2014 Amendments Table

DCP Part / Clause	Current Control / Map	Amendment Required
C1 Site Planning and Design Principles **Section 1.8**	Table of DCP amendments – Pages A5 to A7	*"Section 1.8 What is the date of commencement for the Plan?"* includes a table of amendments to the DCP since adoption. If the Planning Proposal was supported and DCP amendments introduced, this Table would be amended as a procedural outcome to reference the amendments and date of adoption.
C1 Site Planning and Design Principles **1.1.2. Key Areas with Scenic and Landscape Values**	Figure C1.1: Gateways and Areas of Visual Sensitivity	Amend Figure C1.1 to include the whole of Lot 1 consistent with LEP mapping amendments.
D4 Industrial Development **4.1. Key Precincts**	Figure D4.1: Key Precincts Figure D4.5: Precincts 7 and 8 – Emu Plains	Amend Figures D4.1 and D4.5 to include the whole of Lot 1 consistent with LEP mapping amendments
Part E5 Emu Plains	No current Controls relating to the site	Insert additional Part. *Part B – Land at 170 Russell Street Emu Plains (Lot 1 DP 1273251)* Insert new Figure E5.2: Land to which this Part applies identifying 170 Russell Street allotment. Insert clauses as follows: a) No driveway access is to be permitted to Russell Street for industrial vehicles, heavy vehicles, rigid vehicles and trucks.

		a. Driveway Access to Russell Street will be restricted to light vehicles only. b) A detailed traffic study will be required as part of a future Development Application for the site. a. The traffic study will be required to address impacts on Russel Street traffic movement and parking management and Old Bathurst Road. c) A restriction for a single Driveway Access only to the site from Old Bathurst Road, to be located midway or toward the eastern boundary of the site. d) Construction of kerb and gutter along the Old Bathurst Road frontage is required by the developer. e) Insert a clause describing the intended land use arrangements, with any industrial activities or large floorplate buildings to be located along the Old Bathurst road frontage. a. Smaller industrial lots or non-industrial uses if possible are to be positioned along the Russell Street frontage. f) Larger industrial lots are to be positioned along the Old Bathurst Road frontage. g) Landscaping within the site should, where possible, use species characteristic of the Cumberland Plain Woodland and / or River-flat Eucalyptus Forest h) Filling of the land is to be completed in accordance the endorsed flood impact assessment report and the endorsed filling strategy. Fill utilised to address flood levels is to be sourced from Lot 2 DP 1273251.

APPENDIX 4
Engineering Review

NOTE:
- ALL VALUES AND AREAS ARE ESTIMATES ONLY AND MUST NOT BE USED FOR ANY DETAILED CALCULATIONS.

LEGEND

	DEPTH RANGE	HATCH
APPROXIMATE EXTENT OF CUT	> -4.5m	
	-4.5 TO -4.0m	
	-4.0 TO -3.5m	
	-3.5 TO -3.0m	
	-3.0 TO -2.5m	
	-2.5 TO -2.0m	
	-2.0 TO -1.5m	
	-1.5 TO -1.0m	
	-1.0 TO -0.5m	
	-0.5 TO 0.0m	
APPROXIMATE EXTENT OF FILL	0.0 TO 0.5m	
	0.5 TO 1.0m	
	1.0 TO 1.5m	
	1.5 TO 2.0m	
	2.0 TO 2.5m	
	2.5 TO 3.0m	
	3.0 TO 3.5m	
	3.5 TO 4.0m	
	4.0 TO 4.5m	
	> 4.5m	

PLAN REV.	DESCRIPTION	DATE	DESIGN	DRAFT	DESIGN CHECK	DRAFT CHECK
-	AMENDED AS REQUESTED	04/05/2021	T.K.	T.K.	-	-
-	FOR INFORMATION ONLY	27/01/2021	T.K.	T.K.	-	-

HORIZONTAL SCALE (@A1): 1:500
0 5 10 15 20 25 30 35 40 45 50
SCALE 1:500 (A1) SCALE 1:1000 (A3)
VERTICAL SCALE (@A1): -

CLIENT/ PROJECT
-
-

SITE
LOT 4
DP 574650
1-4 OLD BATHURST ROAD
EMU PLAINS
L.G.A. PENRITH CITY COUNCIL

NORTH WESTERN SURVEYS
LAND DEVELOPMENT CONSULTANTS
+ SURVEYING
CIVIL ENGINEERING
PROJECT MANAGEMENT
SUPERINTENDENCY
WATER SERVICING COORDINATION
PHONE (02) 9831 2040 EMAIL nws@nwsurveys.com.au WEBSITE www.nwsurveys.com.au

TITLE
CUT FILL PLAN

THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY

PROJECT MANAGER: GEORGE STOJANOVSKI
PLAN DATE: 04/05/2021
PLAN: -
PLAN REV: -
PROJECT REFERENCE: 18326

APPENDIX 5
Traffic Report

Proposed Rezoning for Industrial Uses
1 to 4 Old Bathurst Road, Emu Plains

Traffic and Parking Assessment Report

Prepared for: Le Bursicot

June 2022

Report No: PT21024r01_Final_V4

TABLE OF CONTENTS

List of Figures

List of Tables

1. Introduction

This report has been prepared on behalf of Le Bursicot to present findings of a traffic and parking assessment of the proposed rezoning of the site known as 1 to 4 Old Bathurst Road, Emu Plains from a combination of industrial / rural residential to sole industrial uses.

The study has assessed existing traffic conditions, parking demands, access arrangements, future traffic conditions and design compliance.

The remainder of the report is set out as follows:

- Section 2 describes the existing traffic and parking conditions;
- Section 3 provides a summary of known traffic assessment reports conducted in the immediate area;
- Section 4 summarises the proposed development;
- Section 5 reviews the potential traffic impacts of the proposal;
- Section 6 reviews the design for compliance with relevant standards; and
- Section 7 presents the conclusions

2. Existing Development / Conditions

The following presents a summary of existing site and traffic conditions.

2.1 Site Location

The proposed site includes frontages to both Russell Street in the west and Old Bathurst Road in the south. The existing site is a greenfield site and its location is shown in **Figure 1**.

Figure 1 - Site Location

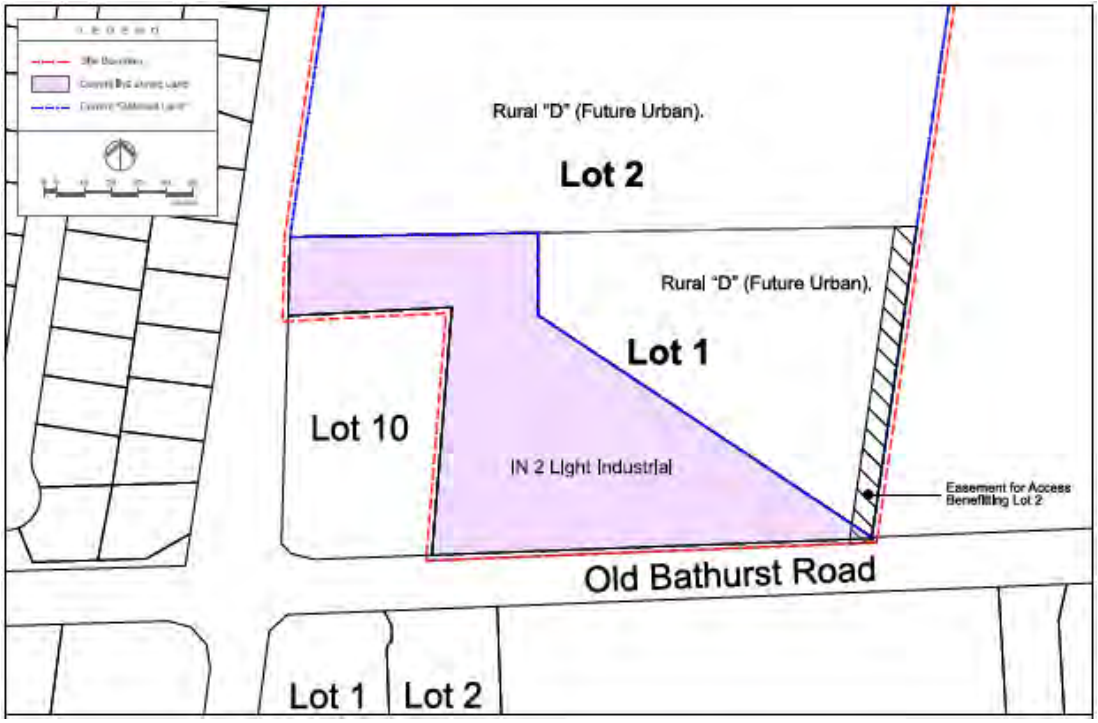
Source: Nearmap

The site surrounds an existing electrical substation located on the north-east corner of the intersection of Old Bathurst Road / Russell Street.

2.2 Existing Zoning

The currently includes a proportion designated as 'IN2 Light Industrial' and 'Rural D Future Urban' and the arrangements of the existing zoning across the site is shown below in **Figure 2**.

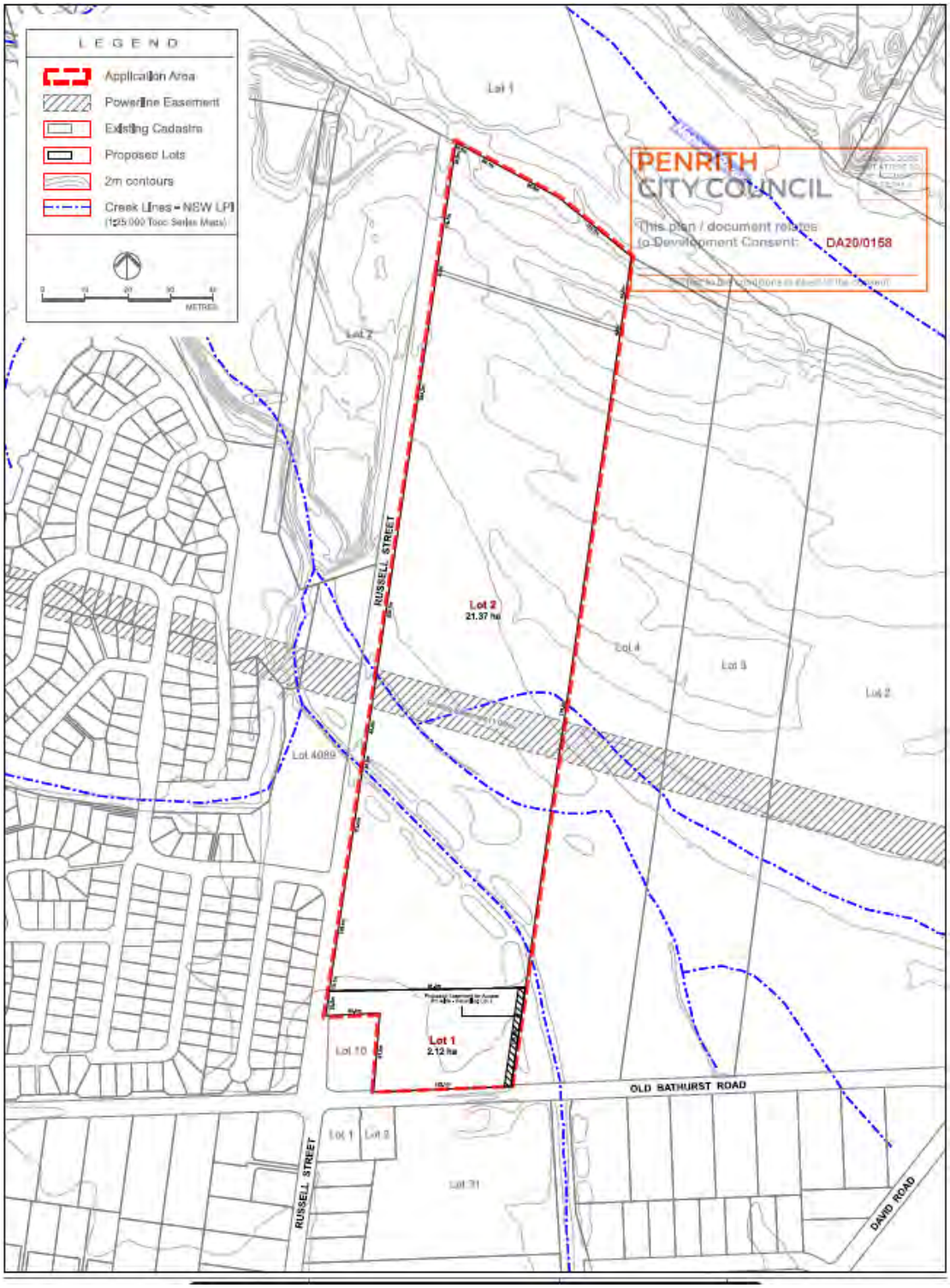
Figure 2 – Existing Site Zoning



2.3 Historical Development Approvals

It is noted that the subject site was included in a previous subdivision development application (DA20/0158) now approved by Penrith City Council to create Lot 1 (light industrial / rural D zoned land) and Lot 2 (rural housing zoned land. The lot arrangements approved by Penrith City Council are shown below in **Figure 3**.

Figure 3 – DA20/0158 Approved Subdivision Arrangements Including Subject Site



The intent of the subdivision was to create an allotment which complied with both the Industrial zoned land minimum lot size and the Rural "Future Urban" zone minimum lot size (being 2ha) to allow future development of the land. However, Lot 1 includes remnant rural residential zoning over a portion of the land which requires a further rezoning application which is the subject of this report.

2.4 Existing Site Traffic Generation

As stated above the existing site is a greenfield site and does not generate any traffic.

2.5 Existing Zoning Potential Traffic Generation

Lot 1 currently includes a combination of mainly IN2 Light Industrial zoning (11,000m^2) with small area zoned as Rural D future urban residential zoning.

On the basis that the site was developed under its current zoning, the potential light industrial proportion of the site would achieve a total of 5,500m^2 gross floor area (based on an assumed FSR of 0.5:1).

Applying the RMS Technical Direction 2013/04a rates for an industrial development (shown below),

Business parks and industrial estates

In 2012 eleven of these two types of sites were surveyed, four within the Sydney urban area, four within the Lower Hunter, one in the Illawarra and one in Dubbo. Summary vehicle trip generation rates were as follows:

Weekday Rates	Sydney Average	Sydney Range	Regional Average	Regional Range
AM peak (1 hour) vehicle trips per 100 m^2 of GFA.	0.52	0.15-1.31	0.70	0.32-1.20
PM peak (1 hour) vehicle trips per 100 m^2 of GFA.	0.56	0.16-1.50	0.78	0.39-1.30
Daily total vehicle trips	4.60	1.89-10.47	7.83	3.78-11.99

the existing zoned site would be expected to generate **29 AM Peak** hour trips two way and **31 PM Peak** hour trips way. The remaining portion of Lot 1 would not be expected to generate any traffic to any great extent given the minimum 2,000m^2 rural housing lot restrictions on such zoned land.

2.6 Classification Criteria

It is usual to classify roads according to a road hierarchy in order to determine their functional role within the road network. Changes to traffic flows on the roads can then be assessed within the context of the road hierarchy. Roads are classified according to the role they fulfil and the volume of traffic they should appropriately carry. The RTA has set down the following guidelines for the functional classification of roads.

- Arterial Road – typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour)
- Sub-arterial Road – defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour)
- Collector Road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity begins to decline noticeably.
- Local Road – provides access to individual allotments, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

2.7 Existing Road Network

Old Bathurst Road – is a Regional Road as defined Transport for NSW Schedule of Classified Roads and Unclassified Regional Roads. The road links the Great Western Highway in the east (and also providing a location to cross the Hawkesbury River) and Blaxland in the west providing one of the few links to the Blue Mountains. The intersection of Old Bathurst Road / Russell Street is controlled by a single lane roundabout. The speed limit in Old Bathurst Road is 50km/hr to a point some 100m east of the roundabout where it is 70km/hr. The road includes kerb and gutter along the southern side for the full frontage of the subject site. However, on the northern side kerb and gutter is only present for a distance of 100m. Across the frontage of the site the road includes a carriageway width of approximately 11.0m with a single travel lane in each direction and formed shoulders. Separate right and left turn bays are provided to the existing McDonalds Restaurant / Service Station on the south-eastern corner of the intersection of Old Bathurst Road / Russell Street.

Russell Street – north of Old Bathurst Road is a local street providing access to the suburb of Emu Heights. South of Old Bathurst Road Russell Street performs more like a Collector Road (Regional Road) as it provides direct access under the Western Railway Line and to the M4 Motorway via its own grade separated interchange. Across the site frontage Russell Street includes a carriageway width of approximately 11.0m, a single travel lane in each direction with unrestricted parallel parking on both sides of the street and a posted speed limit of 50km/hr.

2.8 Existing Traffic Flows

To gauge existing traffic flows on the surrounding road network an intersection count was undertaken on Wednesday 28th April 2021 at the intersection of Old Bathurst Road / Russell Street between the hours of 6:30am – 9:30am and 3:30pm – 6:30pm to capture both the expected peak periods of an industrial use and road network peak. Copies of the intersection count can be found in **Appendix A** of this report. The peak flows by direction in each street at each intersection are summarised below.

Of note, the morning peak demands occurred between **7:45am – 8:45am** and the afternoon peak period occurred between **4:30pm – 5:30pm**.

Table 1 – Existing Weekday Peak Period Volumes in vicinity of site (veh/hr)

		Weekday AM		Weekday PM	
Road	**Location**	**NB/EB**	**SB/WB**	**NB/EB**	**SB/WB**
Old Bathurst Road	East of Russell Street	1,066	382	463	914
	West of Russell Street	848	360	496	910
Russell Street	North of Old Bathurst Road	64	207	203	127
	South of Old Bathurst Road	513	460	522	483

From **Table 1** it can be seen that existing flows on surrounding roads are in generally in line with their classification.

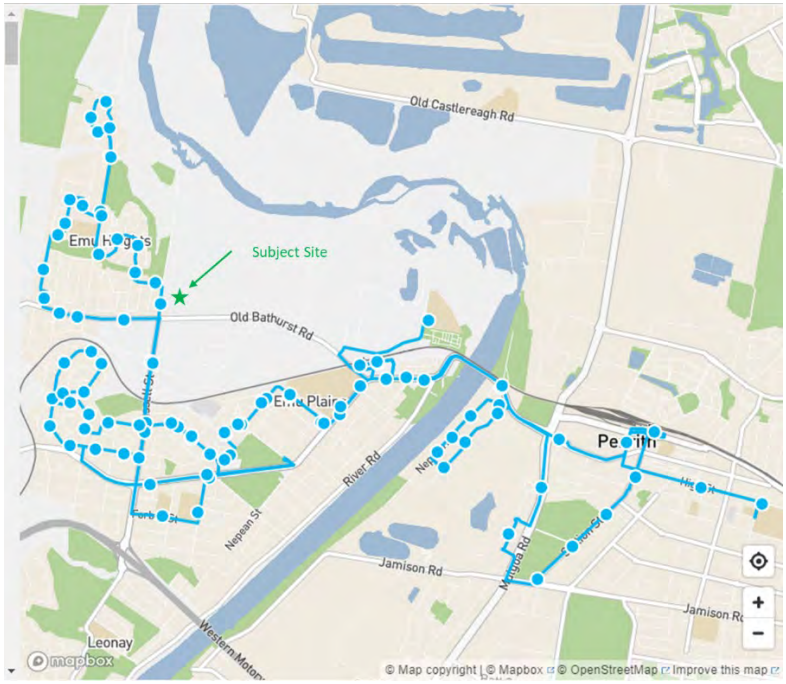
2.9 Public Transport - Buses

The Russell Street frontage of the subject site is located directly adjacent to an existing southbound bus stop in Russell Street which is part of the loop bus service serving Emu Heights. Further, approximately 400m walking distance (centroid of Old Bathurst Road frontage) from an existing westbound bus stop in Old Bathurst Road west of Russell Street. The locations of these stops are shown below.

Figure 4 – Existing Bus Stops Near Site

These stops within a convenient walking distance to the subject site provide a direct access to the Route 688 bus services which provides a loop service between Penrith and Emu Plains via Emu Heights. The route of travel of the 688 service is shown below in **Figure 5**.

Figure 5 – Route 688 Bus Service Route of Travel



The Route 688 service provides seven (7) services during the AM period (between 5:30am – 9:00am) and seven (7) services in the PM period (4:00pm – 7:00pm)

2.10 Penrith City Council Section 7.12 City Wide Contributions Plan

The current city-wide contributions plan of Penrith City Council for non-residential development seeks to provide funding from developments for the provision of a range of infrastructure upgrades throughout the Penrith Local Government Area.

Of direct relevance to this project is the identified upgrade of the intersection of Russell Street / Old Bathurst Road to provide a signalised intersection at the location in place of the existing single lane roundabout.

The contributions plan details these works in Appendix A – Infrastructure Schedule and Location Plans as presented below.

Penrith City Section 7.12 Development Contributions Plan- as amended
Penrith City Council – November 2020

APPENDIX A: INFRASTRUCTURE SCHEDULE AND LOCATION MAPS

A.1 WORKS SCHEDULE

Infrastructure Works	Proposed Location	Estimated Costs $	Priority of works
1. Traffic management facilities			
T1 - Industrial Roundabout	Batt Street/Regentville Road, Jamisontown	$750,000	High
T2 - Traffic Signals	Old Bathurst Road/Russell Street, Emu Plains	$5,250,000	Low

The contributions plan identifies the proposal to convert the existing single lane roundabout to traffic signals as a 'low priority' of works compared to other infrastructure proposals identified in the contributions plan.

3. Background Report Review

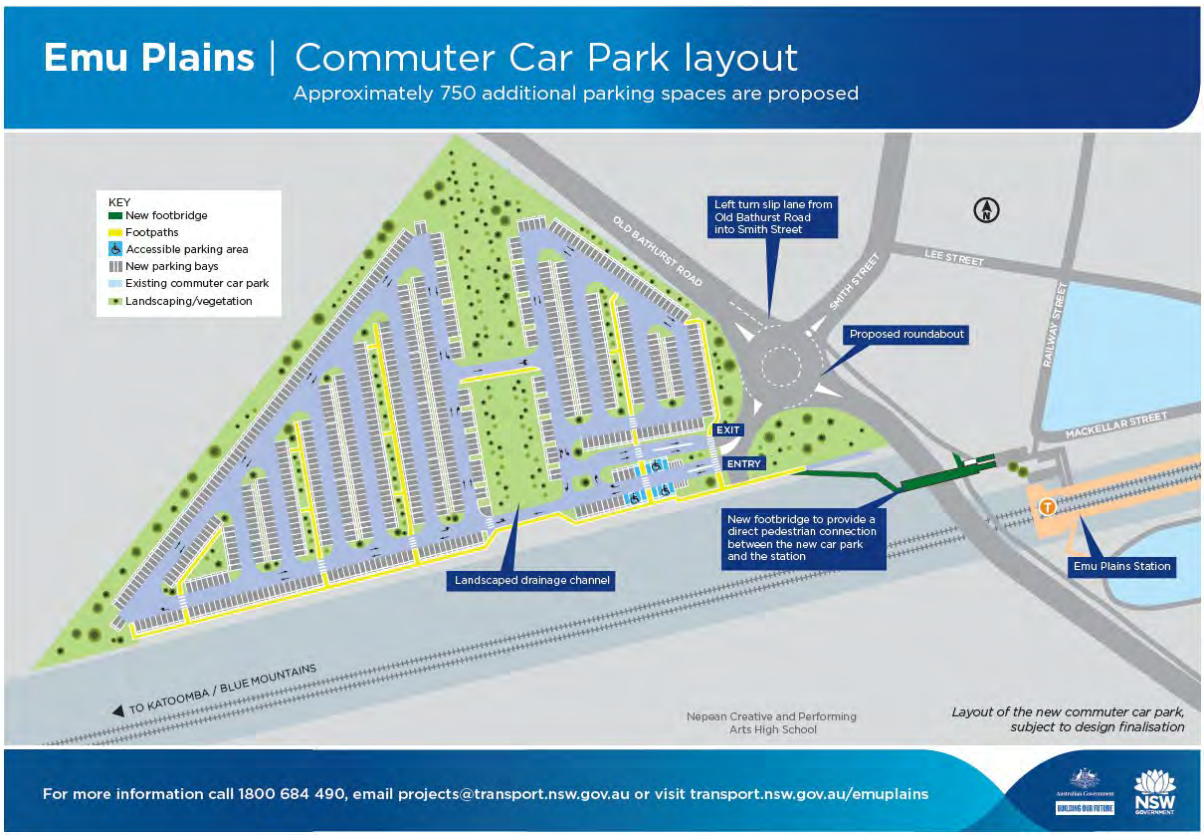
The following presents a summary of publicly assessment traffic impact assessment report/s which have been undertaken in the immediate area.

3.1 Emu Plans Commuter Car Park Proposal

This Transport for NSW initiative seeks to provide a new **750 space** commuter car park within a short walking distance to the Emu Plains Railway Station with direct vehicular access from a new roundabout located in Old Bathurst Road. The **750-space** commuter car park would be connected to the railway station via a new pedestrian footbridge.

The proposed car park / access arrangements are shown below in **Figure 6**.

Figure 6 – Emu Plains Railway Station 750 Parking Space New Commuter Car Park Arrangements



As confirmed by representatives of Penrith City Council during consultation that ***no*** formal traffic impact assessment report of the potential impacts of the new **750 space** commuter car park has been provided by Transport for NSW for review by Council.

3.2 158 – 164 Old Bathurst Road Emu Plains Industrial Precinct Traffic Impact Assessment Report – SCT Consulting 6 April 2022

This traffic impact assessment report was undertaken on behalf of Penrith City Council for a large council owned parcel of land located within Old Bathurst Road to assess the potential traffic impacts of the redevelopment of the site to provide some 40 industrial developable lots.

Figure 7 – 158 – 164 Old Bathurst Road (Site D) Proposed Industrial Development

The traffic report estimated a total potential GFA of some **71,000 m²** resulting in a ***net*** traffic generation increase of **405 vehicles** and **437 vehicles** at full occupation in the weekday AM and PM peak hour respectively.

As shown above in **Figure 7** the Council owned development site would be located directly adjacent to the proposed 750 space Emu Plains Railway Station commuter car park (Site E).

In terms of access arrangements of the site, the proposal included the following:

The existing access on Old Bathurst Road would be converted to a left-in/left-out access. A deceleration lane (70 m) and an acceleration lane (150 m) are provided to ensure there is enough distance for heavy vehicles to diverge and merge with existing traffic on Old Bathurst Road. The design of the access will preclude any right turn movements in and out of the site.

The western access is proposed on David Road with all movements permitted. This access is then connected with the upgraded intersection of David Road/Old Bathurst Road for strategic access (with all movements permitted).[1]
The traffic report included morning / afternoon peak hour counts / modelling at a number of intersections surrounding the site including the roundabout at Old Bathurst Road / Russell Street. These were:

- Old Bathurst Road/Russell Street
- Old Bathurst Road/David Road
- Old Bathurst Road/site access road
- Old Bathurst Road/Smith Street/commuter car park access road
- Old Bathurst Road/Great Western Highway.

[1] 158 – 164 Old Bathurst Road Emu Plains Industrial Precinct Traffic Impact Assessment Report – SCT Consulting 6 April 2022

The intersection surveys were conducted on **16 Nov 2021** for Old Bathurst Road/Russell Street and Old Bathurst Road/David Road, and **22 July 2020** for Old Bathurst Road/Smith Street and Great Western Highway/Old Bathurst Road.

Existing Intersection Operating Conditions

The traffic report found the following 'existing' intersection operating conditions using SIDRA:

Table 2-7 Existing intersection performance (2021)

Intersection	Weekday AM peak			Weekday PM peak		
	Delay	LoS	DoS	Delay	LoS	DoS
Old Bathurst Road/Russell Street	27.1s	B	0.88	104.6s	F	1.05
Old Bathurst Road/David Road	34.0s	C	0.42	19.2s	B	0.40
Old Bathurst Road/site access road	9.4s	A	0.42	9.5s	A	0.43
Old Bathurst Road/Smith Street	13.3s	A	0.44	9.1s	A	0.39
Great Western Highway/Old Bathurst Road	25.2s	B	0.69	21.5s	B	0.75

Source: SCT Consulting, 2021

The SIDRA results indicate that all intersections are operating at a satisfactory level of service (LoS C or better) other than Old Bathurst Road/Russell Street roundabout during the PM peak hour, which will be operating at capacity with a DoS of 1.05 and LoS F. All other intersections will have reserve capacity to accommodate some future growth.

It is noted that in the PM peak the intersection of Old Bathurst Road / Russell Street operated at a poor level of service.

Future Year Intersection Operating Conditions

The traffic report [2] included the potential traffic generation of the commuter car park and assumed 750 trips in the AM peak hour for modelling purposes. Further, the traffic report assumed a 2% per annum growth rate to traffic volumes recorded in 2020 / 2021 to obtain development + future year intersection operating conditions.

On the matter of the distribution of generated trips, the report stated the following:

For worst-case analysis, it is assumed that all development traffic would access/exit the site via Old Bathurst Road/David Road. Traffic to and from the west would access via the south of Old Bathurst Road/Russell Street, while traffic to and from the east would access via the north of Great Western Highway/Old Bathurst Road. A directional split of 90 per cent inbound / 10 per cent outbound was assumed for the AM peak, and vice versa for the PM peak.

[2] 158 – 164 Old Bathurst Road Emu Plains Industrial Precinct Traffic Impact Assessment Report – SCT Consulting 6 April 2022

Table 4-2 Traffic distribution

Peak Period	Origin / Destination split (%)*		Directional split (%)	
	East	West	In	Out
AM	46	54	90	10
PM	46	54	10	90

*The distribution has considered the residential location of local workers and anticipated routings including:

- Penrith: 54% (1/3 from Russell street, 2/3 from Great Western Highway east)
- Blacktown: 12% (half from Russell street via M4, half from Great Western Highway east)
- Blue Mountains: 10% (from Russell street via M4)
- Hawkesbury: 4% (from Great Western Highway east)
- Liverpool: 2% (from Russell street via M4)
- Fairfield: 2% (from Russell street via M4)
- Other Local Government Areas are below 2% each across Sydney (from Russell street via M4).

Applying the above assumptions, the traffic report found the following future year intersection operating conditions assuming existing intersections remain in their current form.

Table 4-3 Future year intersection performance (2033)

Intersection	Future year base case			Future year with development		
	Delay	LoS	DoS	Delay	LoS	DoS
Weekday AM Peak						
Old Bathurst Road/Russell Street	89.5s	F	1.19	225.6s	F	1.60
Old Bathurst Road/David Road*	10.7s	A	0.59	12.3s	A	0.59
Old Bathurst Road/site access road	9.5s	A	0.58	10.4s	A	0.59
Old Bathurst Road/Smith Street	22.5s	B	0.65	24.1s	B	0.78
Great Western Highway/Old Bathurst Road	32.0s	C	0.87	37.0s	C	0.92
Weekday PM Peak						
Old Bathurst Road/Russell Street	165.0s	F	1.37	343.1s	F	1.36
Old Bathurst Road/David Road	29.2s	C	0.57	304.9s	F	1.29
Old Bathurst Road/site access road	11.3s	A	0.60	14.0s	A	0.61
Old Bathurst Road/Smith Street	22.5s	B	0.73	23.8s	B	0.74
Great Western Highway/Old Bathurst Road	26.2s	B	0.88	26.6s	B	0.88

*The south approach documents a 64 and 71 seconds delay, resulting in LoS E and F for the whole intersection performance in the two scenarios. Given the demand is low (16 and 35 vehicles), this movement is disregarded and the second worst movement is reported as the entire intersection.

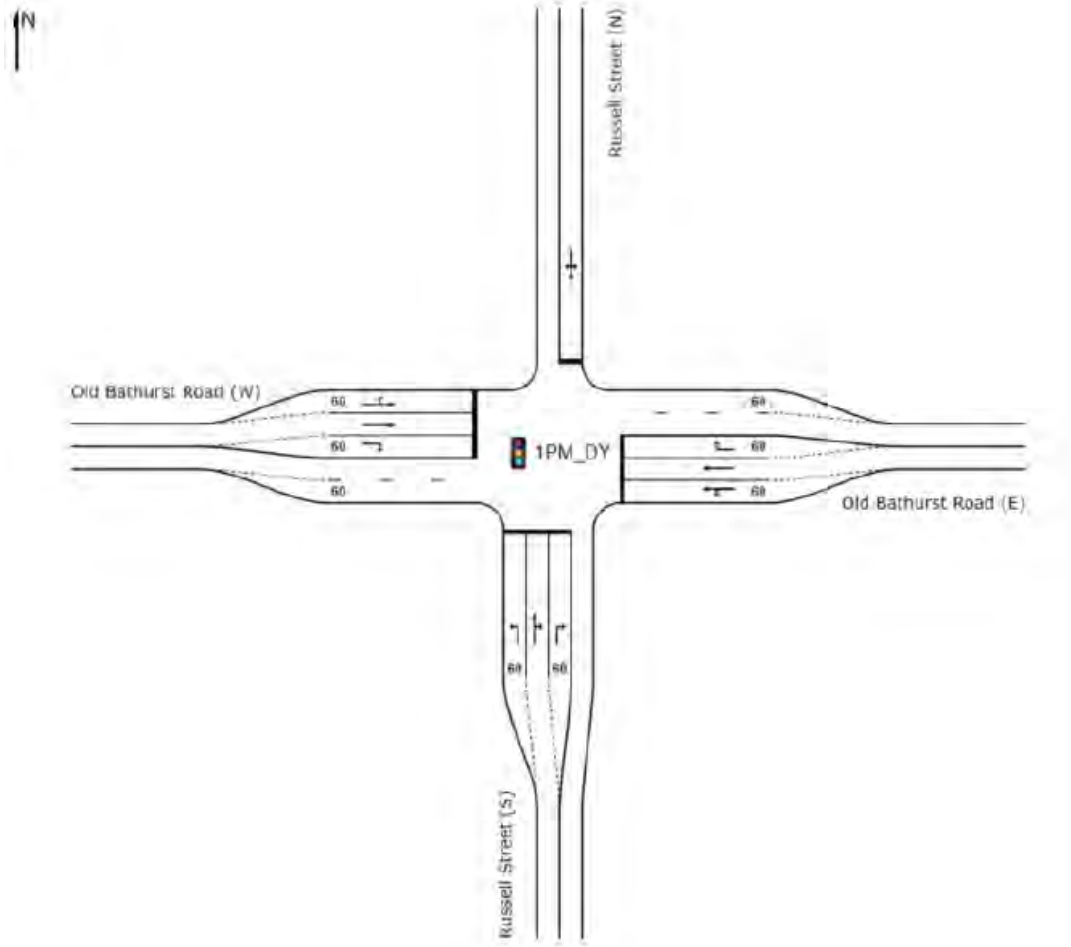
It is noted that the roundabout at Old Bathurst Road / Russell Street would fail in the future in both peak periods. Other intersections would continue to operate at a satisfactory level of service in the future.

Adopted Intersection Upgrade Arrangements

As stated above, the traffic report noted the upgrade of the intersection of Old Bathurst Road / Russell Street in the existing Penrith City Council area wide contributions plan to traffic signals. On

this basis, the traffic report modelled the following signalised intersection operating arrangements under traffic signal control. The report also included upgrade options maintaining the existing roundabout in the form of additional approach lanes / expansion of the roundabout to a dual lane roundabout which did not yield satisfactory future year intersection operating conditions.

Figure 8 – Adopted Old Bathurst Road / Russell Street Adopted Signalised Intersection Configuration



The report found the following future year intersection operating conditions under traffic signal control with *all* traffic generated by both the 750-space commuter car park and the Council owned development at the site of No.158-164 Old Bathurst Road for the PM peak hour. It is noted that the AM peak hour was not included in the table presented below.

Table 4-4 Future year intersection performance with upgrades (2033)

Intersection	Future year			Future year with development		
	Delay	LoS	DoS	Delay	LoS	DoS
Weekday AM Peak						
Old Bathurst Road/Russell Street (upgraded roundabout)	32.5s	C	0.93	49.7s	D	0.96
Old Bathurst Road/Russell Street (signal)	37.7s	C	0.82	50.1s	D	0.96
Old Bathurst Road/David Road (roundabout)	Not required			15.0s	B	0.88
Old Bathurst Road/David Road (signals)	Not required			20.5s	B	0.89
Weekday PM Peak						
Old Bathurst Road/Russell Street(upgraded roundabout)	36.6s	C	0.87	48.9s	D	1.00
Old Bathurst Road/Russell Street (signal)	42.8s	D	0.93	52.3s	D	0.96
Old Bathurst Road/David Road (roundabout)	Not required			34.3s	C	0.76
Old Bathurst Road/David Road (signals)	Not required			27.2s	B	0.86

Thus, it is noted that as an upgraded traffic signal control intersection as listed in Council's contribution plan, the intersection of Old Bathurst Road / Russell Street would operate at a satisfactory level of service in the future.

On the matter of potential traffic impacts of the proposal, it is noted the traffic report stated the following:

It is noted that Council has been levying contributions for the signal at the intersection of Old Bathurst Road/Russell Street under the Section 7.12 Development Contributions Plan, hence it is most likely that a traffic signal will be constructed at this location to cater for background traffic growth and further development. A signalised intersection for Old Bathurst Road/David Road would also improve pedestrian/cyclist safety and indicates better operation performance, hence is recommended. There is no spacing issue with the two potential signalised intersections at Russell Street and David Road, i.e. being about 780m to each other.

As part of preparing this traffic impact assessment, Positive Traffic Pty Ltd obtained electronic copies of the SIDRA files presented above from Penrith City Council to use as a basis of modelling impacts of the proposal subject to this report.

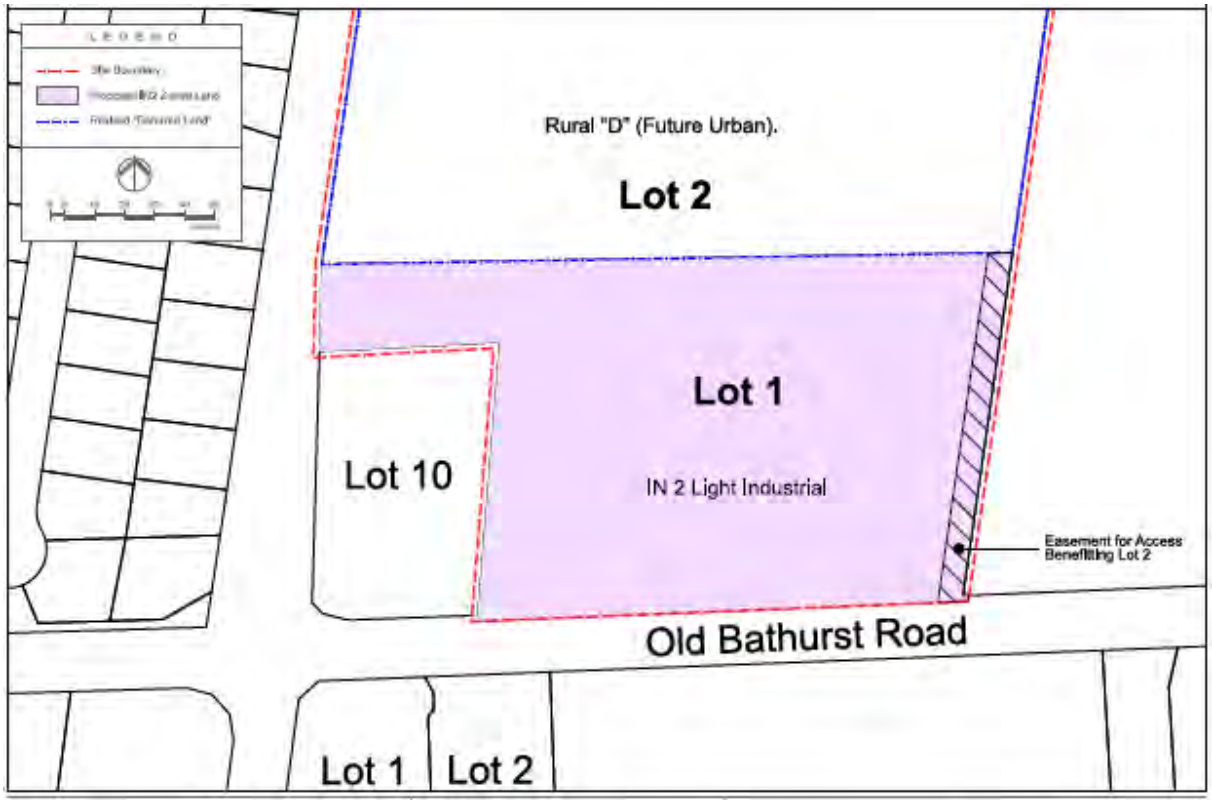
4. The Proposed Development

The key components of the proposed development are summarised below

- Rezoning of the existing portion of land from 'Rural D Future Urban' to 'IN2 Light Industrial' across the site as a whole.
- *Single* entry / exit driveway access in Old Bathurst Road proposed to be located some distance east of the intersection of Old Bathurst Road / Russell Street.
- *Single* entry / exit driveway in Russell Street for light vehicle access to north / eastern corner of the site (development fronting Russell Street only) with no access by large vehicles at this location.

The resulting zoning across the subject site is shown below in **Figure 9**.

Figure 9 – Resultant Site Zoning



For the purpose of assessing the traffic impacts of this rezoning proposal, (as shown in the preliminary arrangement plans shown in **Appendix B** of this report), a potential yield of 10,400m^2 of warehouse space and 1,540m^2 of ancillary office space (total 11,940m^2) has been adopted.

5. Potential Traffic Impacts

5.1 Introduction

The following presents an assessment of the potential traffic impacts of the proposal using the Roads and Traffic Authority Guide to Traffic Generating Developments standard approach.

5.2 Development Traffic Generation

Applying the Transport for NSW Technical Direction TDT2013/04a rate to the potential total GFA industrial development yield of 11,940m2, the total site generation of Lot 1 would equate to **62 AM Peak** trips two way and **67 PM Peak** trips two way.

Noting that the site is currently a greenfield site and despite an existing zoning arrangement which allows for a large portion of the site to be redeveloped for industrial development, to ensure a conservative estimate of future year traffic conditions the *full* traffic generation of the site has been added to the road network.

5.3 Trip Distribution

As stated above Old Bathurst Road would provide the main access to the site and thus the distribution of trips has adopted the same AM / PM peak trip distribution adopted in the SCT Traffic Impact Assessment report[3] undertaken for the Penrith City Council development site at No.158 – 164 Old Bathurst Road.

The adopted distribution of generated trips is shown in **Figure 10**.

Figure 10 – Adopted Trip Distribution

[3] 158 – 164 Old Bathurst Road Emu Plains Industrial Precinct Traffic Impact Assessment Report – SCT Consulting 6 April 2022

The resulting additional trips on Old Bathurst Road is shown in **Figure 11**.

Figure 11 – Resultant Distribution of Trips by Approach Road

5.4 Future Year Intersection Operating Conditions

The SCT report included SIDRA output tables (**Appendix A**) which provide forecast traffic volumes for the intersection of Old Bathurst Road / Russell Street as an upgraded traffic signal-controlled intersection which included the following traffic generating developments / growth:

- Development site at No.1-4 Old Bathurst Road;
- Proposed 750 space commuter car park; and
- 2% per annum growth.

The intersection of Old Bathurst Road / Russell Street has been analysed using the Sidra Intersection analysis program. Sidra Intersection determines the average delay that vehicles encounter, the degree of saturation of the intersection, and the level of service. The degree of saturation is the ratio of the arrival rate of vehicles to the capacity of the approach. Sidra Intersection provides analysis of the operating conditions which can be compared to the performance criteria set out in **Table 2**.

Table 2 – Level of Service Criteria

Level of Service	Average Delay per Vehicle (secs/veh)	Signals & Roundabouts	Give Way & Stop Signs
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & Spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	> 70	Extra capacity required	Extreme delay, traffic signals or other major treatment required

Adapted from RTA Guide to Traffic Generating Developments, 2002.

For roundabouts and priority intersections, the reported average delay is for the individual movement with the highest average delay per vehicle. At signalised intersections, the reported average delay is over all movements.

The future year weekday and weekend day intersection operating conditions are presented in Error! Reference source not found.. Average delay is expressed in seconds per vehicle.

The additional traffic generated by the development has been added to the intersection with the trip distribution described above and assuming the same distribution through the intersection itself as which currently occurs. The resulting 2033 intersection performance conditions are presented below in **Table 3**.

Table 3 – Future Year (2033) Weekday AM / PM Intersection Operating Conditions

Intersection	Control	Morning Peak		Evening Peak	
		Av Delay	LOS	Av Delay	LOS
2033 + Commuter Car Park + 158-164 Old Bathurst Rd	Signals	50.1	D	52.0	D
2033 + Commuter Car Park + 158-164 Old Bathurst Rd + 1-4 Old Bathurst Rd	Signals	53.8	D	54.3	D

Avg Delay (sec/veh) is over all movements at signals, and for worst movement at priority and roundabouts

From Table 3 it is noted that the additional traffic generated by the development at No.1-4 Bathurst Street would result in only a minor change to intersection operating conditions at the signalised intersection of Old Bathurst Road / Russell Street in the year 2033 assuming full development of known sites described above and 2% growth rate for a 10 year period. Further, no additional upgrade of the intersection arrangements as identified in the SCT traffic report would be necessary to accommodate the traffic generation of the development through the intersection of Old Bathurst Road / Russell Street.

Overall, the potential traffic impacts of the proposed rezoning are considered acceptable.

SIDRA outputs are provided in **Appendix C** of this report.

5.5 Active Transport Assessment

The Penrith Accessible Trails Hierarchy (2009) report indicates the footpath along Old Bathurst Road as a 'Priority Pathway' with a potential to upgrade. There is the opportunity for provision of a shared pathway through the provision of an appropriate width path to facilitate future pedestrian / cycle trips between the site and Emu Plains Station / Penrith to the east.

It is noted that a new footbridge over Old Bathurst Road will be provided to ensure safe and direct pedestrian access between the new Emu Plains Commuter Car Park (neighbouring site to the east) and the station.

It is also noted that the Planning Proposal offers the opportunity to facilitate delivery of an upgraded pedestrian and cycle path in conjunction with a future Development Application for the site along the site frontage. A future Development Application will incorporate the construction of kerb and gutter along the Old Bathurst Road frontage, and streetscape works including pedestrian / cycle path, and verge landscaping.

In addition, the existing footpath connection along Russell Street is situated on the western side of the roadway, servicing the residential areas to the west, and providing a direct linkage to the Emu Green Reserve open space area.

The Planning Proposal is able to facilitate delivery of a green link along Russell Street in conjunction with a future Development Application for the site.

A future Development Application will incorporate the delivery of streetscape landscaping works, street trees and verge landscaping.

The verge on Russell Street is able to accommodate a new pedestrian and cycle link if required along the frontage of the site where the rezoning applies. This would be delivered as part of a future Development Application.

It is expected due to the nature of the development that the additional number of pedestrian / cycle trips during peak hours would be very low. Thus, it is not expected that the development would have a significant impact on the current / future active transport network. Further, the Planning Proposal is consistent with, and will enable delivery of the Green Grid Strategy as it applies to landscape and pedestrian connections surrounding the site.

6. Parking and Access Review

6.1 Council DCP Parking Provision

It is expected that future development applications of each component of the development would provide parking in accordance with the requirements of Penrith City Councils DCP.

7. Conclusions

This report has reviewed the potential traffic impacts of the proposed rezoning of a portion of the site known as Lot 1 1-4 Old Bathurst Road, Emu Plains to provide light industrial zoning across the site as a whole. The findings of this assessment are presented below:

1. The potential traffic generation of the development would be very low in the context of existing traffic demands on the immediate surrounding road network.
2. The future year (2033) intersection operating conditions at Old Bathurst Road / Russell Street would be similar to that which is estimated to occur in 2033 without the rezoning proposal additional traffic.
3. The forecast 2033 traffic conditions which incorporated the traffic generation of all known developments including the subject site and a 2% per annum growth till 2033 at the upgraded intersection of Old Bathurst Road / Russell Street would be similar to that which was estimated without the development proposal.
4. The proposed parking provision of the proposal is expected to comply with the requirements of Penrith City Council's DCP.

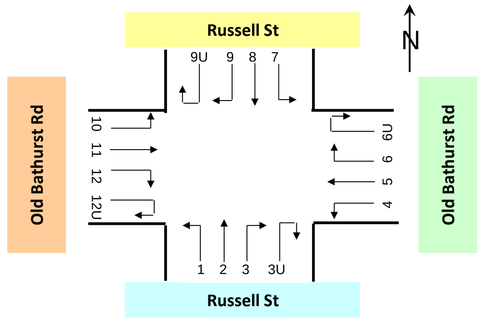
Overall the traffic impacts of the proposal are considered minimal.

8. Appendix A – Intersection Count

Job No. : AUNSW775
Client : The Trustee for Positive Traffic Trust
Suburb : Old Bathurst Road
Location : 1. Old Bathurst Rd / Russell St

Day/Date : Wed, 28th April 2021
Weather : Fine
Description : Classified Intersection Count
: 15 mins Data

Classifications	Class 1	Class 2
	Lights	Heavies



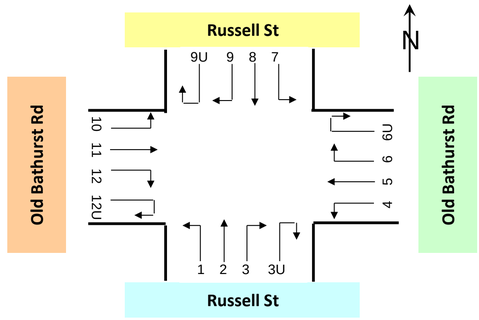
MATRIX Traffic and Transport Data

Approach	Russell St												Old Bathurst Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
6:30 to 6:45	19	1	**20**	1	0	**1**	70	5	**75**	3	1	**4**	17	5	**22**	39	4	**43**	5	1	**6**	2	0	**2**
6:45 to 7:00	20	3	**23**	5	0	**5**	70	3	**73**	3	1	**4**	24	12	**36**	33	1	**34**	2	0	**2**	2	0	**2**
7:00 to 7:15	20	1	**21**	9	0	**9**	44	9	**53**	2	1	**3**	26	6	**32**	31	0	**31**	2	0	**2**	1	0	**1**
7:15 to 7:30	19	4	**23**	5	0	**5**	46	5	**51**	2	0	**2**	25	8	**33**	35	1	**36**	4	0	**4**	1	0	**1**
7:30 to 7:45	21	0	**21**	7	1	**8**	66	11	**77**	3	0	**3**	14	2	**16**	45	1	**46**	7	0	**7**	2	1	**3**
7:45 to 8:00	18	2	**20**	4	0	**4**	78	3	**81**	4	1	**5**	22	2	**24**	50	1	**51**	4	0	**4**	7	0	**7**
8:00 to 8:15	20	1	**21**	7	0	**7**	68	7	**75**	1	0	**1**	22	5	**27**	47	2	**49**	3	0	**3**	8	0	**8**
8:15 to 8:30	33	1	**34**	10	0	**10**	90	7	**97**	10	0	**10**	23	4	**27**	63	1	**64**	8	0	**8**	6	1	**7**
8:30 to 8:45	43	3	**46**	14	0	**14**	77	9	**86**	2	0	**2**	30	2	**32**	57	2	**59**	11	0	**11**	1	0	**1**
8:45 to 9:00	27	3	**30**	8	0	**8**	45	9	**54**	1	0	**1**	29	11	**40**	60	4	**64**	8	0	**8**	1	0	**1**
9:00 to 9:15	30	4	**34**	14	0	**14**	32	11	**43**	4	1	**5**	29	7	**36**	40	1	**41**	3	0	**3**	1	0	**1**
9:15 to 9:30	43	3	**46**	6	0	**6**	33	5	**38**	3	1	**4**	23	11	**34**	45	1	**46**	5	0	**5**	1	0	**1**
AM Totals	**313**	**26**	**339**	**90**	**1**	**91**	**719**	**84**	**803**	**38**	**6**	**44**	**284**	**75**	**359**	**545**	**19**	**564**	**62**	**1**	**63**	**33**	**2**	**35**
15:30 to 15:45	52	1	**53**	24	0	**24**	32	7	**39**	9	0	**9**	91	9	**100**	124	1	**125**	10	1	**11**	4	0	**4**
15:45 to 16:00	52	5	**57**	21	2	**23**	26	13	**39**	10	1	**11**	40	4	**44**	134	1	**135**	18	1	**19**	2	0	**2**
16:00 to 16:15	51	2	**53**	27	0	**27**	37	6	**43**	6	1	**7**	52	5	**57**	147	1	**148**	18	0	**18**	3	1	**4**
16:15 to 16:30	52	6	**58**	26	0	**26**	34	8	**42**	7	0	**7**	34	7	**41**	158	2	**160**	28	1	**29**	0	0	**0**
16:30 to 16:45	59	6	**65**	16	2	**18**	38	10	**48**	6	0	**6**	45	5	**50**	160	0	**160**	24	0	**24**	2	0	**2**
16:45 to 17:00	55	1	**56**	33	1	**34**	32	6	**38**	4	0	**4**	32	3	**35**	152	1	**153**	21	0	**21**	1	0	**1**
17:00 to 17:15	53	1	**54**	26	1	**27**	26	4	**30**	5	0	**5**	49	3	**52**	160	2	**162**	28	1	**29**	1	0	**1**
17:15 to 17:30	78	1	**79**	24	1	**25**	22	3	**25**	8	0	**8**	28	1	**29**	167	0	**167**	23	0	**23**	5	0	**5**
17:30 to 17:45	57	0	**57**	35	0	**35**	19	2	**21**	4	0	**4**	37	3	**40**	159	1	**160**	27	0	**27**	2	0	**2**
17:45 to 18:00	53	1	**54**	28	1	**29**	23	3	**26**	4	0	**4**	18	3	**21**	144	0	**144**	27	0	**27**	3	0	**3**
18:00 to 18:15	68	0	**68**	27	0	**27**	23	1	**24**	5	0	**5**	26	0	**26**	131	0	**131**	18	0	**18**	0	0	**0**
18:15 to 18:30	70	2	**72**	16	0	**16**	19	5	**24**	3	0	**3**	16	2	**18**	107	0	**107**	16	0	**16**	2	0	**2**
PM Totals	**700**	**26**	**726**	**303**	**8**	**311**	**331**	**68**	**399**	**71**	**2**	**73**	**468**	**45**	**513**	**1,743**	**9**	**1,752**	**258**	**4**	**262**	**25**	**1**	**26**

Approach	Russell St												Old Bathurst Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
6:30 to 6:45	11	0	**11**	14	0	**14**	2	0	**2**	0	0	**0**	0	1	**1**	96	0	**96**	37	1	**38**	0	0	**0**
6:45 to 7:00	12	2	**14**	15	1	**16**	4	1	**5**	0	0	**0**	1	0	**1**	111	1	**112**	59	3	**62**	0	0	**0**
7:00 to 7:15	11	0	**11**	16	0	**16**	4	0	**4**	0	1	**1**	0	0	**0**	114	2	**116**	55	5	**60**	0	1	**1**
7:15 to 7:30	20	0	**20**	13	4	**17**	4	1	**5**	0	0	**0**	0	0	**0**	165	4	**169**	79	3	**82**	0	0	**0**
7:30 to 7:45	32	1	**33**	23	1	**24**	5	0	**5**	0	0	**0**	0	0	**0**	162	2	**164**	49	0	**49**	0	0	**0**
7:45 to 8:00	18	0	**18**	25	3	**28**	3	0	**3**	0	0	**0**	0	0	**0**	186	2	**188**	39	2	**41**	0	0	**0**
8:00 to 8:15	23	0	**23**	16	2	**18**	2	0	**2**	0	0	**0**	2	0	**2**	169	0	**169**	54	0	**54**	0	0	**0**
8:15 to 8:30	23	0	**23**	36	0	**36**	10	0	**10**	1	0	**1**	0	0	**0**	125	2	**127**	56	0	**56**	0	0	**0**
8:30 to 8:45	24	0	**24**	19	1	**20**	1	0	**1**	0	0	**0**	0	0	**0**	130	2	**132**	79	0	**79**	0	0	**0**
8:45 to 9:00	16	1	**17**	16	2	**18**	2	1	**3**	0	0	**0**	0	0	**0**	118	1	**119**	74	4	**78**	1	0	**1**
9:00 to 9:15	15	0	**15**	11	0	**11**	1	0	**1**	0	0	**0**	2	0	**2**	110	1	**111**	56	2	**58**	2	0	**2**
9:15 to 9:30	13	0	**13**	14	0	**14**	3	1	**4**	0	0	**0**	1	0	**1**	97	0	**97**	53	1	**54**	1	0	**1**
AM Totals	**218**	**4**	**222**	**218**	**14**	**232**	**41**	**4**	**45**	**1**	**1**	**2**	**6**	**1**	**7**	**1,583**	**17**	**1,600**	**690**	**21**	**711**	**4**	**1**	**5**
15:30 to 15:45	14	1	**15**	6	1	**7**	1	1	**2**	0	0	**0**	4	0	**4**	82	0	**82**	51	5	**56**	0	0	**0**
15:45 to 16:00	11	0	**11**	12	0	**12**	1	2	**3**	0	0	**0**	1	0	**1**	65	0	**65**	48	3	**51**	0	0	**0**
16:00 to 16:15	16	0	**16**	19	0	**19**	3	0	**3**	0	0	**0**	1	0	**1**	69	0	**69**	48	1	**49**	2	0	**2**
16:15 to 16:30	13	1	**14**	11	0	**11**	3	1	**4**	0	0	**0**	0	0	**0**	63	0	**63**	35	0	**35**	0	0	**0**
16:30 to 16:45	14	0	**14**	11	1	**12**	1	1	**2**	0	0	**0**	0	0	**0**	74	2	**76**	50	0	**50**	1	0	**1**
16:45 to 17:00	19	0	**19**	11	2	**13**	1	0	**1**	0	0	**0**	1	0	**1**	59	0	**59**	56	0	**56**	3	0	**3**
17:00 to 17:15	16	0	**16**	15	2	**17**	2	0	**2**	0	0	**0**	0	0	**0**	63	1	**64**	63	2	**65**	0	0	**0**
17:15 to 17:30	9	0	**9**	18	1	**19**	3	0	**3**	0	0	**0**	1	0	**1**	56	0	**56**	60	2	**62**	2	0	**2**
17:30 to 17:45	9	0	**9**	8	0	**8**	4	0	**4**	1	0	**1**	2	0	**2**	56	0	**56**	35	0	**35**	0	0	**0**
17:45 to 18:00	7	0	**7**	15	1	**16**	6	0	**6**	0	0	**0**	0	0	**0**	61	0	**61**	52	0	**52**	1	0	**1**
18:00 to 18:15	9	0	**9**	10	1	**11**	2	0	**2**	0	0	**0**	6	0	**6**	44	0	**44**	48	1	**49**	1	0	**1**
18:15 to 18:30	13	0	**13**	16	1	**17**	0	0	**0**	0	0	**0**	4	0	**4**	66	0	**66**	42	0	**42**	0	0	**0**
PM Totals	**150**	**2**	**152**	**152**	**10**	**162**	**27**	**5**	**32**	**1**	**0**	**1**	**20**	**0**	**20**	**758**	**3**	**761**	**588**	**14**	**602**	**10**	**0**	**10**

Job No. : AUNSW775
Client : The Trustee for Positive Traffic Trust
Suburb : Old Bathurst Road
Location : 1. Old Bathurst Rd / Russell St

Day/Date : Wed, 28th April 2021
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



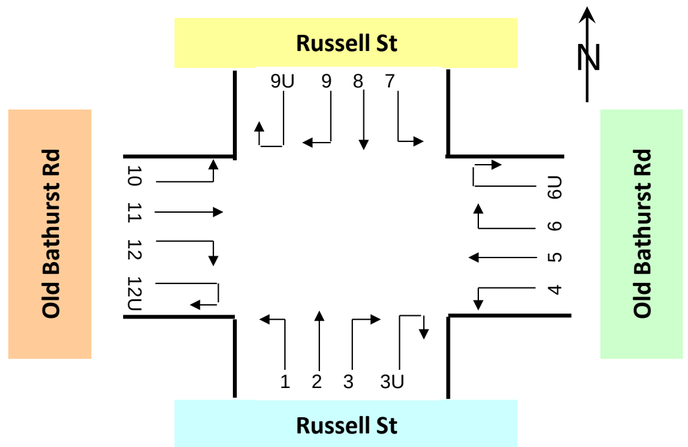
MATRIX Traffic and Transport Data

Approach	Russell St												Old Bathurst Rd											
Direction	Direction 1 (Left Turn)			Direction 2 (Through)			Direction 3 (Right Turn)			Direction 3U (U Turn)			Direction 4 (Left Turn)			Direction 5 (Through)			Direction 6 (Right Turn)			Direction 6U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
6:30 to 7:30	78	9	**87**	20	0	**20**	230	22	**252**	10	3	**13**	92	31	**123**	138	6	**144**	13	1	**14**	6	0	**6**
6:45 to 7:45	80	8	**88**	26	1	**27**	226	28	**254**	10	2	**12**	89	28	**117**	144	3	**147**	15	0	**15**	6	1	**7**
7:00 to 8:00	78	7	**85**	25	1	**26**	234	28	**262**	11	2	**13**	87	18	**105**	161	3	**164**	17	0	**17**	11	1	**12**
7:15 to 8:15	78	7	**85**	23	1	**24**	258	26	**284**	10	1	**11**	83	17	**100**	177	5	**182**	18	0	**18**	18	1	**19**
7:30 to 8:30	92	4	**96**	28	1	**29**	302	28	**330**	18	1	**19**	81	13	**94**	205	5	**210**	22	0	**22**	23	2	**25**
7:45 to 8:45	114	7	**121**	35	0	**35**	313	26	**339**	17	1	**18**	97	13	**110**	217	6	**223**	26	0	**26**	22	1	**23**
8:00 to 9:00	123	8	**131**	39	0	**39**	280	32	**312**	14	0	**14**	104	22	**126**	227	9	**236**	30	0	**30**	16	1	**17**
8:15 to 9:15	133	11	**144**	46	0	**46**	244	36	**280**	17	1	**18**	111	24	**135**	220	8	**228**	30	0	**30**	9	1	**10**
8:30 to 9:30	143	13	**156**	42	0	**42**	187	34	**221**	10	2	**12**	111	31	**142**	202	8	**210**	27	0	**27**	4	0	**4**
AM Totals	**313**	**26**	**339**	**90**	**1**	**91**	**719**	**84**	**803**	**38**	**6**	**44**	**284**	**75**	**359**	**545**	**19**	**564**	**62**	**1**	**63**	**33**	**2**	**35**
15:30 to 16:30	207	14	**221**	98	2	**100**	129	34	**163**	32	2	**34**	217	25	**242**	563	5	**568**	74	3	**77**	9	1	**10**
15:45 to 16:45	214	19	**233**	90	4	**94**	135	37	**172**	29	2	**31**	171	21	**192**	599	4	**603**	88	2	**90**	7	1	**8**
16:00 to 17:00	217	15	**232**	102	3	**105**	141	30	**171**	23	1	**24**	163	20	**183**	617	4	**621**	91	1	**92**	6	1	**7**
16:15 to 17:15	219	14	**233**	101	4	**105**	130	28	**158**	22	0	**22**	160	18	**178**	630	5	**635**	101	2	**103**	4	0	**4**
16:30 to 17:30	245	9	**254**	99	5	**104**	118	23	**141**	23	0	**23**	154	12	**166**	639	3	**642**	96	1	**97**	9	0	**9**
16:45 to 17:45	243	3	**246**	118	3	**121**	99	15	**114**	21	0	**21**	146	10	**156**	638	4	**642**	99	1	**100**	9	0	**9**
17:00 to 18:00	241	3	**244**	113	3	**116**	90	12	**102**	21	0	**21**	132	10	**142**	630	3	**633**	105	1	**106**	11	0	**11**
17:15 to 18:15	256	2	**258**	114	2	**116**	87	9	**96**	21	0	**21**	109	7	**116**	601	1	**602**	95	0	**95**	10	0	**10**
17:30 to 18:30	248	3	**251**	106	1	**107**	84	11	**95**	16	0	**16**	97	8	**105**	541	1	**542**	88	0	**88**	7	0	**7**
PM Totals	**700**	**26**	**726**	**303**	**8**	**311**	**331**	**68**	**399**	**71**	**2**	**73**	**468**	**45**	**513**	**1,743**	**9**	**1,752**	**258**	**4**	**262**	**25**	**1**	**26**

Approach	Russell St												Old Bathurst Rd											
Direction	Direction 7 (Left Turn)			Direction 8 (Through)			Direction 9 (Right Turn)			Direction 9U (U Turn)			Direction 10 (Left Turn)			Direction 11 (Through)			Direction 12 (Right Turn)			Direction 12U (U Turn)		
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total
6:30 to 7:30	54	2	**56**	58	5	**63**	14	2	**16**	0	1	**1**	1	1	**2**	486	7	**493**	230	12	**242**	0	1	**1**
6:45 to 7:45	75	3	**78**	67	6	**73**	17	2	**19**	0	1	**1**	1	0	**1**	552	9	**561**	242	11	**253**	0	1	**1**
7:00 to 8:00	81	1	**82**	77	8	**85**	16	1	**17**	0	1	**1**	0	0	**0**	627	10	**637**	222	10	**232**	0	1	**1**
7:15 to 8:15	93	1	**94**	77	10	**87**	14	1	**15**	0	0	**0**	2	0	**2**	682	8	**690**	221	5	**226**	0	0	**0**
7:30 to 8:30	96	1	**97**	100	6	**106**	20	0	**20**	1	0	**1**	2	0	**2**	642	6	**648**	198	2	**200**	0	0	**0**
7:45 to 8:45	88	0	**88**	96	6	**102**	16	0	**16**	1	0	**1**	2	0	**2**	610	6	**616**	228	2	**230**	0	0	**0**
8:00 to 9:00	86	1	**87**	87	5	**92**	15	1	**16**	1	0	**1**	2	0	**2**	542	5	**547**	263	4	**267**	1	0	**1**
8:15 to 9:15	78	1	**79**	82	3	**85**	14	1	**15**	1	0	**1**	2	0	**2**	483	6	**489**	265	6	**271**	3	0	**3**
8:30 to 9:30	68	1	**69**	60	3	**63**	7	2	**9**	0	0	**0**	3	0	**3**	455	4	**459**	262	7	**269**	4	0	**4**
AM Totals	**218**	**4**	**222**	**218**	**14**	**232**	**41**	**4**	**45**	**1**	**1**	**2**	**6**	**1**	**7**	**1,583**	**17**	**1,600**	**690**	**21**	**711**	**4**	**1**	**5**
15:30 to 16:30	54	2	**56**	48	1	**49**	8	4	**12**	0	0	**0**	6	0	**6**	279	0	**279**	182	9	**191**	2	0	**2**
15:45 to 16:45	54	1	**55**	53	1	**54**	8	4	**12**	0	0	**0**	2	0	**2**	271	2	**273**	181	4	**185**	3	0	**3**
16:00 to 17:00	62	1	**63**	52	3	**55**	8	2	**10**	0	0	**0**	2	0	**2**	265	2	**267**	189	1	**190**	6	0	**6**
16:15 to 17:15	62	1	**63**	48	5	**53**	7	2	**9**	0	0	**0**	1	0	**1**	259	3	**262**	204	2	**206**	4	0	**4**
16:30 to 17:30	58	0	**58**	55	6	**61**	7	1	**8**	0	0	**0**	2	0	**2**	252	3	**255**	229	4	**233**	6	0	**6**
16:45 to 17:45	53	0	**53**	52	5	**57**	10	0	**10**	1	0	**1**	4	0	**4**	234	1	**235**	214	4	**218**	5	0	**5**
17:00 to 18:00	41	0	**41**	56	4	**60**	15	0	**15**	1	0	**1**	3	0	**3**	236	1	**237**	210	4	**214**	3	0	**3**
17:15 to 18:15	34	0	**34**	51	3	**54**	15	0	**15**	1	0	**1**	9	0	**9**	217	0	**217**	195	3	**198**	4	0	**4**
17:30 to 18:30	38	0	**38**	49	3	**52**	12	0	**12**	1	0	**1**	12	0	**12**	227	0	**227**	177	1	**178**	2	0	**2**
PM Totals	**150**	**2**	**152**	**152**	**10**	**162**	**27**	**5**	**32**	**1**	**0**	**1**	**20**	**0**	**20**	**758**	**3**	**761**	**588**	**14**	**602**	**10**	**0**	**10**

Job No. : AUNSW775
Client : The Trustee for Positive Traffic Trust
Suburb : Old Bathurst Road
Location : 1. Old Bathurst Rd / Russell St

Day/Date : Wed, 28th April 2021
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary



MATRIX Traffic and Transport Da

	Approach	Russell St			Old Bathurst Rd			Russell St			Old Bathurst Rd			Grand Total
	Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
AM	7:45 to 8:45	479	34	**513**	362	20	**382**	201	6	**207**	840	8	**848**	**1,950**
PM	16:30 to 17:30	485	37	**522**	898	16	**914**	120	7	**127**	489	7	**496**	**2,059**

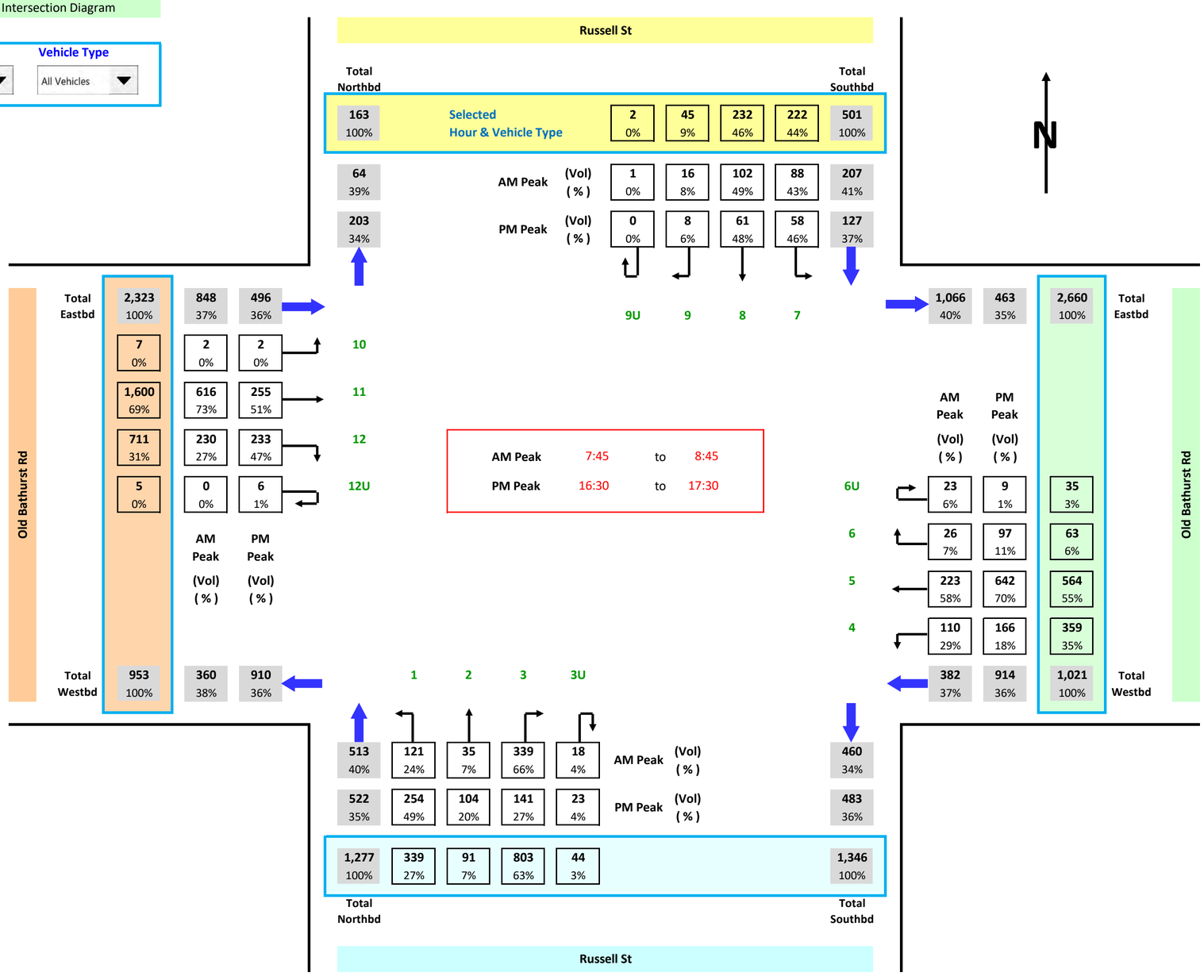
Time Period	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	Grand Total
6:30 to 7:30	338	34	**372**	249	38	**287**	126	10	**136**	717	21	**738**	**1,533**
6:45 to 7:45	342	39	**381**	254	32	**286**	159	12	**171**	795	21	**816**	**1,654**
7:00 to 8:00	348	38	**386**	276	22	**298**	174	11	**185**	849	21	**870**	**1,739**
7:15 to 8:15	369	35	**404**	296	23	**319**	184	12	**196**	905	13	**918**	**1,837**
7:30 to 8:30	440	34	**474**	331	20	**351**	217	7	**224**	842	8	**850**	**1,899**
7:45 to 8:45	479	34	**513**	362	20	**382**	201	6	**207**	840	8	**848**	**1,950**
8:00 to 9:00	456	40	**496**	377	32	**409**	189	7	**196**	808	9	**817**	**1,918**
8:15 to 9:15	440	48	**488**	370	33	**403**	175	5	**180**	753	12	**765**	**1,836**
8:30 to 9:30	382	49	**431**	344	39	**383**	135	6	**141**	724	11	**735**	**1,690**
AM Totals	**1,160**	**117**	**1,277**	**924**	**97**	**1,021**	**478**	**23**	**501**	**2,283**	**40**	**2,323**	**5,122**
15:30 to 16:30	466	52	**518**	863	34	**897**	110	7	**117**	469	9	**478**	**2,010**
15:45 to 16:45	468	62	**530**	865	28	**893**	115	6	**121**	457	6	**463**	**2,007**
16:00 to 17:00	483	49	**532**	877	26	**903**	122	6	**128**	462	3	**465**	**2,028**
16:15 to 17:15	472	46	**518**	895	25	**920**	117	8	**125**	468	5	**473**	**2,036**
16:30 to 17:30	485	37	**522**	898	16	**914**	120	7	**127**	489	7	**496**	**2,059**
16:45 to 17:45	481	21	**502**	892	15	**907**	116	5	**121**	457	5	**462**	**1,992**
17:00 to 18:00	465	18	**483**	878	14	**892**	113	4	**117**	452	5	**457**	**1,949**
17:15 to 18:15	478	13	**491**	815	8	**823**	101	3	**104**	425	3	**428**	**1,846**
17:30 to 18:30	454	15	**469**	733	9	**742**	100	3	**103**	418	1	**419**	**1,733**
PM Totals	**1,405**	**104**	**1,509**	**2,494**	**59**	**2,553**	**330**	**17**	**347**	**1,376**	**17**	**1,393**	**5,802**

Job No. : AUNSW775
Client : The Trustee for Positive Traffic Trust
Suburb : Old Bathurst Road
Location : 1. Old Bathurst Rd / Russell St

Day/Date : Wed, 28th April 2021
Weather : Fine
Description : Classified Intersection Count
: Intersection Diagram

MATRIX Traffic and Transport Data

Hour Starting: AM Totals
Vehicle Type: All Vehicles



9. Appendix B – Plans of Potential Development

INDICATIVE BUILDING ENVELOPE PLAN

170 RUSSELL STREET

EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

0 5 10 15 20 25 METRES

CLIENT : Le Boursicot
SCALE : A2 @ 1:500
DATE : 04/05/2022
PLAN No : 056.EP.013
REVISION : 03

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10. Appendix C – SIDRA Outputs

MOVEMENT SUMMARY

Site: 1PM_DY [OLD_RUS_33_PM_DY+1-4 Bathurst (Site Folder: PM_DV)]

New Site
Site Category: Proposed Design 1
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 133 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Russell Street (S)														
1	L2	257	19	271	7.4	0.594	39.8	LOS C	12.6	93.5	0.93	0.82	0.93	38.8
2	T1	146	5	154	3.4	0.624	60.6	LOS E	9.7	69.8	1.00	0.81	1.00	37.3
3	R2	205	18	216	8.8	* 0.956	93.9	LOS F	17.6	132.5	1.00	1.08	1.52	30.3
Approach		608	42	640	6.9	0.956	63.1	LOS E	17.6	132.5	0.97	0.90	1.14	35.1
East: Old Bathurst Road (E)														
4	L2	417	10	439	2.4	0.357	14.6	LOS B	12.1	86.5	0.47	0.70	0.47	45.2
5	T1	805	6	847	0.7	* 0.959	61.8	LOS E	65.3	459.9	0.96	1.09	1.23	30.3
6	R2	104	3	109	2.9	0.466	63.9	LOS E	6.7	48.4	0.97	0.79	0.97	34.3
Approach		1326	19	1396	1.4	0.959	47.2	LOS D	65.3	459.9	0.81	0.94	0.97	35.3
North: Russell Street (N)														
7	L2	46	0	48	0.0	* 0.964	99.2	LOS F	11.2	81.1	1.00	1.14	1.63	29.8
8	T1	77	1	81	1.3	0.964	93.7	LOS F	11.2	81.1	1.00	1.14	1.63	32.5
9	R2	7	4	7	57.1	0.964	98.7	LOS F	11.2	81.1	1.00	1.14	1.63	28.3
Approach		130	5	137	3.8	0.964	95.9	LOS F	11.2	81.1	1.00	1.14	1.63	31.4
West: Old Bathurst Road (W)														
10	L2	2	0	2	0.0	0.090	25.6	LOS B	2.8	20.2	0.56	0.46	0.56	42.7
11	T1	301	6	317	2.0	0.241	20.7	LOS B	8.5	60.2	0.60	0.50	0.60	41.1
12	R2	214	8	225	3.7	0.964	96.2	LOS F	18.6	134.6	1.00	1.10	1.54	28.8
Approach		517	14	544	2.7	0.964	52.0	LOS D	18.6	134.6	0.76	0.75	0.98	34.0
All Vehicles		2581	80	2717	3.1	0.964	54.3	LOS D	65.3	459.9	0.85	0.91	1.05	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

INTERSECTION SUMMARY

Site: 1AM_DY [OLD_RUS_33_AM_DY+1-4 Bathurst (Site Folder: AM_DV)]

New Site
Site Category: Proposed Design 1
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 108 seconds (Site Optimum Cycle Time - Minimum Delay)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	35.0	km/h	35.0	km/h
Travel Distance (Total)	4421.9	veh-km/h	5306.3	pers-km/h
Travel Time (Total)	126.3	veh-h/h	151.6	pers-h/h
Desired Speed (Program)	50.0	km/h		
Speed Efficiency	0.70			
Travel Time Index	6.67			
Congestion Coefficient	1.43			
Demand Flows (Total)	2556	veh/h	3067	pers/h
Percent Heavy Vehicles (Demand)	4.5	%		
Degree of Saturation	0.963			
Practical Spare Capacity	-6.5	%		
Effective Intersection Capacity	2655	veh/h		
Control Delay (Total)	38.21	veh-h/h	45.85	pers-h/h
Control Delay (Average)	53.8	sec	53.8	sec
Control Delay (Worst Lane)	82.6	sec		
Control Delay (Worst Movement)	87.9	sec	87.9	sec
Geometric Delay (Average)	2.4	sec		
Stop-Line Delay (Average)	51.4	sec		
Idling Time (Average)	45.3	sec		
Intersection Level of Service (LOS)	LOS D			
95% Back of Queue - Vehicles (Worst Lane)	30.7	veh		
95% Back of Queue - Distance (Worst Lane)	217.6	m		
Ave. Queue Storage Ratio (Worst Lane)	0.24			
Total Effective Stops	2471	veh/h	2966	pers/h
Effective Stop Rate	0.97		0.97	
Proportion Queued	0.92		0.92	
Performance Index	316.1		316.1	
Cost (Total)	5112.72	$/h	5112.72	$/h
Fuel Consumption (Total)	413.3	L/h		
Carbon Dioxide (Total)	983.7	kg/h		
Hydrocarbons (Total)	0.077	kg/h		
Carbon Monoxide (Total)	0.804	kg/h		
NOx (Total)	1.669	kg/h		

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Site Model Variability Index (Iterations 3 to N): 1.6 %
Number of Iterations: 4 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Main (Timing-Capacity) Iterations: 3.4% 3.1% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,226,779	veh/y	1,472,135	pers/y
Delay	18,339	veh-h/y	22,006	pers-h/y
Effective Stops	1,186,219	veh/y	1,423,462	pers/y
Travel Distance	2,122,528	veh-km/y	2,547,034	pers-km/y
Travel Time	60,622	veh-h/y	72,746	pers-h/y
Cost	2,454,103	$/y	2,454,103	$/y
Fuel Consumption	198,364	L/y		
Carbon Dioxide	472,167	kg/y		
Hydrocarbons	37	kg/y		
Carbon Monoxide	386	kg/y		

MOVEMENT SUMMARY

Site: 1AM_DY [OLD_RUS_33_AM_DY+1-4 Bathurst (Site Folder: AM_DV)]

New Site
Site Category: Proposed Design 1
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 108 seconds (Site Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Russell Street (S)														
1	L2	160	10	168	6.3	0.203	15.0	LOS B	3.2	23.4	0.63	0.71	0.63	44.8
2	T1	68	1	72	1.5	0.352	31.4	LOS C	8.2	59.3	0.82	0.75	0.82	41.9
3	R2	546	31	575	5.7	* 0.943	62.8	LOS E	29.6	217.6	0.95	1.00	1.29	35.1
Approach		774	42	815	5.4	0.943	50.1	LOS D	29.6	217.6	0.87	0.92	1.11	37.2
East: Old Bathurst Road (E)														
4	L2	170	30	179	17.6	0.306	30.1	LOS C	7.3	58.4	0.75	0.75	0.75	41.3
5	T1	315	18	332	5.7	0.822	47.9	LOS D	17.2	126.1	0.99	0.97	1.15	33.2
6	R2	61	2	64	3.3	0.630	63.2	LOS E	3.6	26.0	1.00	0.80	1.11	34.4
Approach		546	50	575	9.2	0.822	44.1	LOS D	17.2	126.1	0.91	0.88	1.02	36.1
North: Russell Street (N)														
7	L2	78	2	82	2.6	* 0.963	87.9	LOS F	14.2	103.2	1.00	1.21	1.65	31.7
8	T1	107	6	113	5.6	0.963	78.6	LOS F	14.2	103.2	1.00	1.21	1.65	34.4
9	R2	10	0	11	0.0	0.963	83.2	LOS F	14.2	103.2	1.00	1.21	1.65	30.5
Approach		195	8	205	4.1	0.963	82.6	LOS F	14.2	103.2	1.00	1.21	1.65	33.2
West: Old Bathurst Road (W)														
10	L2	4	0	4	0.0	0.346	43.0	LOS D	8.6	60.6	0.81	0.70	0.81	38.2
11	T1	663	5	698	0.8	* 0.930	53.7	LOS D	30.7	216.5	0.93	1.01	1.18	32.2
12	R2	246	4	259	1.6	0.887	64.5	LOS E	15.6	111.0	1.00	1.01	1.34	33.5
Approach		913	9	961	1.0	0.930	56.6	LOS E	30.7	216.5	0.95	1.01	1.22	32.7
All Vehicles		2428	109	2556	4.5	0.963	53.8	LOS D	30.7	217.6	0.92	0.97	1.18	35.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

INTERSECTION SUMMARY

Site: 1PM_DY [OLD_RUS_33_PM_DY+1-4 Bathurst (Site Folder: PM_DV)]

New Site
Site Category: Proposed Design 1
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 133 seconds (Site Optimum Cycle Time - Minimum Delay)

Intersection Performance - Hourly Values				
Performance Measure	**Vehicles**		**Persons**	
Travel Speed (Average)	34.7	km/h	34.7	km/h
Travel Distance (Total)	4661.7	veh-km/h	5594.0	pers-km/h
Travel Time (Total)	134.2	veh-h/h	161.1	pers-h/h
Desired Speed (Program)	50.0	km/h		
Speed Efficiency	0.69			
Travel Time Index	6.61			
Congestion Coefficient	1.44			
Demand Flows (Total)	2717	veh/h	3260	pers/h
Percent Heavy Vehicles (Demand)	3.1	%		
Degree of Saturation	0.964			
Practical Spare Capacity	-6.7	%		
Effective Intersection Capacity	2818	veh/h		
Control Delay (Total)	41.00	veh-h/h	49.20	pers-h/h
Control Delay (Average)	54.3	sec	54.3	sec
Control Delay (Worst Lane)	96.2	sec		
Control Delay (Worst Movement)	99.2	sec	99.2	sec
Geometric Delay (Average)	2.2	sec		
Stop-Line Delay (Average)	52.1	sec		
Idling Time (Average)	46.7	sec		
Intersection Level of Service (LOS)	LOS D			
95% Back of Queue - Vehicles (Worst Lane)	65.3	veh		
95% Back of Queue - Distance (Worst Lane)	459.9	m		
Ave. Queue Storage Ratio (Worst Lane)	0.38			
Total Effective Stops	2460	veh/h	2952	pers/h
Effective Stop Rate	0.91		0.91	
Proportion Queued	0.85		0.85	
Performance Index	367.3		367.3	
Cost (Total)	5374.80	$/h	5374.80	$/h
Fuel Consumption (Total)	413.0	L/h		
Carbon Dioxide (Total)	979.4	kg/h		
Hydrocarbons (Total)	0.076	kg/h		
Carbon Monoxide (Total)	0.791	kg/h		
NOx (Total)	1.281	kg/h		

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Intersection LOS value for Vehicles is based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Site Model Variability Index (Iterations 3 to N): 0.0 %
Number of Iterations: 2 (Maximum: 10)
Largest change in Lane Degrees of Saturation for the last three Main (Timing-Capacity) Iterations: 10.4% 52.6% 0.0%

Intersection Performance - Annual Values				
Performance Measure	**Vehicles**		**Persons**	
Demand Flows (Total)	1,304,084	veh/y	1,564,901	pers/y
Delay	19,679	veh-h/y	23,615	pers-h/y
Effective Stops	1,180,883	veh/y	1,417,059	pers/y
Travel Distance	2,237,620	veh-km/y	2,685,144	pers-km/y
Travel Time	64,428	veh-h/y	77,313	pers-h/y
Cost	2,579,902	$/y	2,579,902	$/y
Fuel Consumption	198,245	L/y		
Carbon Dioxide	470,105	kg/y		
Hydrocarbons	37	kg/y		
Carbon Monoxide	380	kg/y		

APPENDIX 6
Aboriginal Heritage Report

COMBER CONSULTANTS

ARCHAEOLOGY - HERITAGE - MEDIATION - ARBITRATION

1-4 OLD BATHURST ROAD, EMU PLAINS

Aboriginal Archaeological Assessment

PREPARED BY	JILLIAN COMBER & DAVID NUTLEY
REPORT TO	URBANCO PTY LTD ON BEHALF OF BERNARD AND LINNA LE BOURISCOT
LGA	PENRITH
VERSION NO	B.2020
DATE	JULY 2020

COMBER CONSULTANTS

ARCHAEOLOGY – HERITAGE – MEDIATION – ARBITRATION
ABORIGINAL – HISTORIC - MARITIME

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DOCUMENT CONTROL

PROJECT NO.: UC386 **STATUS:** FINAL

REV	DATE	PREPARED	APPROVED
A	14/07/2020	Jillian Comber & David Nutley	Jillian Comber
B	22/07/2020	Jillian Comber & David Nutley	Jillian Comber

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ECAAS ISO 9001 QUALITY MANAGEMENT CERTIFIED
ECAAS AS/NZS 4801 SAFETY MANAGEMENT CERTIFIED
ECAAS ISO 45001 SAFETY MANAGEMENT CERTIFIED
ECAAS ISO 14001 ENVIRONMENTAL MANAGEMENT CERTIFIED

EXECUTIVE SUMMARY

This Aboriginal archaeological assessment was prepared for Urbanco Pty Ltd on behalf of Bernard and Linna Le Bouriscot. The proponent is currently seeking Penrith Council approval for the Torrens Title "paper" subdivision of the subject site at 1-4 Old Bathurst Road, Emu Plains, formally described as Lots 1 and 2 in DP517958 and Lot 4 in DP574650. The proposed consolidation / subdivision incorporates the creation of two (2) lots, with one lot along the Old Bathurst Road frontage, and the balance land holding being the second allotment.

The Aboriginal archaeological assessment was commissioned to ensure that there will be no adverse impact upon Aboriginal heritage which may exist on the subject site.

An archaeological survey was undertaken on 7th July 2020 in consultation with the Deerubbin Local Aboriginal Land Council. The Land Council's letter of support for the findings of this report is at (Appendix C).

This report makes the following recommendations:

1. There is no objection to the proposed subdivision of the subject property. It will not be necessary to undertake testing or apply for an AHIP, for the "paper" subdivision.

2. Once the subdivision plans have been approved, if it is proposed to undertake building works or any ground disturbance on the property it will be necessary to undertake Aboriginal testing in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW.* Such testing is limited to determining if Aboriginal objects exist on the property and if so, their nature and extent. If Aboriginal objects are uncovered, it will then be necessary to apply for an AHIP. If no objects are uncovered redevelopment of the site can proceed without an AHIP.

3. Prior to undertaking the testing Aboriginal consultation must be undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Guidelines for Proponents 2010.*

CONTENTS

FIGURES

1.0 INTRODUCTION

1.1 Background

This Aboriginal archaeological assessment was prepared for Urbanco Pty Ltd on behalf of Bernard and Linna Le Bouriscot. The proponent wishes to obtain Penrith Council approval for the Torrens Title "paper" subdivision of the subject site at 1-4 Old Bathurst Road, Emu Plains, known as Lots 1 and 2 in DP517958 and Lot 4 in DP574650.

The Aboriginal archaeological assessment was commissioned to ensure that there will be no adverse impact upon the Aboriginal objects or sites which may exist on the subject site. This report was prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW.*

A site inspection was undertaken on 7 July 2020 in consultation with the Deerubbin Local Aboriginal Land Council.

1.2 Location and description

The study area is located on the north eastern corner of Old Bathurst Road and Russell Street, Emu Plains and is known as Lots 1 and 2 in DP517958 and Lot 4 in DP574650 and is approximately 0.234km^2 in area. It is located within the Penrith LGA and is approximately 60kms west of Sydney and approximately 2kms north-west of Penrith (Figures 1 and 2).

The site is situated approximately 1.7km west of the Emu Plains Train Station (Figure 2). The main Penrith Central Business District (CBD) is situated approximately 3.4m to the east.

A portion of the land along Old Bathurst Road is currently zoned IN2 Light Industrial under Penrith Local Environmental Plan (PLEP) 2010. The balance of the land holding is listed as a "deferred matter" and remains subject to the historic Penrith Interim Development Order (IDO) No. 93.

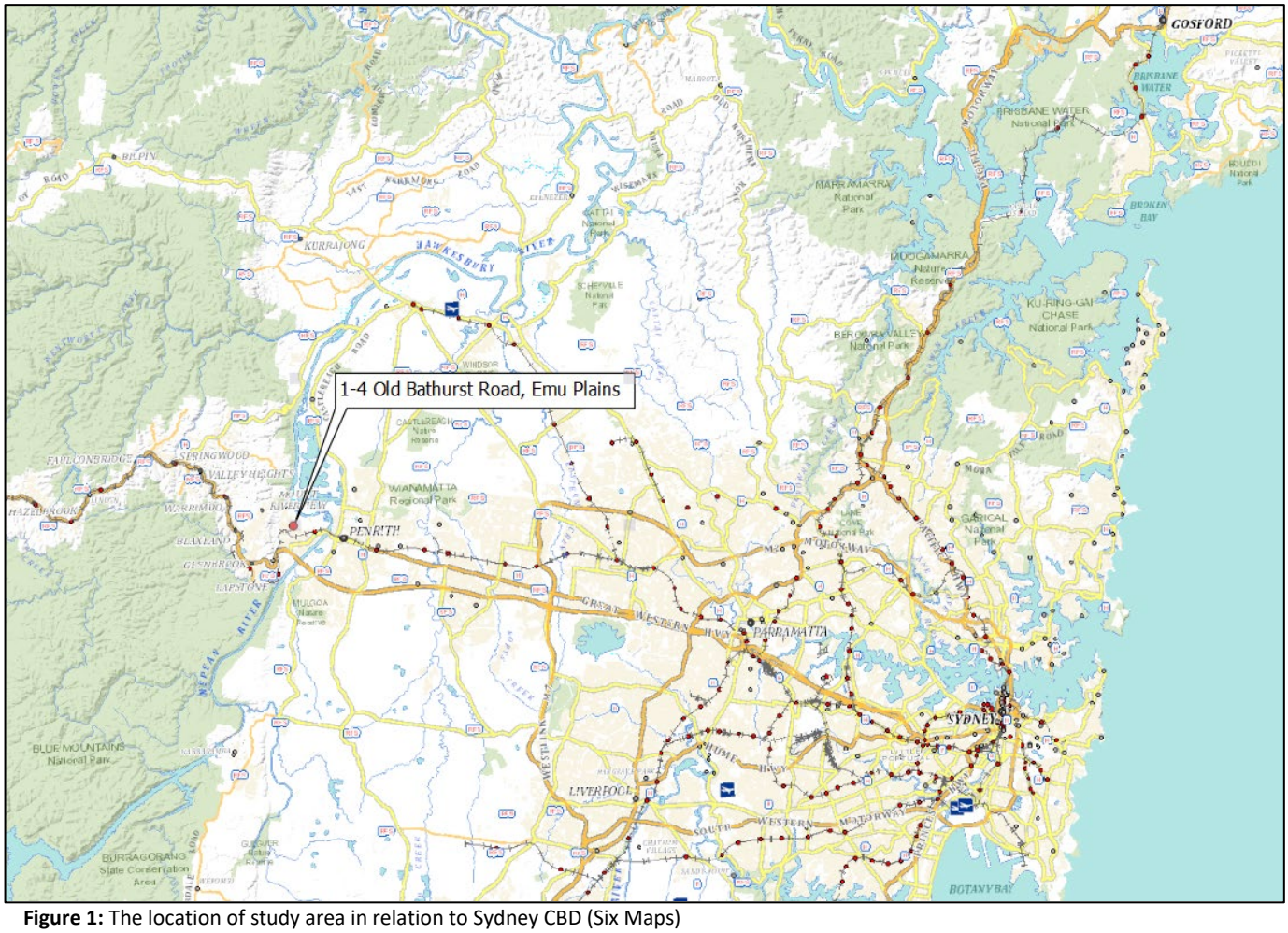

Figure 1: The location of study area in relation to Sydney CBD (Six Maps)

Figure 2: Aerial view of study area in relation to Sydney CBD (Urbanco, Statement of Environmental Effects March 2020, p1)

1.3 Proposal

The proponent has advised that they are seeking Penrith Council approval for the Torrens Title "paper" subdivision of the subject site at 1-4 Old Bathurst Road, Emu Plains. The proposed consolidation subdivision incorporates the creation of two (2) lots, with one lot along the Old Bathurst Road frontage, and the balance being the second allotment (Appendix B). The plans shown at Appendix B include indicative building and carparking envelopes, however, at this stage the proponent is only seeking approval for the subdivision.

Figure 3: Subdivision plan showing Lot 1 and Lot 2 and creek lines

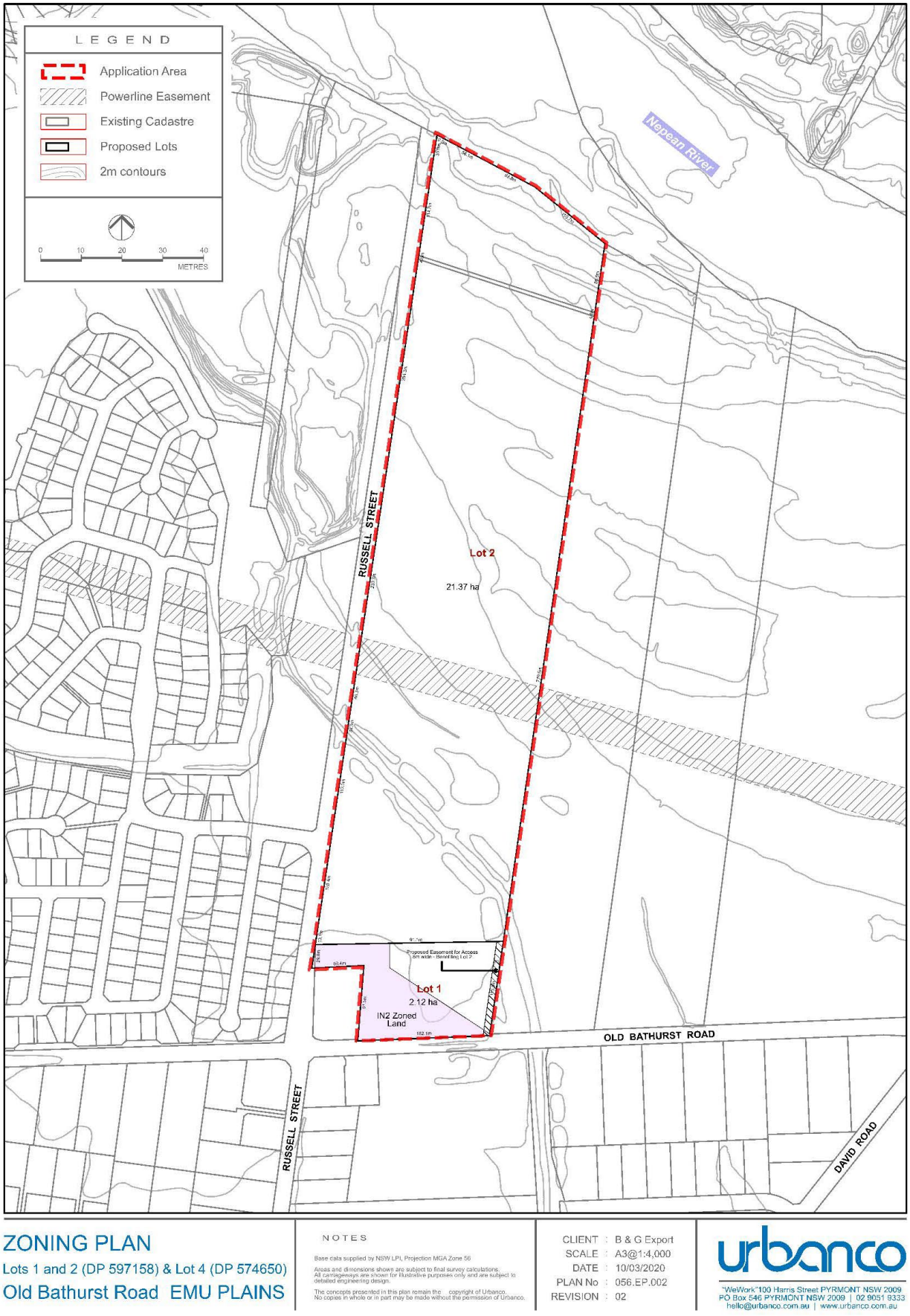

Figure 4: Subdivision plan showing portion of Lot 1 zoned Industrial (IN2).
(Note the ridge lines formed within the flood plain and running parallel to the Nepean River)

2.0 METHODOLOGY

This project was conducted in three stages, being background research, field survey and report preparation, as detailed below.

Stage 1: Background Research
Prior to the field component of this project, the Aboriginal Heritage Information Management System (AHIMS) was searched on 29 May 2020. A copy is attached at Appendix A. Site data, associated documents and archaeological survey reports held by AHIMS were reviewed. Environmental information relating to Aboriginal land use was also researched. Such research facilitated an understanding of the potential nature of sites and site patterning in the region, which enabled a predictive statement to be made. It also provided an archaeological and environmental context within which a significance assessment could be made, if any Aboriginal sites were located during the field survey.

Stage 2: Site Inspection
The archaeological site inspection was undertaken by David Nutley, Rivers McEwen and Christopher Jones of Comber Consultants and Steve Randall of the Deerubbin Local Aboriginal Land Council on Tuesday 7 July 2020. The team was accompanied by Michael Rodger of Urbanco. The inspection, undertaken on foot, excluded the footprint of the existing building on the site and areas where vegetation density precluded access.

Stage 3: Report Preparation
Further archaeological research was conducted, where necessary, to clarify the results of the assessment. This report was then compiled provided to Urbanco.

3.0 ABORIGINAL CONSULTATION

3.1 The Mulgoa Clan

The Mulgoa clan of the Darug were the traditional owners of the land around the Penrith area. Knowledge of the names and boundaries of language groups and bands in Sydney is incomplete due to the scarcity of reliable data. The population of the Darug was probably 500-600 people who divided into smaller communities of from 35 to 60 people, who camped, travelled, foraged, fished and hunted together (Hinkson 2001:xix-xxv; Barani 2020). In April, these communities would congregate around the swamps to catch eels whilst in summer when food was plentiful several of these communities would gather along the Nepean River. In winter, these communities split into smaller extended family groups (Kohen 1997:3).

After British settlement Aboriginal communities were dislocated. Forced movement of people occurred across NSW and caused the loss of many aspects of Aboriginal culture resulting in the emergence of new groups incorporating people from diverse areas. Reorganisation ensured the preservation of some of the core cultural practices and knowledge in Aboriginal communities (Hinkson 2001: xxiv-xxv) The organisation now representing the Penrith/Emu Plains area is the Deerubbin Local Aboriginal Land Council.

Aboriginal culture is dynamic and continuous. It includes the tangible and intangible and links people over time to their community and land. It is important to recognise that Aboriginal people have the right to protect, preserve and promote their cultural heritage.

In recognition of that right, the Deerubbin Local Aboriginal Land Council (DLALC) was invited to take part in the project and participated fully in this archaeological assessment. Steve Randall, Site Officer, DLALC, attended the site inspection and undertook a thorough inspection of the property. The project was discussed in detail with Steve and the recommendations contained in this report were formulated in association with Steve Randall onsite and during a later telephone call on 14/07/2020 when Steve confirmed he agreed with the recommendations.

This report was forwarded to Steve Randall on 14th July 2020 for review and comment. The DLALC supports the recommendations of this report (see Appendix C).

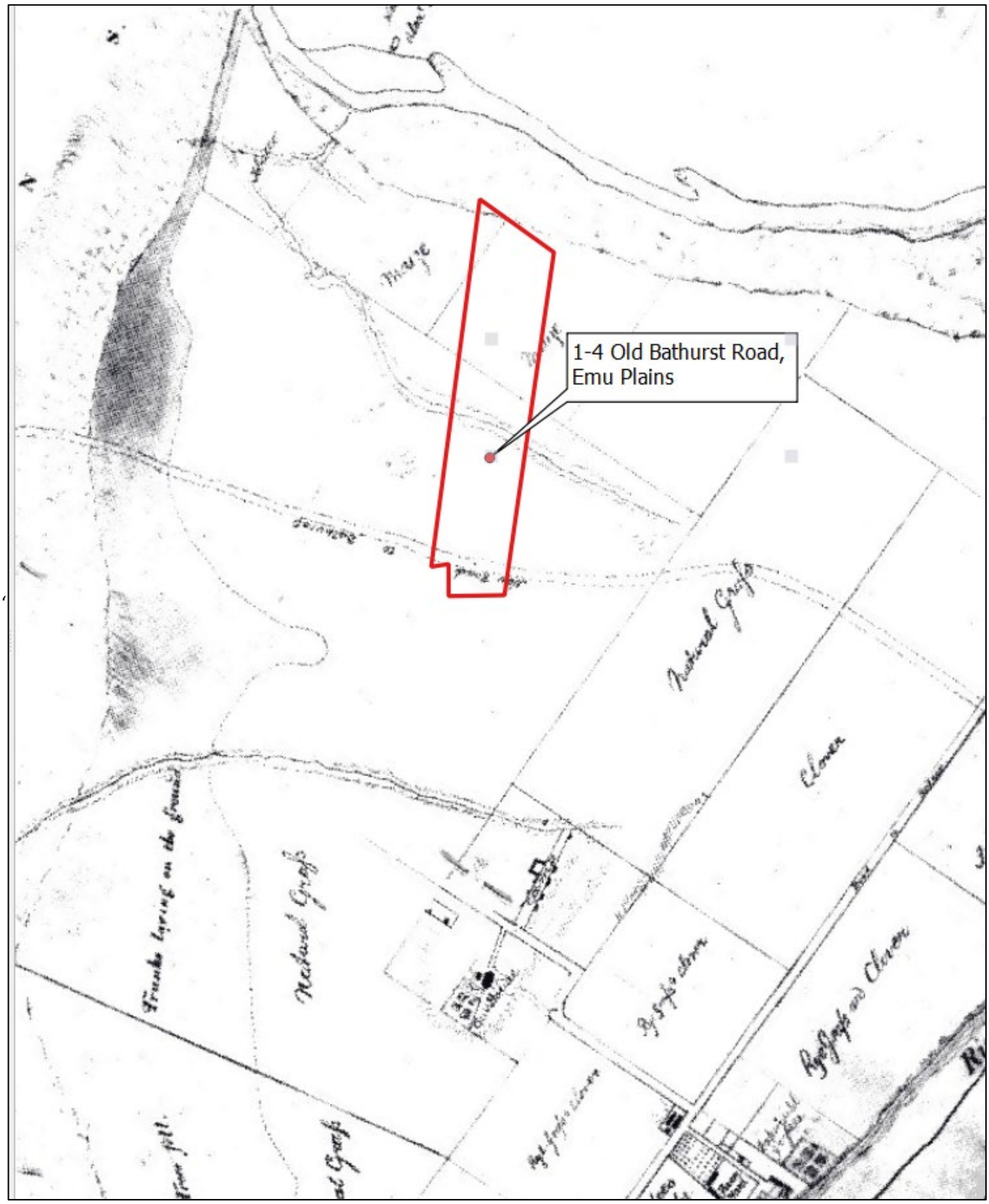

Figure 5: The Emu Plains Agricultural Establishment as depicted by Alexander Kinghorne in 1826 with overlay of subject property. (Source: SRNSW Item 2661)

4.0 ENVIRONMENTAL CONTEXT

4.1 Topography

The survey area is located within the Cumberland Plain which is characterised by low gently undulating slopes. The Cumberland Plain covers approximately 600 square kilometres. It is bordered on the west by the Blue Mountains and on the east by the Georges River and headwaters of the Parramatta Rivers. To the north is the Hornsby Plateau and to the south is the Woronora Plateau (Smith 1989a:8).

The study area is located to the south and west of the Nepean River and south of Cranebrook Creek and the Upper Castlereagh area. It is approximately 20ha and contains a series of very low ridgelines. It slopes gently down to an unnamed creek in the northern portion of the study area. A canal runs in an east-west direction through the southern portion of the study area. The canal contains sloping concrete walls. The top of the wall is built up and contains an area wide enough for vehicles to drive along. The southern wall is planted with native vegetation whilst the northern wall is grassed. An underground pipeline also runs east west across the study area to the north of the canal. Its location is indicated by a depression in the landscape plus the stop valve can be observed. The southern portion of the study area to the south of the canal is flat land.

Figure 4 provides detail of the contours of the landscape and the location of the canal and pipeline, whilst photographs 1-10 show the landscape and photographs 11-13 show the canal

The study area is located within a semi-urban landscape. Directly to the west and south is residential development whilst to the north is the Penrith Lakes Scheme and to the east is the Emu Plains Correctional Centre for women (see Figures 1-2).

4.2 Geology and soils

The Cumberland Plain, generally overlies the Wianamatta Group of Shales. The survey area consists of the Ashfield Shale sub-group of Wianamatta Shales. This sub-group is comprised of shales, carbonaceous claystones, claystones laminate, fine to medium grained lithic sandstone, tuff and some coal. The Cranebrook Formation disconformably overlies the Ashfield Shales. The Cranebrook Formation contains pebbles and cobbles of quartz, quartzite, chert, porphyry, granite, hornfells, sandstone and silcrete. (Penrith 1:100,000 geological map; Jones & Clark 1991:43-49). The tuff from the Ashfield shales and the cobbles from the Cranebrook Formation would have provided suitable material for small tool production for the Darug whilst the sandstone would have been suitable for the manufacture of ground edge axes.

Other locations on the Cumberland Plain which contain suitable material for stone tool manufacture, such as silcrete are located nearby. Silcrete outcrops are located at Luddenham approximately 20kms to the south, Plumpton approximately 15kms to the west, St Clair approximately 15km to the south-east and Erskine Park approximately 20km to the south-east. Other material used in the manufacture of stone tools on the Cumberland Plain, such as chert, tuff, quartz, basalt and quartzite, are located within the Rickabys Creek Formation, which is located between Cranebrook and Windsor, to the north of the survey area with some outcrops just to the west of the survey area (Jones & Clark 1991:32-33; Smith 1989a:9-11 & 1989b:6-7).

4.3 Vegetation

The vegetation of the study area was mapped by Benson (1989, 1981 & 2002) and the NSW National Parks & Wildlife Service (2002). Historically, the undulating slopes of Western Sydney would have supported a tall open-forest of Cumberland Plain Woodland. The area immediately around the Nepean River would have supported an Alluvial Woodland characterised by Eucalyptus moluccana (Grey Box) in association with Eucalyptus tereticornis (Forest Red Gum). The understorey would have consisted of Acacia parramattensis, Acacia floribunda and other acacia sp., Casuarina cunninghamiana (River Oak) and Bursaria spinosa (Sweet Bursaria, Blackthorn) with grasses of Themeda australis (Kangaroo Grass) and Lomandra longifolia.

Such a vegetation community would have provided a variety of edible plant species and plants suitable for artefact manufacture. For example, the tall Grey Box and Red Gum's would have provided bark to make coolamons, shields or canoes, whilst the long Lomandra leaves would have been used for basket weaving (Baker et al 1986:136). Acacia gum was a sweet nutritious food source and the acacia seeds were a valuable source of protein. The dried seeds were ground between stones and baked as a bread/damper and the green seeds eaten like peas (Low 1992:86). In addition, Cumberland Plain vegetation provided habitat for a variety of marsupials and birds whilst the Nepean River and associated creeks would have provided fish, yabbies and other crustaceans.

4.4 Stream order modelling

Stream order can be used to predict Aboriginal land use patterns. First and Second Ponds Creeks would be classified as second order streams whilst Caddies Creek would be a third order stream.

A first order stream is the smallest and is a small tributary that flows into and feeds larger streams but does not normally have any water flowing into it. The joining of two first order streams creates a second order stream and when two second order streams join they form a third order stream. In addition, first and second order streams generally form on steep slopes and flow quickly until they slow down and meet the next order waterway. First order streams are intermittent (Horton 1945; Strahler 1952).

Modelling undertaken by McDonald and Mitchell (1994) on the Cumberland Plain indicates that stream order can be used to predict areas of archaeological potential. The model hypothesis is that in any climate and landscape, a threshold catchment area is necessary to allow permanent stream flow or the establishment of waterholes with extended longevity (i.e. months to years). The critical point where these conditions are met appears to be at the junction of two second or third order streams. Such a location is likely to contain more complex sites with a high density of artefacts, whilst second and third order streams are also likely to contain large sites within 100 metres of the watercourse.

The northern extent of the study area is just 50m from the Nepean River, a third order stream. In addition, the ephemeral creek that once flowed through the property, now largely contained in a concrete lined canal, joins the Nepean River less than half a kilometre to the north-west. The property is also within the flood plain of the Nepean. The study area is near the junction of second and third order streams and as detailed above such a location is likely to contain more complex sites with a high density of artefacts.

4.5 Current land use and disturbance

As noted in section 3.4, the present nature and composition of the study area has been altered by past clearance and European land management activities. The study area has been used for grazing for many years and has been cleared of all native vegetation. It has been planted with introduced pasture and other grasses including, couch, kikuyu and clover and invaded by weeds such as dandelions, thistle, African love grass and paspalum. At the time of the inspection most of the site was covered with very long grass at least waist height and other vegetation. The vegetation had been slashed in the southern section of the property and the thick mat of slashed grass obscured ground visibility.

In the northern section of the study area lantana has invaded the sloping gully. Stands of Camphor Laurel (*Cinnamomum camphora*) and a disused domestic garden and orchard were also observed in the northern section of the study area.

Various Eucalypts and other native species have recently been planted along the northern border and along the southern side of the canal which runs east west through the study area.

There is one house within the study area, and associated sheds as well as chicken and other bird enclosures.

5.0 ARCHAEOLOGICAL BACKGROUND

5.1 Sydney Basin and Cumberland Plain

Many surveys have been undertaken in the Sydney region which indicate the richness of the archaeological resources and which provide information about Aboriginal occupation within the region. In particular, Attenbrow (2003) has excavated a range of sites within the Sydney Basin. The aim of her study was to identify local geographic variation and temporal changes in the subsistence patterns and material culture of the people of this area. She excavated sites at Balmoral Beach, Cammeray, Castle Cove, Sugarloaf Point (Lane Cove River), Darling Mills State Forest, Winston Hills, Vaucluse and Cumberland Street in the Rocks. Dates for initial occupation range from approximately 10,000 years BP at Darling Mills to approximately 450 years BP at Cumberland Street, the Rocks.

One of the oldest dated occupations for the Sydney region is 15,000 years BP from the Shaws Creek K2 rockshelter on the Nepean River (Kohen 1984; Nanson et al. 1987). The dates obtained by Kohen (1984) and Attenbrow (2003) must be considered in association with environmental data related to sea level rises. The Sydney region that we know today was vastly different to the landscape of 15,000 years ago.

The period of maximum glaciation was 15,000 – 18,000 years BP. Therefore, the date of the K2 rockshelter and Attenbrow's Darling Mills site indicate that Aboriginal people lived throughout a period of extreme environmental change. During this period, sea levels were up to 130m below current sea levels (Nutley 2006: 1). About 10,000 years ago, as temperatures began rising at the end of the last ice age, the polar ice started melting and sea levels rose. The rising sea levels forced people to abandon coastal sites and move inland, with the result that the oldest coastal sites were inundated.

By about 6,000 years ago, rising water levels had flooded the coastal plain forming the Sydney landscape that we know today. The vast majority of sites in the Sydney region date to around 5,000 years BP, after sea levels had stabilised. Whilst research into submerged indigenous sites is now being undertaken (Nutley 2006), there are few sites in the Sydney area that are known to date beyond 10,000 years BP. Therefore, research undertaken to date has focused on subsistence patterns and cultural change, e.g. Attenbrow (2003).

Many archaeological surveys have been conducted within the Sydney region, particularly on the Cumberland Plain, in relation to Environmental Impact Statements. As a result of those studies, which were occasioned by the burgeoning urban expansion extending into the Cumberland Plain, the NPWS recognised the need for a coherent study of the area to fully assess the impact of urbanisation on the natural and cultural heritage of the Cumberland Plain. Smith (1989a) was commissioned by the NPWS to undertake an Aboriginal Site Planning Study to be utilised in the management of Aboriginal sites on the Cumberland Plain. Prior to her study, 307 sites had been recorded on the Cumberland Plain, mainly open artefact scatters (297) with four scarred trees, one carved tree, four axe-grinding grooves and a Mission site (the Blacktown Institute). Smith (1989a:2) added 79 open sites and 29 isolated finds from field surveys related to her study.

Smith's (1989a:3) analysis indicated that site location and site densities were influenced by the availability of water and raw materials. She concluded that other factors such as topography, natural vegetation and soil types did not influence site location.

She also identified that the majority of sites recorded have been in the northern sector of the Cumberland Plain, during site surveys of areas threatened by development (Smith 1989a:21). Her field studies (1989a & 1989b:10) confirmed that site densities in the southern Cumberland Plain appear to be lower overall to site densities on the northern Plain.

Since Smith's study, there has been a dramatic increase in development in Western Sydney, resulting in a great deal more archaeological survey and excavation (Comber 1990a&b, 1991, 2006a&b, 2007; 2008; 2010; McDonald 1997, 2002 & 2005a). This further work has indicated the complexity in the archaeological record of the area that was not previously recognised. For example, sites on permanent water are more complex than sites on ephemeral drainage lines with major confluences being prime site locations. However, McDonald (2005a) reports that archaeological sites are found in a range of landscapes and that their condition is dependent on the amount of impact from European land practices.

McDonald's 2005a report demonstrates the dynamic nature of stone tool technologies on the Cumberland Plain. She reviewed previous work within a theoretical framework to identify intra and inter-regional variation. She not only identified change over time in the stone tool technology, but the manner in which "stone technologies were organised in relation to landscape" (McDonald 2005a: np). Her report provides a framework to tentatively date sites through technological analyses and to identify cultural changes.

Her study also indicated that the surface representation of a site on the Cumberland Plain does not necessarily reflect the actuality of that site. Of the excavations conducted by her, sub-surface deposits were present even when there was no surface indication of a site. According to McDonald (2005a:5), "despite artefacts being rare or completely absent on the surface at each of the sites investigated, all six sites were found to contain intact archaeological deposit. Almost 500 square metres were excavated during this Project and almost 35,000 artefacts retrieved." McDonald (2005) also considers that Aboriginal occupation was focussed on the major river systems and characterised by mobility between a small number of sites. As a result of her various studies and applying stream order modelling she (2005) further predicts that the density and complexity of archaeological sites will vary according to stream order, as follows:

- Fourth-Fifth order creeks (or rivers): Archaeological evidence will be more complex and possibly stratified, reflecting more permanent and repeated occupation on major creeks.
- Third order creeks: Evidence of more frequent occupation such as knapping floors or higher artefact densities will be found in the lower reaches of tributary creeks.
- Second order creeks: Sparse archaeological evidence will be found which indicates occasional use and/or occupation.
- First order creeks: Due to the intermittent nature of water flow only very sparse evidence would be found in the headwaters of upper tributaries such as background artefact scatter.

Kohen's studies at Penrith confirmed the importance of fifth order creeks and rivers. He recorded over 50 sites in the Penrith area which included open artefact scatters, axe grinding grooves and rock shelters. Kohen (1997:7) indicates that sites occurring throughout the Penrith area "are particularly likely to occur adjacent to the rivers and creeks. The distribution of raw materials associated with the manufacture of stone tools suggests that chert and basalt were carried or traded east from the river gravels and that silcrete was traded or carried from sources near South Creek and Eastern Creek, west towards the Nepean flood plain".

Comber (2010d&e) also recorded open artefact scatters and scarred trees within the Cumberland Plain. She undertook excavation at two sites at Penrith Lakes known as Camenzulis (2010e) and PL9 (2010d). At PL9 she retrieved more than 1,500 artefacts, including backed blades and an edge ground axe. Her work confirms McDonald's (2005) and Kohen's predictive model that sites are more likely to occur adjacent to the rivers and high order creeks. These excavations (Comber 2010d&e) at Penrith Lakes further indicates the possibility that sub-surface archaeological deposits will remain despite disturbance by non-Aboriginal activities and the complexity of such sites. Surveys (2006c & d) undertaken prior to the excavations recorded the areas as being disturbed by agricultural activities. They had been grazed, ploughed, planted with crops and a dam constructed. Only a small number of artefacts were recorded on the surface but over 2,500 artefacts retrieved during excavation.

A survey undertaken by Comber (2008) and subsequent excavations undertaken by Stening (2011) at Doonside demonstrated that although no surface artefacts were recorded (Comber 2008) substantial subsurface deposits did exist on the site with over 1,000 artefacts being recovered from a highly disturbed context (Stening 2011). This site was located beside Eastern Creek an important 4th or 5th order creek. It is an important watershed with extensive evidence of Aboriginal occupation.

5.2 Emu Plains/Penrith

A large number of sites have been recorded by Kohen (1997; 1981; 1984a and 1984b) and Comber (2006a and b; 2007; 2008; 2010) within the Penrith area.

Kohen recorded over 50 sites which included open artefact scatters, axe grinding grooves and rock shelters. Kohen (1997:7) indicates that sites occurring throughout the Penrith area "are particularly likely to occur adjacent to the rivers and creeks. The distribution of raw materials associated with the manufacture of stone tools suggests that chert and basalt were carried or traded east from the river gravels and that silcrete was traded or carried from sources near South Creek and Eastern Creek, west towards the Nepean flood plain".

Comber (2006a; 2010) also recorded open artefact scatters and scarred trees. She undertook excavation at two sites at Penrith Lakes known as Camenzulis (2006a) and PL9 (2010). At PL49 she retrieved more than 1,500 artefacts including backed blades and an edge ground axe. Her work confirms the predictive model developed by Kohen that sites are more likely to occur adjacent to the rivers and creeks. She also undertook an assessment (2006b) at Emu Plains on the banks of the Nepean River, but did not record any sites, although she did recommend sub-surface testing.

In 1986 Rich (1986) undertook a survey for Aboriginal sites for the proposed transmission line between Regentville and Penrith. She identified five open artefact scatters, none of which were recorded within the present study area. A Section 90 Consent to Destroy was issued for all of these sites in August 1987.

Dallas recorded an open artefact scatter (AHIMS 45-5-2414) comprising a hammerstone and a "mudstone" flake which was located approximately 700m to the south west of the present study area along a fence line of a trotting track.

Dallas also recorded an open campsite and potential archaeological deposit (AHIMS 45-5-2416) in close proximity to 45-5-2414. However, the AHIMS site card for AHIMS 45-5-2416 is a replication of the site card for 45-5-2414. Therefore, it is not clear whether these are two separate sites.

An isolated find (AHIMS 45-5-3317), comprising a chert flaked piece and an artefact scatter (AHIMS 45-5-3318) comprising two "mudstone" flakes and three "mudstone" flaked pieces were recorded in a sports field located 3km to the north east of the study area in a moderately disturbed context. During a survey by Stening (2013) these sites could not be relocated in the field (Stening 2013).

An isolated find and potential archaeological deposit (AHIMS 45-5-3319) was recorded approximately 2km to the north east of the present study area. The site comprised a red silcrete flake which was located on a dirt walking track (Figure 5).

Within 1.2 km of the study area 4 sites have been recorded: AHIMS 45-5-0539, 45-5-0540, 45-5-0541 and 45-5-4361 all open artefact scatters. Figure 5 shows the location of these sites.

The evidence from the above brief review of previous work within Penrith area indicates that sites are located throughout the area with larger more complex sites occurring near the confluence of the Nepean River and along creeks and rivers. The archaeological evidence also indicates that subsurface deposits can exist even if there is no evidence on the surface and despite subsequent disturbance.

5.3 Study Area

A search of AHIMS Register on the 29th May 2020 indicated that there are no objects or registered sites on the subject property or within 1km of the site. The study area is not a registered Aboriginal Place.

In 2006 Comber (2006b) undertook an assessment of the current property, but did not record any sites, although she did recommend sub-surface testing.

5.4 Site prediction

The above information indicates that it is highly likely that sites will be located on the subject site. It is located close to water and lithic resources for the manufacture of stone tools are located nearby. Historically the area provided an abundance of resources to enable the Darug to live comfortably off the land. Such resources included stone material for stone tool manufacture and rock outcrops to sharpen axes, a variety of plant and animal material for food plus fresh water for drinking and the provision of fish and other seafood. Many sites have been located in the area indicating that large groups of people lived in the area and the study area would have been an ideal camping and foraging location given its proximity to fresh water. In addition, as detailed above, stream order modelling indicates that it is possible that a large complex site could exist on the property. As indicated by previous work on the Cumberland Plain such a site would most likely be subsurface.

It is possible that artefacts made from chert and silcrete could be located on the site. Such artefacts would be characterised by the residue from stone tool making and could include tools such as small blades and points. It is also possible that ground edge axes could be located on the site.

As no sandstone outcrops or platforms were observed on the subject site it is not expected that art sites, shelters or rock engravings would be located.

In addition, as the area has been denuded of original vegetation and utilised for grazing for many years, it is not expected that scarred or carved trees would be located on the site. The only trees remaining within the study area have been planted in more recent years.

6.0 SIGNIFIANCE ASSESSMENT

6.1 Preamble

Significance assessment is the process whereby sites or landscapes are assessed to determine their value or importance to the community.

A range of criteria have been developed for assessing the significance which embody the values contained in the Burra Charter. The Burra Charter provides principles and guidelines for the conservation and management of cultural heritage places within Australia.

Following are the criteria which will be used to assess the study area:

Social Value (sometimes termed "Aboriginal" value) which refers to the spiritual, traditional, historical or contemporary associations and attachments which the place or area has for the present day Aboriginal community.

Historic Value refers to the associations of a place with a person, event, phase or activity of importance to the history of an Aboriginal community.

Scientific Value refers to the importance of a landscape, area, place or object because of its archaeological and/or other technical aspects.

Aesthetic Value refers to the sensory, scenic, architectural and creative aspects of the place.

Representativeness refers to whether the site demonstrates the principal characteristics of that site and is a good representative example of that site type.

Rarity refers to the degree to which such a site is known elsewhere and whether the site is uncommon, rare or endangered.

6.2 Assessment

Social Values
Consultation with representatives of the Aboriginal community indicates that the study area is important to the local and broader Aboriginal community. The artefacts predicted to be located on the site will provide evidence of Aboriginal occupation representing their past providing a direct link to their ancestors.

Historic Values
The study area could contain evidence of Aboriginal occupation providing information about the history of occupation of the Mulgoa Clan.

Scientific Values
The study area has the potential to yield further information through detailed scientific and archaeological research into the nature of Aboriginal occupation and techniques utilised in subsistence activities. It has the potential to contain sub-surface archaeological deposits.

Aesthetic Values
The current site does not contain Aboriginal aesthetic values, however, after excavation the objects uncovered might meet this criteria.

Representative Values
At this stage it is not known if the site contains representative values.

Rarity Values
At this stage it is not known if the site contains rarity values.

6.3 Statement of Significance

Consultation with representatives of the Aboriginal community indicates that the study area is important to the local and

broader Aboriginal community. The artefacts predicted to be located on the site will provide evidence of Aboriginal occupation representing their past providing a direct link to their ancestors. The study area has the potential to yield further information through detailed scientific and archaeological research into the nature of Aboriginal occupation and techniques utilised in subsistence activities. It has the potential to contain sub-surface archaeological deposits.

7.0 LEGISLATION

7.1 *National Parks & Wildlife Act 1974*

The *National Parks & Wildlife Act 1974* (NPW Act) provides statutory protection to all Aboriginal sites within New South Wales. Heritage NSW is the State Government agency responsible for the implementation and management of this Act.

Part 6 of the *National Parks & Wildlife Act* states that it is an offence to harm or desecrate an Aboriginal object or Aboriginal place, without an Aboriginal Heritage Impact Permit (AHIP). An Aboriginal object is defined as:

> *Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.*

An Aboriginal Place is defined as:

> *A place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture, to be an Aboriginal place for the purposes of this Act.*

However, as the current proposal is only for a "paper" subdivision, no Aboriginal objects will be harmed. Therefore, there is no need to apply for an AHIP for the subdivision application.

However, if at a later stage redevelopment of the site is proposed, it will be necessary to undertake subsurface archaeological testing prior to any redevelopment or ground disturbance. The *National Parks & Wildlife Regulations* detail the provisions for undertaking archaeological testing, if an area is predicted to contain Aboriginal objects, which are further outlined in *The Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* and *The Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. If there is the possibility that Aboriginal objects exist within the study area, then limited subsurface archaeological testing must be undertaken in consultation with the Registered Aboriginal Parties. The aim of the testing is to determine the nature and extent of the Aboriginal objects. This testing can be undertaken without an AHIP. Prior to undertaking such testing Aboriginal consultation must be undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW.*

Therefore, as the subject property is within an area of archaeological sensitivity with the potential to contain Aboriginal objects if, at a later stage, redevelopment of the study area is proposed, the following must be undertaken:

- Aboriginal consultation must be undertaken in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* prior to archaeological testing. This has already commenced and should be finished by early April.
- Once the consultation has been undertaken, archaeological testing must be undertaken to determine the nature and extent Aboriginal objects within the study area and their nature and extent. This testing must be undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW.* The testing will take approximately 2-4 weeks).
- If, during the testing, no Aboriginal objects are uncovered, redevelopment can proceed without the need to undertake any further assessment, monitoring, testing or archaeological excavation.
- If Aboriginal objects are uncovered during the testing, an application for an AHIP, with salvage must be submitted to Heritage NSW.
- Once the permit has been received Aboriginal archaeological salvage can be undertaken. Once that has been completed the redevelopment can proceed.

However, as previously noted, for the current subdivision plans, no testing or further Aboriginal consultation is required. In addition, as the proposal will not harm Aboriginal objects an AHIP is not required.

8.0 RESULTS, IMPACT & MITIGATION

8.1 Results

Except for an approximately 50-60m section along the frontage with Old Bathurst Road, the remaining vegetation in Lot 1 had been recently slashed (Photograph 1). Ground visibility was nil due to vegetation cover. Therefore, the table recommended in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* has not been used. Despite an intensive site inspection, no Aboriginal objects were observed. Please see the photographs below.

Photograph 1: Un-slashed vegetation along Old Bathurst Road frontage. View to east.

Photograph 2: Slashed portions of Lot 1 and Lot 2. View to NNE.

A portion of Lot 2 had been slashed. This was limited to the area immediately to the north of Lot 1 (Photograph 3) and skirted around the yard of the c1960s house (Photograph 4). No slashing or clearance of vegetation had taken place within the house yard, along the canal banks or in the remaining area to the north of the canal. Dense ground cover, including African 'Love Grass' (*Eragrostis Curvula*) and Blackberry, obscured any ground visibility in Lot two (Photographs 6-8), with the exception of a small area of the northern side of the canal bank which revealed exposed clay where the topsoil had been removed through construction of the canal (Photograph 5).

Photograph 3: View to NW across Lot 2 from Lot 1. The line of the concrete canal is indicated by the trees and thick vegetation in the background.

Photograph 4: Slashed portion of Lot 2 between canal banks to left and house yard to right.

Photograph 5: Rivers McEwen examining an area of exposed clay on the bank above the concreted canal. View to west.

Photograph 6: African 'Love Grass' (*Eragrostis Curvula*) on northern side of canal (RHS). View to east.

Photograph 7: View to west north of the canal with blackberry bushes in mid-field.

Photograph 8: View to NNW along Lot 2 showing ridgelines running parallel to the Nepean River to the north.

Photograph 9: View from near northern boundary showing series of ridges running east to west across the property. View to south

Photograph 10: Raised levee on southern side of canal. View to NE

There are constructed levees on the southern side of the concrete lined canal (Photograph 12). Unlike flood plain levees to the north of the canal, these are likely to be formed from soil excavated from the creek during excavation of the canal. The banks of the canal are heavily vegetated with bushes, Camphor laurels and, along the southern bank, several regrowth Eucalypts (Photographs 4, 12 & 10). Due to the density of vegetation, access to most of this area was not possible.

Photograph 11: Steve Randall approaching stand of Camphor laurel on northern side of canal. View to north

Photograph 12: The concrete canal which follows the original creekline showing regrowth Eucalypts and other vegetation. View to east from Russel Street

Photograph 13: Drainage line running east west to north of canal. View to west.

Photograph 14: The Nepean River runs approximately 80m north of the boundary of Lot 2. View to west.

No Aboriginal objects, artefacts or sites were located during the survey. The lack of visible sites could not be considered a true indication of the Aboriginal cultural landscape within the study area. The dense ground cover precluded the possibility of locating any artefacts or artefact scatters and affected the detectability of artefacts. Previous work in the Cumberland Plain has indicated that despite later disturbance, extensive subsurface archaeological deposits can exist. Also the predictive modelling detailed in section 5.4 of this report indicates that it is highly likely that subsurface Aboriginal objects will exist within the study area.

The ephemeral creeks that ran through the property, (including the formalisation of one of these into a concrete lined canal), the proximity of the Nepean River adjacent to the northern boundary, (Photograph 14) and the presence of river levees formed through flooding events in north of the canal indicate that the study held valuable resources for the Mulgoa Clan prior to annexation by the colonists in the nineteenth century.

8.2 Impacts & Mitigation

The current application is for a “paper” subdivision. No building works or ground disturbance is to occur. Therefore, it will not be necessary to undertake testing or apply for an AHIP to undertake the “paper” subdivision. Unless there is to be ground disturbance, the guidelines do not permit testing and Heritage NSW will not issue an AHIP.

However, once redevelopment or any ground disturbance to the site is to occur it will be necessary to undertake subsurface testing. Such testing can be undertaken without an AHIP but is limited to determining the nature and extent of the deposit. Once the testing has been completed and if Aboriginal objects have been identified on the site, it will be necessary to apply for

an AHIP with salvage. If no objects are uncovered redevelopment of the site can proceed without an AHIP. Prior to undertaking the testing, it will be necessary to undertake Aboriginal consultation in accordance with the *Aboriginal Cultural Heritage Consultation Guidelines for Proponents 2010.*

9.0 RECOMMENDATIONS

The following recommendations are based on:

- Legal requirements under the terms of the *National Parks & Wildlife Act 1974* (as amended), which states that it is an offence to harm or desecrate an Aboriginal object without first gaining a permit under Part 6 of the *National Parks & Wildlife Act 1974*.
- Research into the archaeological record for the Cumberland Plain and the study area in particular.
- Results of the assessment as outlined in this report.

IT IS THEREFORE RECOMMENDED THAT:

1. There is no objection to the proposed subdivision of the subject property. It will not be necessary to undertake testing or apply for an AHIP, just for the "paper" subdivision.

2. Once the subdivision plans have been approved, if it is proposed to undertake building works or any ground disturbance on the property it will be necessary to undertake Aboriginal testing in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*. Such testing is limited to determining if Aboriginal objects exist on the property and if so, their nature and extent. If Aboriginal objects are uncovered, it will then be necessary to apply for an AHIP. If no objects are uncovered redevelopment of the site can proceed without an AHIP.

3. Prior to undertaking the testing Aboriginal consultation must be undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Guidelines for Proponents 2010.*

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APPENDIX A: AHIMS SEARCH

Office of Environment & Heritage
NSW GOVERNMENT

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Emu Plains

Client Service ID : 509278

Comber Consultants Pty Limited

76 Edwin Street North
Croydon New South Wales 2132

Attention: Jillian Comber

Email: jillian.comber@comber.net.au

Date: 29 May 2020

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP517958 with a Buffer of 1000 meters, conducted by Jillian Comber on 29 May 2020.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.

A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

APPENDIX B: BUILDING ENVELOPE PLANS

BUILDING ENVELOPE PLAN
PROPOSED LOT 1
1-4 OLD BATHURST ROAD, EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

The concepts presented in this plan remain the copyright of Urbanco.
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5 0 10 20 30 40 50 METRES

CLIENT : Le Boursicot
SCALE : A2@1:1,000
DATE : 16/06/2020
PLAN No : 056.EP.006
REVISION : 01

urbanco
Suite 3.03 55 Miller Street PYRMONT NSW 2009
PO Box 546 PYRMONT NSW 2009 | 02 9051 9333
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APPENDIX C: DEERUBBIN LOCAL ABORIOGINAL LAND COUNCIL REPORT

Deerubbin Local Aboriginal Land Council

Level 1, Suite 3
291-295 High Street
PENRITH NSW 2750
PO Box 40
Penrith BC
NSW 2751 AUSTRALIA

ABN: 41 303 129 586
T: (02) 4724 5600
F: (02) 4722 9713
E: Staff@deerubbin.org.au
W: http://www.deerubbin.org.au

Comber Consultants Pty Ltd
76 Edwin Street
CROYDON NSW 2132

Our Ref: 3184

22 July 2020

SUBJECT: PROTECTION OF ABORIGINAL CULTURAL HERITAGE

1-4 Old Bathurst Road
Emu Plains

Attention: David Nutley

A representative of the Deerubbin Local Aboriginal Land Council inspected the 1-4 Old Bathurst Road, Emu Plains on 7th July 2020. An Aboriginal cultural heritage assessment was undertaken to evaluate the likely impact that development has on the cultural heritage of the land.

No Aboriginal cultural materials (in the form of stone artefacts, for example) were found during the Aboriginal cultural heritage assessment, because of the long grass

Deerubbin Local Aboriginal Land Council therefore, has no objections to the subdividing of the lots and if there is any impact of the landscape, further investigations will be required before development of 1-4 Old Bathurst Road, Emu Plains.

Yours Faithfully,

S Randall

(Steven Randall
Senior Aboriginal Cultural Heritage Officer)

C.c. Barry Gunther – Department of Planning Industry & Environment

APPENDIX 7
European Heritage Report

COMBER CONSULTANTS

ARCHAEOLOGY - HERITAGE - MEDIATION - ARBITRATION

1-4 OLD BATHURST ROAD, EMU PLAINS

HISTORICAL ARCHAEOLOGICAL ASSESSMENT

PREPARED BY	JILLIAN COMBER & DAVID NUTLEY
REPORT TO	URBANCO PTY LTD ON BEHALF OF BERNARD AND LINNA LE BOURISCOT
LGA	PENRITH
VERSION NO	A.2020
DATE	JULY 2020

COMBER CONSULTANTS

ARCHAEOLOGY – HERITAGE – MEDIATION – ARBITRATION
ABORIGINAL – HISTORIC - MARITIME

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DOCUMENT CONTROL

PROJECT NO. UC386 **STATUS** DRAFT

REV	DATE	PREPARED	APPROVED
A	14/07/2020	Jillian Comber & David Nutley	Jillian Comber

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The assistance of the following is gratefully acknowledged:

- Caroline Plim of 'Caroline Plim history + research' for the historic research in Section 3 of this report
- Michael Roger, of Urbanco

INTEGRATED MANAGEMENT SYSTEM

Comber Consultants has a certified integrated management system to the requirements of ISO 9001 (quality), ISO 14001 (environmental), ISO 45001 (health and safety) and AS/NZS 4801 (health and safety). This is your assurance that Comber Consultants is committed to excellence, quality and best practice and that we are regularly subjected to rigorous, independent assessments to ensure that we comply with stringent Management System Standards.

ECAAS ISO 9001 CERTIFIED QUALITY MANAGEMENT
ECAAS AS/NZS 4801 CERTIFIED SAFETY MANAGEMENT
ECAAS ISO 45001 CERTIFIED SAFETY MANAGEMENT
ECAAS ISO 14001 CERTIFIED ENVIRONMENTAL MANAGEMENT

EXECUTIVE SUMMARY

This historical archaeological assessment was prepared for Urbanco Pty Ltd on behalf of Bernard and Linna Le Bouriscot. The proponent wishes to obtain Penrith Council approval for the Torrens Title "paper" subdivision of the subject site at 1-4 Old Bathurst Road, Emu Plains, known as Lots 1 and 2 in DP517958 and Lot 4 in DP574650.

This historical archaeological assessment was commissioned to ensure that there will be no adverse impact upon non- Aboriginal heritage which may exist on the subject site.

This report makes the following recommendations:

1. There are no constraints, upon historical archaeological grounds, to the proposed subdivision and future redevelopment of the site.

2. No further historical archaeological assessment, monitoring, testing or salvage is required in respect of the proposed subdivision or future redevelopment.

3. If re-located the bucket from a mining dredge located on the property could be donated to a local Museum or used as an interpretative feature within the new development.

4. If any previously undetected historical archaeological site or relic is unearthed or uncovered, work must cease in the vicinity of that site or relic and advice sought from the Consultant, Council's Heritage Advisor and/or Heritage NSW on a suitable course of action.

5. All employees and/or contractors engaged in the future redevelopment of the site should be advised that it is an offence under the Heritage Act 1977 to disturb or excavate a relic without a permit.

CONTENTS

1.0 INTRODUCTION

1.1 Background (Style: Heading 2)

This historical archaeological assessment was prepared for Urbanco Pty Ltd on behalf of on behalf of Bernard and Linna Le Bouriscot. The proponent wishes to obtain Penrith Council approval for the Torrens Title "paper" subdivision of the subject site at 1-4 Old Bathurst Road, Emu Plains, formally described as Lots 1 and 2 in DP517958 and Lot 4 in DP574650.

This report was prepared to ensure that there would be no adverse effect on the historical archaeology of the subject site, as a result of the subdivision.

1.2 Site Location and Description

The study area is located on the north eastern corner of Old Bathurst Road and Russell Street, Emu Plains and is known as Lots Lots 1 and 2 in DP517958 and Lot 4 in DP574650 and is approximately 0.234km^2 in area. It is located within the Penrith LGA and is approximately 60kms west of Sydney and approximately 2kms north-west of Penrith (Figures 1 and 2).

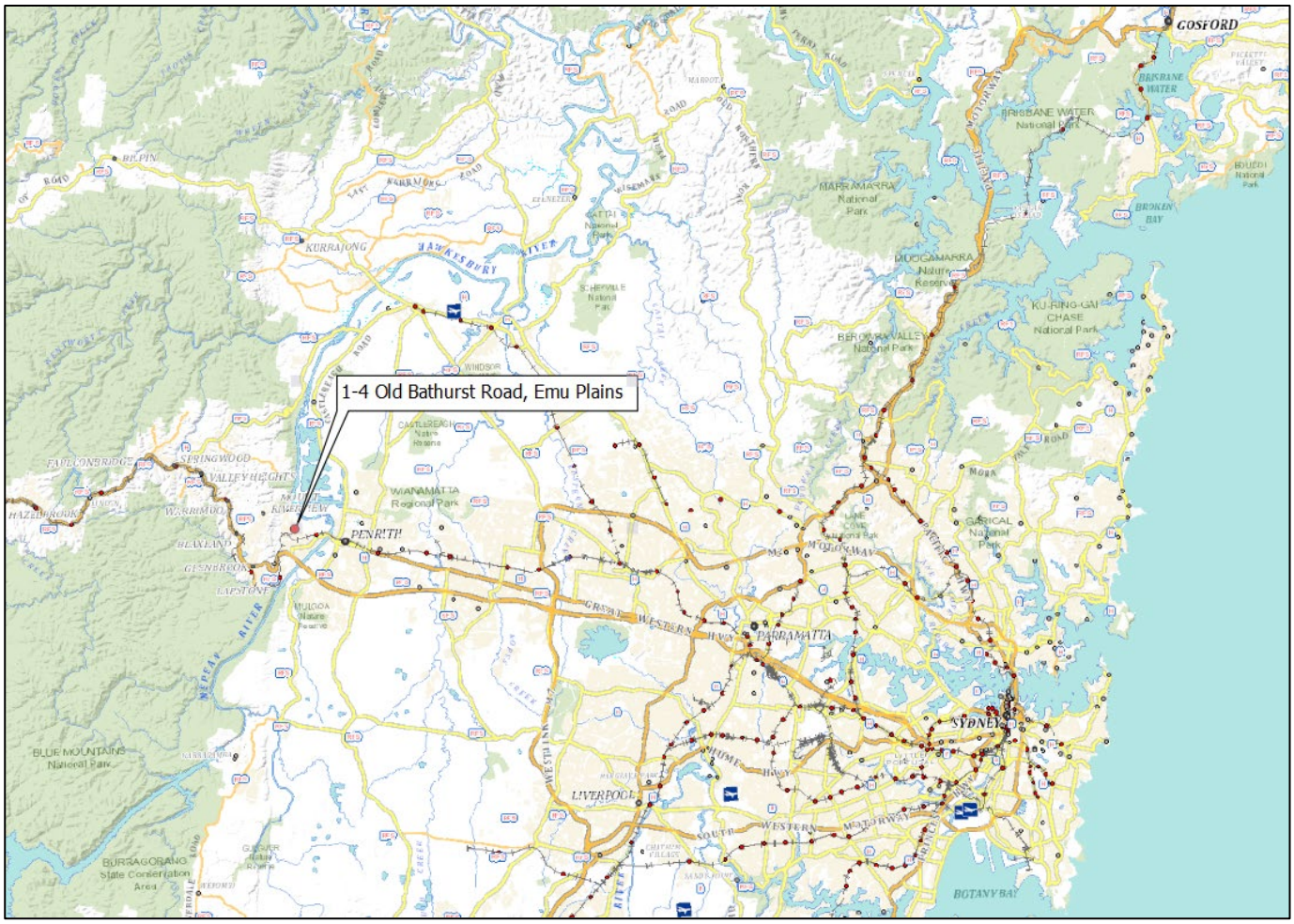

Figure 1: The location of study area in relation to Sydney CBD (Six Maps)

Figure 2: Aerial view of study area in relation to Sydney CBD (Urbanco, Statement of Environmental Effects March 2020, p1)

1.3 Proposal

The proponent has advised that they are seeking Penrith Council approval for the Torrens Title "paper" subdivision of the subject site at 1-4 Old Bathurst Road, Emu Plains. The proposed subdivision incorporates the creation of two (2) lots, with one lot along the Old Bathurst Road frontage, and the balance being the second allotment (Appendix B). The plans shown at Appendix B include indicative building and carparking envelopes, however, at this stage the proponent is only seeking approval for the subdivision.

Figure 3: Subdivision plan showing Lot 1 and Lot 2 and creek lines

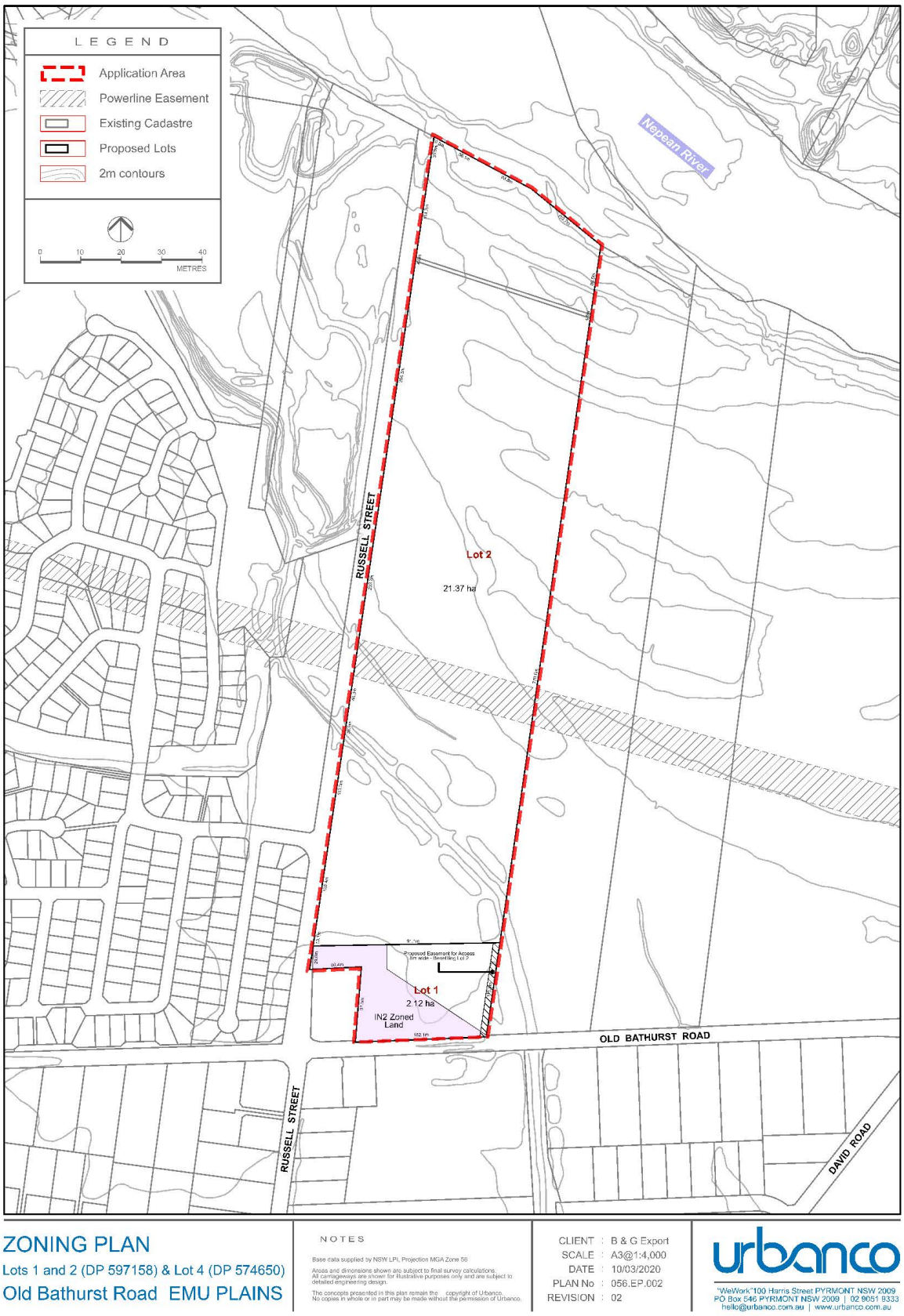

Figure 4: Subdivision plan showing portion of Lot 1 zoned Industrial (IN2).

2.0 METHODOLOGY

This project was conducted in three stages, being background research, field survey and report preparation, as detailed below.

Stage 1: Background Research

Prior to the field component of this project, ……

Stage 2: Site Inspection

The archaeological site inspection was undertaken by David Nutley, Rivers McEwen and Christopher Jones of Comber Consultants on Tuesday 7 July 2020. The team was accompanied by Michael Rodger of Urbanco. The inspection, undertaken on foot, excluded the footprint of the existing building on the site and areas where vegetation density precluded access.

Stage 3: Report Preparation

Further archaeological research was conducted, where necessary, to clarify the results of the survey. This report was then compiled provided to Urbanco.

3.0 HISTORY

3.1 Brief history of Emu Plains

On 26 June 1789 Captain Watkin Tench, an officer of the Royal Marines, and a small party set out on an expedition to explore the western parts of the colony, beyond the areas investigated by Governor Phillip earlier in the month. Phillip's aim was to assess the land's characteristics and potential for cultivation. At this stage in the colony's development, settlement did not extend to the Blue Mountains. What is now known as the Nepean River was reached on 27 June and the potential of the land to the west of the river, later known as Emu Plains, was considered. They travelled north along the river seeing evidence of Aboriginal occupation and recent flooding (Tench 1788 cited in Stacker 2000: 1).

Tench reported to Governor Phillip that the land was 'tolerably plain' but would cause little hindrance to settlers who sought to cultivate it. In December 1789 Lieutenants Dawes and Johnson were next to visit the location aiming to explore the western side of the river. They crossed at the ford, to the north of the site reached by Tench. They traversed the plain and then continued for about 15 miles into the mountains (Tench 1788 cited in Stacker 2000: 1-2).

Sir John Jamison and Dr Robert Townson showed interest in the land at Emu Plains and on arrival in the colony both applied for land grants. Jamison eventually received a grant on the eastern side of the Nepean River. In 1806 Governor Bligh banned settlers from crossing the Nepean however it appears that in July 1808 'rebel' Governor Lieutenant George Johnston had granted much of the land at Emu Plains to his son, George as well as 500 acres to William Lawson. Governor Macquarie revoked the grants in 1810. The Colonial Secretary's Papers indicate however that settlers were grazing cattle at Emu Island in 1812 and a General Order against trespassing of cattle was issued (CSP 11 Apr 1812 State Records NSW). In February 1813 it was again announced that the land was to be exclusively used for Government cattle and another warning was posted (CSP, SRNSW).

Emu Plains is thought to have been named based on the sighting of many emus, wrongly identified as cassowaries, in the area. Tench made a note of 'cassowaries' on the map he prepared of the area (Stacker 2000: 2-3). Early records sometimes refer to the site as 'Emu Island' although it is debated whether it appeared to be island-like during times of flood and that the course of the river has now changed somewhat; or that the name was not meant literally and referred to the open area of the plain. Gregory Blaxland who saw the area in 1813 stated then that it was not an island at all. Governor Macquarie made the same comment on his tour in April 1813 and suggested that the name be changed. It later became known as 'Emu'. The name 'Emu Plains' was formalised in July 1814 when plans were made to construct a road over the Blue Mountains (Stacker 2000: 2-3).

Preparations for the crossing of the Blue Mountains had been made since 1813 and while work was in progress in 1814 no one was permitted to cross the ford without an official pass. A hut was built at Emu Plains as a depot for stores and tools and William Cox proceeded to survey and mark out the proposed route over the mountains (Stacker 2000: 4). The road building by convicts commenced at the ford and proceeded over the plain and onto Lapstone Hill. The road was completed in January 1815 (Stacker 2000: 4-5). Cox's road over the Mountains traversed Emu Plains in a south-westerly direction from the ford to ascend the slopes steeply. The Old Bathurst Road surveyed by Sir Thomas Mitchell ran in a westerly direction from the ford. This also proved too difficult for bullock teams and Mitchell laid out a third route up Lapstone Hill 1833 (Fox & Associates 1991: 28).

A more permanent base for journeys to Bathurst was then established at Emu Plains. This involved rounding-up wild cattle, land clearance, construction of a cottage and huts, stables and stockyards for the horses and bullocks necessary for the arduous journey. Joseph Greenhatch, who had cleared the land, also grew some wheat for his own use. Macquarie reported on the progress at the site on his journey to Bathurst in April 1815 stating that the ford was safe and the Nepean only about 6 inches 150mm) deep in this section. He inspected the site again in October of that year and was pleased with the progress of the Government herds which now included 480 heifers (Stacker 2000: 6).

The Great Western Road from Parramatta to Emu Ford was completed on 24 January 1818 and tolls were imposed (CSP SRNSW). In the following year Macquarie established a convict farm at Emu Plains, considered to be a suitable site due to its good soil and relative isolation. The aim of the Government Agricultural Establishment was to be a place of hard labour while providing convicts with agricultural training that would hopefully 'reform' them (Stacker 2000: 9). Richard Fitzgerald, an ex-convict, was appointed as superintendent of Emu Plains and the farm was equipped with carpenters, a blacksmith, tools and stores with which to build accommodation for 200 convicts and barracks for the soldiers (Stacker 2000: 11-13).

In September 1819 Fitzgerald reported to Macquarie that nearly 2000 acres of the land at Emu Plains would be suitable for cultivation. In December 1820, a house referred to as Government House was constructed for the Superintendent and included accommodation for the Governor (Stacker 2000: 13-14). The farm was soon productive and deemed by Macquarie and others

to be a success (Stacker 2000: 16). By 1822 there were several substantial buildings including a 1 ½ storey-brick residence for the Superintendent and the Governor as well as cottages, barracks, guard house, lock-up, a granary, store, two barns and log huts for up to 500 convicts. Crops grown there included tobacco, wheat, maize, potatoes, turnips, peas and beans (Stacker 2000: 18-19). Female convicts were sent to Emu Plains in 1822 however it was soon discontinued despite good reports as to the improved behaviour of the male convicts (Stacker 2000: 27). This settlement, including Government House was located to the south east of the present study area.

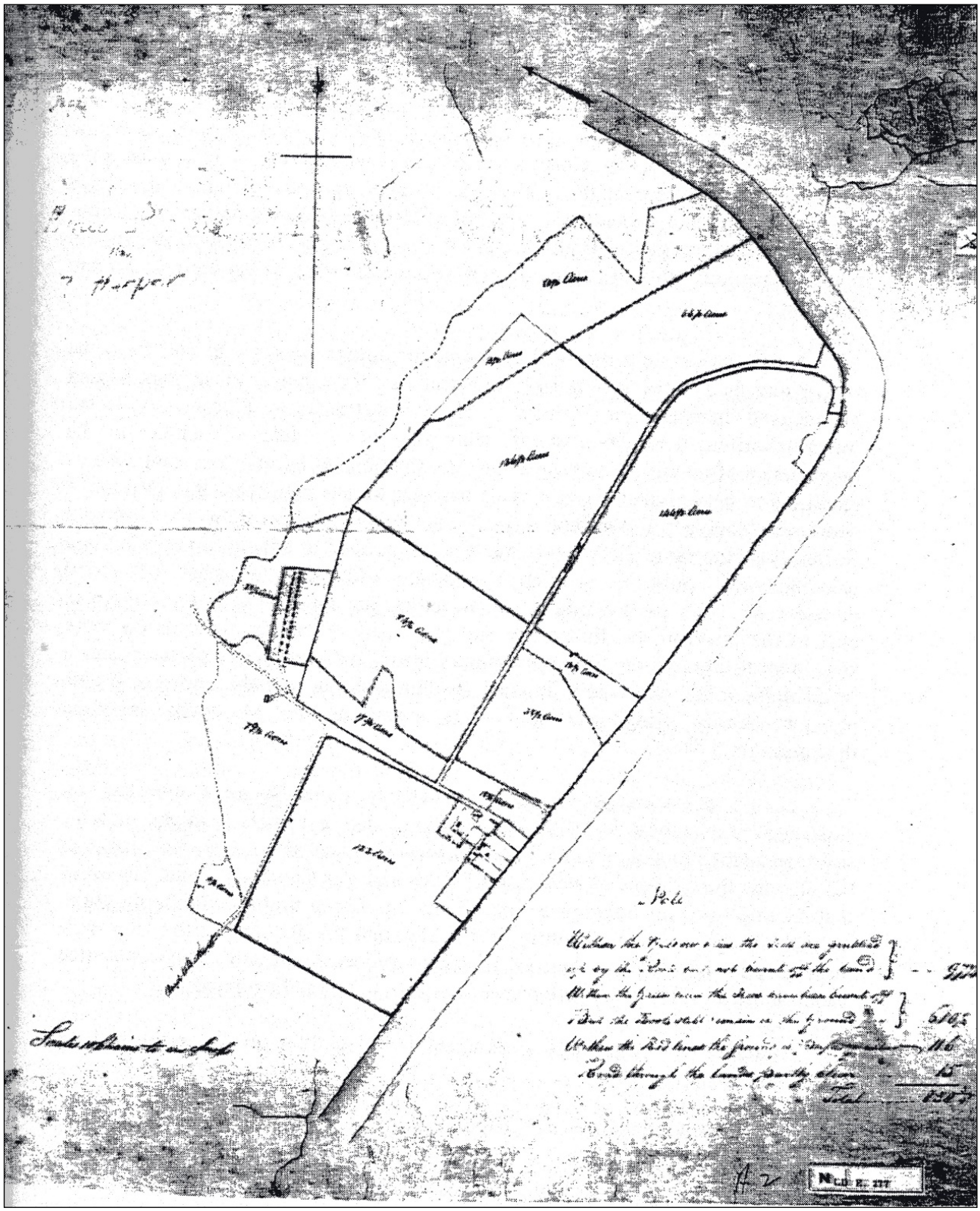

Figure 5: Map prepared by Surveyor Harper in 1822 showing the buildings and cultivation of Emu Plains SRNSW Item 2659)

In 1825 a French visitor, René Primevère Lesson wrote that 'the land was once covered by great trees, while at the present time it is bare'. What attracted his attention when Emu Plains was reached:

> *…is the residence of the Superintendent of the Crown Farm., situated on an eminence, and not far from which are located the convict huts, that, surrounded by tree, form a kind of pleasant little village in the midst of the regularity of the plain. Most of the bark huts that served to shelter the workmen when the land was being cleared still stand. The farm buildings, the stables the cattle shed and the gardens have been located near the river (cited in Mackaness 1965: 146-50).*

Superintendents employed at the farm during its operation included, Lieutenant Peter Murdoch 1822-4), Alexander Kinghorne 1824-6), James Kinghorne 1826-9), John Maxwell 1829-31) and James Smith Acting Superintendent 1831). Each had a different management style and developed the establishment in different ways. Some superintendents attracted attention from critics of the establishment. Despite physical and social changes the farm maintained its productivity. During Alexander Kinghorne's tenure he arranged for the wheat to be milled at a mill that he had constructed on a property at Castlereagh, across the river. He also constructed a threshing machine on the Emu Plains farm (Stacker 2000: 39). In 1825 Kinghorne approved the construction of a theatre and production of plays by convicts 1825 &1830), in the process creating 'quite a stir in the colony' (Riviere 1825: 187. cited in Stacker 2000: 43). Not all activities or farming developments were approved of by successive Governors or by the growing community of free settlers and pastoralists.


Plan of EMU PLAINS Jan.y 1826
The NEPEAN River.
Maize
Natural Grass
Clover
Fallow
Rye Grass and Clover
Lapstone Hill

Figure 6: The Emu Plains Agricultural Establishment as depicted by Alexander Kinghorne in 1826.
There appear to be pencil annotations on the plan showing changes made by James Kinghorne in 1827.
(*Source:* SRNSW Item 2661)

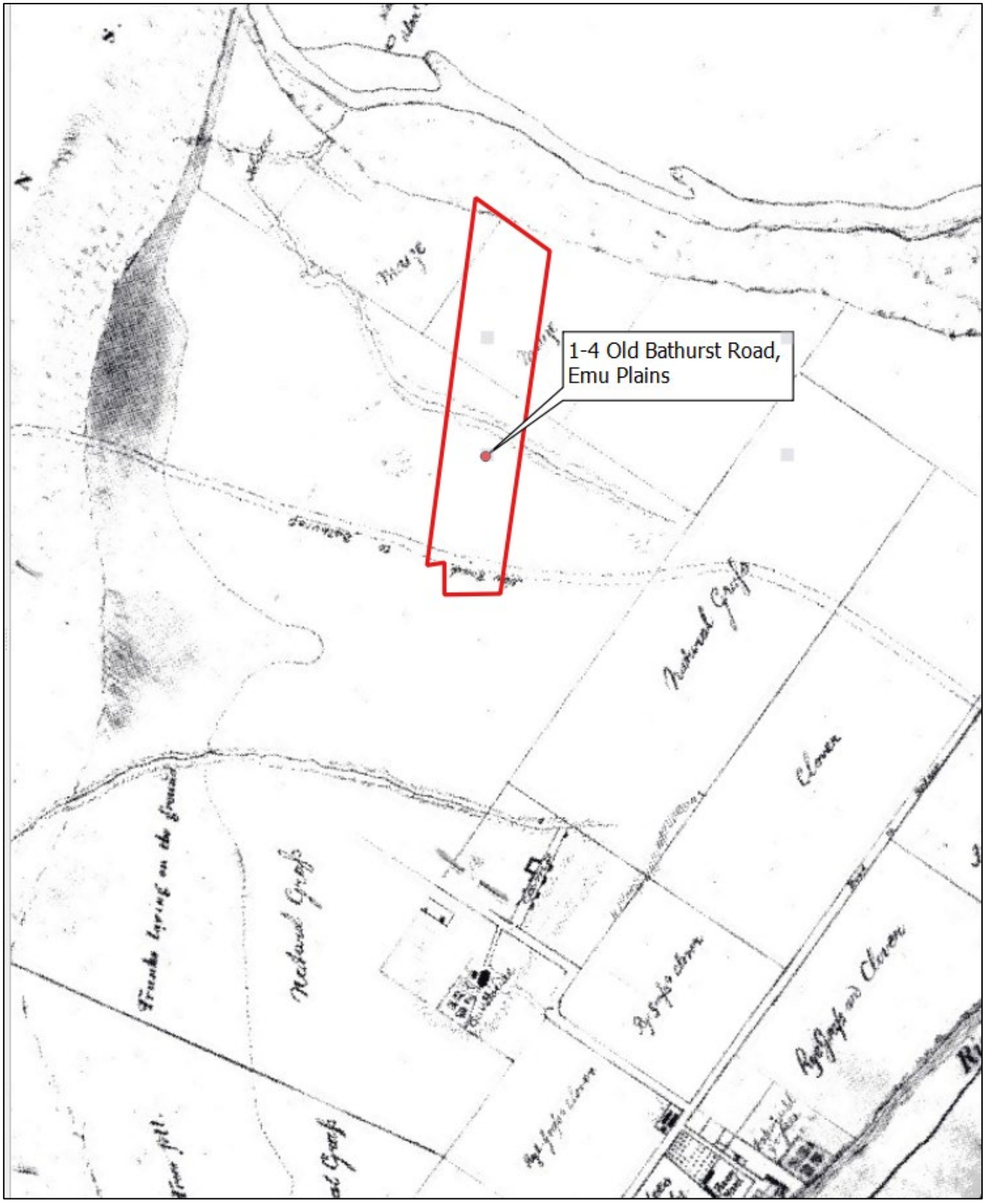

Figure 7: The study area overlaid on the Emu Plains Agricultural Establishment as depicted by Alexander Kinghorne in 1826.
(Source: SRNSW Item 2661)

In November 1827 James Kinghorne reported to Governor Ralph Darling on the farm's progress. A total of 2,700 acres had been cleared and fenced of which 1,112 acres was under cultivation or laid down with English or native grasses. Pasture amounted to 1,587 acres. The crops gown included wheat 175 acres), maize 141 acres), tobacco 10 acres), flax 5 acres) and grass for haymaking 78 acres). Livestock included horses, cattle, oxen, sheep and pigs (Stacker 2000: 50, 52). During 1828 convict 'invalids, cripples and idiots' were housed at Emu Plains and some were employed in physical tasks (Stacker 2000: 54).

By 1830 The Emu Plains Agricultural Establishment had become somewhat run down and was reduced to 100 convicts with little emphasis on agricultural production and focusing more on the management of Government herds. The idea and objectives behind the establishment of the convict farms had become obsolete (Stacker 2000: 62, 67). After a series of disputes, discussions began between John Maxwell, the Superintendent, Governor Darling and the Secretary of State about the abolition of the farm or alternatively its remodelling to improve its efficiency (Stacker 2000: 79). Operations at the farm were reduced but it was kept running. Emu Plains also served as a base for the Mounted Police and for road gangs and it was of some convenience for Darling to maintain it as long as possible (Stacker 2000: 80).

The catalyst for the eventual closure of the farm was a dispute between Maxwell and the Mounted Police over who had certain rights on the farm. Several reports prepared by Maxwell at this time indicate how many men worked at the farm, agricultural production, government stock, building work carried out, timber sawn and provisions made for the Mounted Police (Stacker 2000: 80-81). Preparations were made to reduce all activities and Maxwell resigned on 31 March 1831. General Returns of Stock, final returns for the farm and an inventory by the Board of Survey were prepared prior to the establishment's closure (Stacker 2000: 84-5).

The establishment was now to cater for the Mounted Police and Road gangs only. In November 1831 surplus stock was sent to other sites or sold (Stacker 2000: 86). The Emu Plains Agricultural Establishment was finally closed on 31 August 1832. In the late 1820s and early 1830s the 'forces of private enterprise', together with the growing free population had formed a powerful lobby group calling for convict farms such as that at Emu Plains to be closed down and this was achieved in 1831 (Stacker 2000: 94). The Farm had operated for thirteen years with its peak of production and efficiency in 1825. Its survival through four successive Governors, combined with the changing priorities of the English administration, is evidence of the overall success of the venture and the skills of the farm's Superintendents.

Further details and a comprehensive analysis of the Emu Plains Government Agricultural Establishment can be found in Lorraine Stacker's, 'Chained to the Soil on the Plains of Emu: a Emu History of the Plains Government Agricultural Establishment 1819-1832', published by the Nepean District Historical Society (2000). It includes a detailed bibliography.

The Village of Emu was laid out by Surveyor H.F. White in May 1832. Land was to be sold as town allotments and 20 ha farms as advertised in the Government Gazette of 30 July 1832. The present day Gough, Jamison, Russell, Brougham, Grey and Bedford Streets are evidence of the original town layout. It was located at a distance from the low-lying alluvial flats and from the main road over the mountains. The area developed slowly except for the inns located on the main road and there appeared little interest in Emu Plains other than for farming (Fox & Assoc 1991: 1) 22).

The Mounted Police continued to use the Farm's buildings and land. The place soon became run-down. A description by Baron Charles von Hugel of Emu Plains in June 1834 depicted it as,

> *…once being covered with trees and then entirely cleared by the Government, which established a farm here and built the Government House for the officials. This house is distinguished by its ugliness and dilapidation. In the distance a few farm buildings may be seen, but these, as well as the garden, which must have cost a great deal of labour to establish, are in a bad state. The Government has given up all these farms, and this one here will be put up for public auction as soon as the new pass to the last descent of the Blue Mountains is completed.*

Von Hugel also noted that the site for the new town was ill-planned, being too far from the Nepean and with no spring (Hugel cited in Stacker 2000: 94-5). Emu Plains continued to be an agricultural district with land taken by orchards, market gardens and dairy farms. It also developed as a market for livestock brought from Western NSW. Inns thrived as a significant number of travellers and stockmen required accommodation and stores prior to or following their trek over the mountains (Stacker 2000: 95). St Paul's Church of England School opened in 1848, indicating that the population was large enough to require and support a church and school.

A bridge over the Nepean took some time to come to fruition. Toby Ryan of Emu Hall, and entrepreneur and farmer made two attempts. The first bridge built in 1855 was washed away by floodwaters soon after its construction and the second failed in 1860 under similar circumstances. John Whitton the Chief Engineer of the NSW Railways then designed the Victoria Bridge to

carry both rail and road traffic (Fox & Associates 1991: 28). Construction was commenced in 1867. In October 1867, the town of Emu was extended by Mort & Co in anticipation of the railway and the potential of residential development that often followed the railway's path.

The railway reached Emu Plains in June 1867, and Emu Station, on the south side of the old Bathurst Road opened on August 1868. A new railway station building with stationmaster's residence upstairs was built in 1886 (www.penrithcity.nsw.gov.au). The railway clearly had an impact on population growth with the numbers rising at a steady rate towards the end of the century.

Year	Emu Plains population
1861	107
1871	136
1881	530
1891	642

Table 1: Population data for Emu Plains
Source: WA Coghlan's Census data as shown in Fox and Associates 1991: 52)

An indication of further development in Emu Plains is the establishment of an alluvial gravel pit by the Emu Gravel Company in 1884 of 46 acres on the Nepean River, opposite 'Bird's Eye Corner'. It later became the Emu & Prospect Gravel Company after opening several other quarries (www.westernsydneylibraries.nsw.gov.au/transport/rail.html). During the construction of Warragamba Dam from 1946 a cable was built from Emu Plains to the site to carry blue metal for the dam wall (Fox & Assoc 1991: 49; Parliamentary Return of Landholders District: Windsor Town Emu 1885).

The Emu Plains Prison Farm was established in 1914 on 43 hectares set aside for this use. It is located to the east of the site that is the subject of this report. The site's selection would have been based on its relative isolation from Sydney and the semi-rural environment where inmates could learn various farm related trades. Its establishment encouraged some minor economic and residential in Emu Plains (www.penrithcity.nsw.gov.au/index). Now known as Emu Plains Correctional Centre the site was a prison farm for male offenders for 80 years until it was converted in 1994 into a minimum-security centre to prepare female inmates for release from prison (www.parliament.nsw.gov.au/prod/parlment/hansart.nsf).

3.2 Brief history of the subject site

The site that is the subject of this report was granted to Charles York c.1805-1861), a free settler of Penrith, later of Emu Plains and Mount York. The land at Emu Plains, totalling 55 acres 2 roods and 6 perches was granted by Major General Richard Bourke on 23 September 1833. Portion 149 as it became known was advertised on 18 March 1833 as Lot 6 of 56 acres. York paid £155/10/1 for the site that extended from the Nepean River in the north to Bathurst Road in the south (Lands Dept Serial 32 p.8). York owned several other blocks in Emu including Portions 65, 54 and 59. Later Russell Street was constructed on the site's western boundary.

It is not known how York used the land at Emu Plains although it is likely that it was farmed. York married Maria Chalker 1811-1884) in 1826 at St Lukes, Liverpool. Charles York died in 1861 at Emu Plains, aged 56 years. As shown in *Grenville's Post Office Directory* Maria York continued to live at Vine Cottage, Emu Plains until at least 1872. The name 'Vine Cottage' suggests that the family might have operated a vineyard or there was one nearby. The Primary Application for the property indicates that William John Ferguson was in possession of the property possibly as executor) on 12 January 1886, several years after Maria's death. In April of that year the property was conveyed from William Ferguson and James Thomas York one of Charles and Maria's sons) to George Nash. On 18 September 1905 Eliza Nash George Nash's wife) leased the property to Frederick Carter (Lands, PA No 33267).

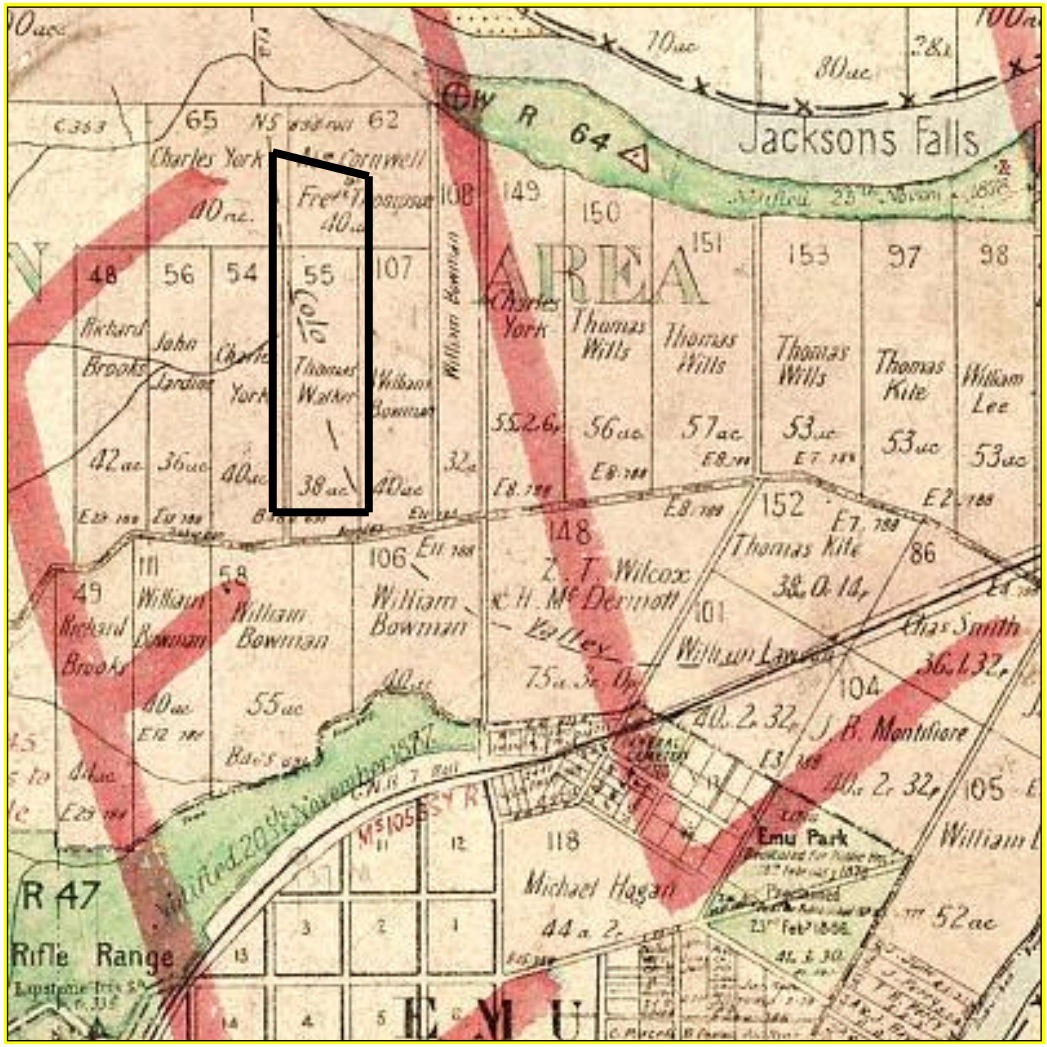

Figure 8: A map of the Parish of Strathdon, dated 1888, showing land now known as Emu Plains, including Portion 149 owned by Charles York
Source: Lands Dept Image: 14027401 PMap MN02)

George Nash sold the property to Martin Gilligan in 14 November 1911 (Lands Book 951 No 83). At various times the property was used as security or mortgaged. In 1916 Annie Elizabeth Stephens appears to come into possession of the site and in April 1917 sold it to Anne Dobson (Lands, Book 1107 No 512). Anne's husband Harry Albert Dobson d.7/7/1949) was a farmer at Emu Plains. An option for the lease of the land was taken out by Clarendon Nepean Sands Ltd in February 1935. It is not known if this proceeded (Lands PA No 33267), however large quantities of alluvial sand would have been required for the Sydney building industry and this type of enterprise would have been profitable.

The site was converted to Torrens Title in September 1937. In 1949 the property was transferred to Harry Albert Dobson, the Younger, also a farmer, Edith Muriel Dobson, Jessie Louise Dobson and Florence Marion Dobson, all of Emu Plains and presumably Anne and Harry Dobson's children. Part of the site was leased to the Metropolitan Water Sewerage and Drainage Board in 1952 and a portion resumed by the Electricity Commission in 1962, for a transmission line. In 1963 Harry A. Dobson Jr, Annie Margaret Dobson, Jessie Louise Dobson and Florence Marion Dobson held the title (Lands Vol 5050 Fol 171).

In 1966 a major portion of the site Lot 4 DP 574650) was transferred to the Blacktown and Districts Plumbing and Draining Company Limited, changing its name to Carthona Properties Pty Ltd in 1975 (Lands Vol 10271 Fol 250).

Evidence of historic structures being constructed on the site such as a house or cottage could not located. It appears from the historical record that the land was used solely for grazing and that the owners lived in other locations. Animal pens may have been constructed on the site. The convict Agricultural Station and other associated historical buildings were not located on the subject site. They were located to the south east of the subject site.

4.0 RESULTS

The site inspection was undertaken on 7th July, 2020 by David Nutley, Rivers McEwen and Chris Jones of Comber Consultants, accompanied by Michael Rodgers of Urbanco. Historical archaeological sites were not located on the property and it is highly unlikely that any sub-surface historical archaeological remains would exist. The historical evidence as detailed above does not indicate that any formal historic structures were previously located on the site.

Except for an approximately 50-60m section along the frontage with Old Bathurst Road, the remaining vegetation in Lot 1 had been recently slashed (Photographs 1 & 2). No items of cultural significance were visible in the slashed or un-slashed areas. The area that had not been slashed was covered with dense grass and other undergrowth. While no access was possible within the areas that had not been slashed, no remnant structures were visible within that area. Please see photographs below

Photograph 1: Un-slashed vegetation along Old Bathurst Road frontage. View to east.

Photograph 2: Slashed portions of Lot 1 and Lot 2. View to NNE.

A portion of Lot 2 had also been slashed. This was limited to the area immediately to the north of Lot 1 (Photograph 3) and skirted around the yard of the c1960s house (Photograph 4). No slashing or clearance of vegetation had taken place within the house yard, along the canal banks or in the remaining are of Lot 2 to north of the canal. Dense ground cover included African 'Love Grass' (*Eragrostis Curvula*) and Blackberry (Photographs 5-7).

Photograph 3: View to NW across Lot 2 from Lot 1.

The line of the concrete canal is indicated by the trees and thick vegetation in the background.

Photograph 4: Slashed portion of Lot 2.

Canal banks to left and house yard to right.

Photograph 5: African 'Love Grass' (*Eragrostis Curvula*) on northern side of canal (RHS). View to east.

Photograph 6: View to west north of the canal with blackberry bushes in mid-field.

Photograph 7: View to NNW along Lot 2 showing ridgelines running parallel to the Nepean River to the north.

Photograph 8: The Nepean River runs approximately 80m north of the boundary of Lot 2. View to west.

Around the c1960s house yard there were discarded items of machinery. These included an abandoned car, a small river punt, a ride-on mower, a petrol driven push lawn mower and an old front-end loader. Structures around the house included possible horse shed, an aviary and a chicken pen or fenced garden (see Photographs 9-18), but these are not significant and do not need to be recorded or retained.

Photograph 9: Rear of house and yard on the property being inspected by Rivers McEwen and Christopher Jones of Comber Consultants and Steve Randall from Deerubbin Local Aboriginal Land Council.

Photograph 10: Abandoned slasher

Photograph 11: Landrover in yard at rear of house. View to SW.

Photograph 12: River punt in bushes - northern side house yard

Photograph 13: shed in house yard. View to south.

Photograph 14: View of house from Russell Street.

Photograph 15: Rear of house. View to west.

Photograph 16: Front end loader/bulldozer

Photograph 17: Back yard showing density of vegetation and additional abandoned machinary.

Photograph 18: Levee on southern side of canal. View to NE

On the southern side of the concrete lined canal were raised levees, likely to be discard soil from excavation of the canal (Photograph 18). The banks of the canal are heavily vegetated with bushes, Camphor laurels and, along the southern bank, several regrowth Eucalypts (Photographs 19-22). Due to the density of vegetation, access to most of this area was not possible. However, among the Camphor Laurel trees on the northern side of the bank of the canal were discarded items including a child's bike, and what appeared to be remnants of a small treehouse.

Photograph 19: Stgeve Randall approaching stand of *Camphor laurel* on northern side of canal. View to north

Photograph 20: Density of undergrowth along canal banks. View to west.

Photograph 21: The concrete canal which follows the original creekline. View to east from Russel Street.

Photograph 22: Bucket from mining dredge recorded on property in 2005/6. Not found in 2020 inspection. Cattle race visible in background.

Photograph 23: Photograph taken in 2020 from similar position to that in photograph 2005/6 showing change in vegetation hiding the cattle race.

Photograph 24: Former cattle race under cover of vegetation in 2020.

A bucket from a mining dredge was located near the cattle race in 2006 (Photograph 22) but could not be found in the 2020 survey. This is possibly due to having been moved or to the thick vegetation that had subsequently developed on the property. This bucket may have been associated with the Clarendon Nepean Sands Ltd who leased the property in the 1930s. However, as noted above in section 3.2, it is unclear whether alluvial sands were extracted from this property. If relocated, this bucket could be donated to a local Museum or used as an art installation within any subsequent development.

In 2006, to the east of the bucket, as shown in Photograph 22, is a former cattle race. By 2020, vegetation had engulfed this structure but it still standing within the cover of the trees and bushes (Photographs 23-24).

Whilst the site demonstrates the continuity of agricultural and pastoral activities in Emu Plains since it was cleared for farming and grazing in 1819, it could not be considered a significant cultural landscape.

5.0 SIGNIFIANCE ASSESSMENT

5.1 Preamble

Significance Assessment is the process whereby buildings, items or landscapes are assessed to determine their value or importance to the community.

The following criteria have been developed by Heritage NSW and embody the values contained in the Burra Charter. The Burra Charter provides principles and guidelines for the conservation and management of cultural heritage places within Australia.

5.2 Assessment

Historical

Criterion (a) – an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area)

No landscape or other features within the subject property possess a level of State or local heritage significance against this criterion.

Association

Criterion (b) – an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area)

No landscape or other features within the subject property possess State or local heritage significance against this criterion.

Aesthetic/Technical

Criterion (c) – an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)

No landscape or other features within the subject property possess State or local heritage significance against this criterion.

Social

Criterion (d) – an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons

No landscape or other features within the subject property possess State or local heritage significance against this criterion.

Research

Criterion (e) – an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area)

No landscape or other features within the subject property possess State or local heritage significance against this criterion

Rarity

Criterion (f) – an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area)

No landscape or other features within the subject property possess State or local heritage significance against this criterion.

Representative

Criterion (g) – an item is important in demonstrating the principal characteristics of a class of NSW's

- *cultural or natural places; or*
- *cultural or natural environments.*

or a class of the local area's

- *cultural or natural places; or*
- *cultural or natural environments*

No landscape or other features within the subject property possess State or local heritage significance against this criterion.

5.3 Statement of Significance

No features of non-Aboriginal State or local heritage significance were identified within the subject property.

6.0 LEGISLATION

6.1 Heritage Act 1977 (as amended)

State Heritage Register

Under s57 of the Heritage Act a person must not "demolish, despoil, excavate, alter, move, damage or destroy" an item listed on the State Heritage Register without a permit under s60 of the Act.

The subject property is not listed on the State Heritage Register.

Relics Provisions *NSW Heritage Act, 1977*

Division 9: Section 139, 140–146 - Relics Provisions Under Section 139:

(1) A person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.

(2) A person must not disturb or excavate any land on which the person has discovered or exposed a relic except in accordance with an excavation permit.

A relic is described under the Act as:

..any deposit, object or material evidence –
(a) which relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and
(b) is of State or local heritage significance.

Any item identified as a relic cannot be impacted upon without an excavation permit, under s140 of Act. An excavation permit forms an approval from the Heritage Council for permission to 'disturb' a relic.

However, an excavation permit is not required when the works are only minor in nature, and will have minimal impact on the heritage significance of the place. Under s139(4) of the *Heritage Act* when the impact is minor an excavation exception can be applied for.

As detailed in this report, the subject property a 1-4 Old Bathurst Road, Emu Plains is not listed on the State Heritage Register and the site has been assessed in this report as having nil-low historical archaeological potential. Therefore, a permit under s60 or s140 of the Heritage Act will not be required. The subdivision and any subsequent works can occur without any further assessment, monitoring, testing or salvage excavations.

6.2 Penrith Local Environmental Plan (LEP) 2010

The Penrith LEP lists individual heritage items and Heritage Conservation areas that are significant, and heritage assets that should be conserved. 1-4 Old Bathurst Road is not listed on the heritage schedule of the LEP. In addition, no items of historical significance are listed within the vicinity of the study area.

This report concludes that there will be no adverse impact on the heritage significance within or in the vicinity of the proposed subdivision and any later works.

7.0 RECOMMENDATIONS

The following recommendations are made based on:

- Legal requirements under the terms of the *Heritage Act 1977*.
- The research and analysis outlined contained in this report.
- Results of the assessment as outlined in this report.

IT IS RECOMMENDED THAT:

1. There are no constraints, upon historical archaeological grounds, to the proposed subdivision and future redevelopment of the site.

2. No further historical archaeological assessment, monitoring, testing or salvage is required in respect of the proposed subdivision or future redevelopment.

3. If re-located the bucket from a mining dredge located on the property could be donated to a local Museum or used as an interpretative feature within the new development.

4. If any previously undetected historical archaeological site or relic is unearthed or uncovered, work must cease in the vicinity of that site or relic and advice sought from the Consultant, Council's Heritage Advisor and/or Heritage NSW on a suitable course of action.

5. All employees and/or contractors engaged in the future redevelopment of the site should be advised that it is an offence under the *Heritage Act 1977* to disturb or excavate a relic without a permit.

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APPENDIX A: BUILDING ENVELOPE PLAN

BUILDING ENVELOPE PLAN
PROPOSED LOT 1
1-4 OLD BATHURST ROAD, EMU PLAINS

NOTES

Base data supplied by NSW LPI
Projection MGA Zone 56

Areas and dimensions shown are subject to final survey calculations.
All carriageways are shown for illustrative purposes only and are subject to detailed engineering design.

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5 0 10 20 30 40 50 METRES

CLIENT : Le Boursicot
SCALE : A2@1:1,000
DATE : 16/06/2020
PLAN No : 056.EP.006
REVISION : 01

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APPENDIX 8
Flood Study

Rienco Consulting

Providing Specialist Services in the Fields of Hydrology and Hydraulics

Floodplain Risk Management Plan
Proposed Rezoning at
1-4 Old Bathurst Road, Emu Plains

for Urbanco Pty Ltd

Ref: 22036 Report 001 Rev 2 Flood Study.doc

Report title:

Floodplain Risk Management Plan
Proposed Rezoning at 1-4 Old Bathurst Road, Emu Plains

Prepared for:

Urbanco Pty Ltd

Prepared by:

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0	30.09.21	1	PDF	Client	AB
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1. INTRODUCTION

1.1. BACKGROUND AND PROPOSED REZONING

The applicant seeks to rezone a portion of their land at Old Bathurst Road, Emu Plains. A Development Consent was issued in August 2020 to consolidate the land holding allotments, creating two lots (Lot 1 and Lot 2). Lot 1 was created as a future development parcel, comprising all of the IN2 zoned land along the Old Bathurst Road frontage and is approximately 20,000 m^2 in area. Whilst Lot 1 contains all of the land currently zoned IN2, not all of Lot 1 is zoned IN2.

Following Development Consent, Penrith Council completed and released more detailed flood modelling of the local Emu Plains catchment, via their *Emu Plains Overland Flow Flood Study (2020*). This indicated that the recently subdivided Lot 1 was not affected by overland flow in the 1% AEP design flood, but was still marginally affected in the same AEP flood from the regional Nepean River system. It is understood that a further review of more detailed up to date flood modelling of Nepean River Catchment (by Penrith Council) also identified that flood planning areas had been modified and refined over Lot 1 in the time that had elapsed. It was subsequently identified that the balance of Lot 1 (not presently zoned industrial) could be rezoned to Industrial land.

The purpose of the Planning Proposal is to rezone the remaining portion of Lot 1 to IN2 Light Industrial under the Penrith Local Environmental Plan (PLEP) 2010, addressing the land within Lot 1 which is currently a 'deferred matter'. The Planning Proposal notes that this will provide a consistent zoning across Lot 1 and the land fronting Old Bathurst Road. The Planning Proposal further notes that *no approval is sought for the site at this stage. A detailed Development Application will be prepared and lodged with Council following resolution of this Planning Proposal*.

During its ongoing assessment of the Planning Proposal, Penrith Council received correspondence from the Department of Planning, Industry and Environment (DPIE) (undated, DPIE ref IRF21/3043). This correspondence stated, inter alia:

> *The planning proposal seeks to rezone land from Deferred Matter Rural 'D' to IN2 Light Industrial. The proposal is inconsistent with Clause 5 of this direction as a planning proposal must not rezone land within the flood planning area from Rural to Industrial. Further assessment is required to address consistency with other parts of the Direction. It is understood that some cut and fill is also proposed. The preliminary cut and fill design plan submitted demonstrates minor filling of Lot 1, with the fill relocated from Lot 2 to ensure it is flood free at the 1 in 100 flood level. While cut and fill is not precluded, under clause 6 of the direction, any changes to the natural surface levels would need to demonstrate that the development will not result in significant flood impacts to other properties.*
>
> *Our initial review of the planning proposal against the new flood planning package is that there are no particular policies, or draft studies underway that would preclude this planning proposal being assessed on its merits, and any inconsistencies with Direction 4.3 could not be considered by the Minister where they could satisfactorily address Clause 9 of the Direction.*
>
> *Consistency with this Direction is an important threshold issue, and it is recommended that the applicant provide supporting documentation and the necessary flood studies to assess the planning proposal against Direction 4.3, and consistency with Clause 9 of the Direction, as part of the Gateway application. Council may need to provide the*

proponent with guidance on whether Clause 9(b) or 9(c) should be utilised to justify the inconsistency with this Direction.

Subsequently, Urbanco Pty Ltd (on behalf of the owners) engaged Rienco Consulting to prepare a suitably detailed Floodplain Risk Management Plan that addresses the requirements of the Section 9.1 Direction Clause 4.3, as further described in **Section 1.2**. Revision 0 of this report was issued to Penrith Council, and after some feedback from Penrith Council, minor updates were made with regard to some additional commentary on flood impacts and evacuation. These updates were reflected in Revision 1 of this report.

Some additional feedback was received from Penrith Council in relation to addressing some additional issues raised in documentation provided to the applicant. This information has been reviewed and comments provided in this (now Revision 2) report.

1.2. PURPOSE OF THIS REPORT

The purpose of this report is to:

a) Review of existing flood information available for the site, as quantified in:
   i. Nepean River Flood Study (2018)
   ii. Emu Plains Overland Flow Flood Study (2020)
b) Prepare a detailed hydraulic model that replicates as best as practical the worst case 1% AEP design flood behaviour at the site under pre-development conditions.
c) Determine the potential impacts of the proposed development, and the associated flood hazard categorisation, by way of additional hydraulic modelling.
d) Review the proposed development, together with the hydraulic model results, and assess it against Clause 4.3 of the Section 9.1 Directions relating to flooding, and
e) Prepare a report summarising the above suitable for lodgement with Penrith City Council to accompany the PP.

1.3. LIMITATIONS AND ASSUMPTIONS

This report has been strictly prepared for the purposes stated in this report for exclusive use by the client. No other warranty, expressed or implied, is made as to the advice included in this report. This study specifically focuses on the quantification of flood behaviour at the subject site, given current conditions. This study does not address flood behaviour for other sites within the overall catchment except where explicitly noted in this report.

2. AVAILABLE DATA

2.1. SITE DESCRIPTION

The subject site is located in Emu Plains, NSW and is largely vacant land consisting of two adjoining parcels (Lot 1 and Lot 2). Lot 1 (the southern lot) is the focus of this investigation. Lot 1 is bounded to the north by Lot 2, to the east by Lapstone Creek and vacant land, to the south by Old Bathurst Road and to the west by Russell Street. **Figure 2.1-1** presents an aerial image of the site and surrounds.

Figure 2.1-1 Subject Site

Note: Image sourced from NearMap.

The highest topographic level at Lot 1 is located in the south-western corner adjacent to Old Bathurst Road, where existing ground levels are approximately RL +25.1m AHD. Lot 1 falls to the north and east, and falls to around RL +23.7m AHD along its northern and eastern boundaries.

2.2. SURVEY DATA

Topographic information was available in the form of Airborne Laser Scan (ALS) data. The NSW Government's Land & Property Information department (LPI) have supplied a 5m DEM from the underlying LiDAR 2011 dataset. Aerial imagery (2021) was also supplied for the subject site and surrounds via Nearmap.

2.3. SITE INSPECTION

A physical site inspection was not possible due to the current COVID-19 travel restrictions. Given the scope of works and nature of the report, the author does not consider that a site inspection would materially alter the recommendations of the report.

2.4. PREVIOUS STUDIES

2.4.1. Nepean River Flood Study (2018)

The Nepean River Flood Study was prepared by Advisian in 2018. As noted in the study, the Hawkesbury-Nepean River catchment is one of the largest coastal basins in NSW with an area of 21,400 square kilometres. The catchment at Penrith is approximately half of the total catchment area and of this portion, 80% is under the control of Warragamba Dam (PCC, 2021).

The Nepean River Flood Study quantified design flood flows, velocities, levels, extents, and hydraulic and hazard category mapping for a range of flood events under existing floodplain and catchment conditions. The Flood Study provides detailed mapping of various storm events over the Nepean River catchment within the Penrith LGA, inclusive of the 1 in 20 year storm through to the 1 in 2,000 year storm event and the Probable Maximum Flood (PCC, 2021).

Figure 2.4-1 below is an extract from the 2018 Study, summarising the peak flood extents across Lot 1 in the 1% AEP design flood in the Nepean River.

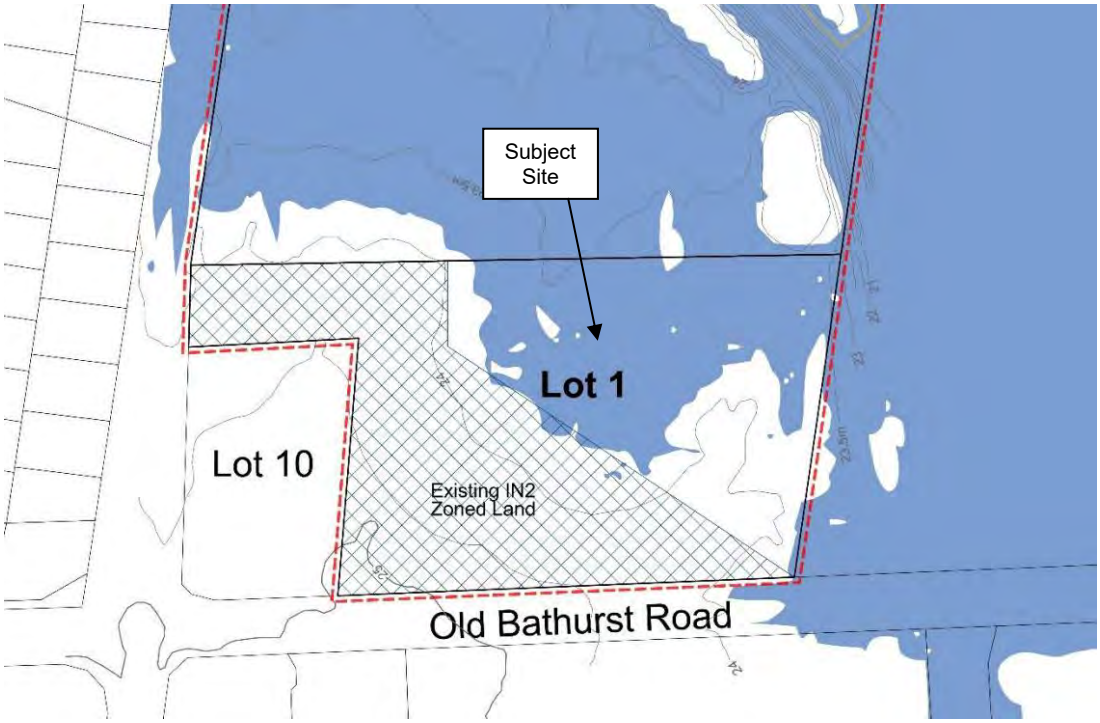

Figure 2.4-1 1% AEP Design Flood Extent under Nepean River Flood Behaviour

2.4.2. Emu Plains Overland Flow Flood Study (2020)

The Emu Plains Overland Flow Flood Study was prepared by BMT in 2020, on behalf of Penrith City Council. The study defined flood behaviour under historical, existing, and future conditions (incorporating potential impacts of climate change) for a full range of design flood events under localised flood behaviour from the Emu Plains catchment. The subject site is within this local catchment, being a subcatchment of the overall Nepean River.

The Study provides detailed mapping of various storm events over the Nepean River catchment within the Penrith LGA, inclusive of the 1 in 20 year storm through to the Probable Maximum Flood (PCC, 2021). In relation to Lot 1, the results from the Study confirm that Lot 1 is not flood affected by overland flow in the 1:100 year storm event, which is fully contained within the existing drainage canal (known as Lapstone Creek). **Figure 2.4-2** is an extract from the 2020 Study, summarising the peak flood extents across Lot 1 in the 1% AEP design flood derived from the local upstream catchment.

Figure 2.4-2 1% AEP Design Flood Extent under Local Catchment Flood Behaviour

3. HYDRAULIC MODELLING – PRE DEVELOPMENT

3.1. HYDRAULIC MODEL DEVELOPMENT

During its ongoing assessment of the Planning Proposal, Penrith Council received correspondence from the Department of Planning, Industry and Environment (DPIE) (undated, DPIE ref IRF21/3043). This correspondence stated, inter alia:

> *…..The preliminary cut and fill design plan submitted demonstrates minor filling of Lot 1, with the fill relocated from Lot 2 to ensure it is flood free at the 1 in 100 flood level. While cut and fill is not precluded, under clause 6 of the direction, any changes to the natural surface levels would need to demonstrate that the development will not result in significant flood impacts to other properties.*

As such, a hydraulic model was required to quantify the impacts of the proposed cut and fill in the standard design flood event – the 1% AEP design flood. Importantly, the cut and fill would have no impact on 1% AEP design flood from the local (Emu Plains) catchment, as the site is not inundated in that event from local catchment runoff (Emu Plains Overland Flow Flood Study, 2020). Therefore, the only hydraulic modelling necessary was modelling of the Nepean River system.

This has the potential to be no small task, given the large nature of PCC's 2018 model, and the relatively minor nature of the development. Further, PCC's 2018 modelling was undertaken in RMA-2, and whilst Rienco's staff have demonstrated experience with that model, using such an older model is never without its complexities. Run-times are also an important consideration in particular given the minor context of the cut and fill. These are all relevant and necessary considerations.

After due consideration, it was determined that a small sub-scale model of the Nepean River could be constructed to as best as practical replicate the results of PCC's 2018 modelling. This hydraulic model would then be fit for the purpose of carrying out additional modelling of the cut and fill, and quantifying the impacts (if any) of the cut and fill. TUFLOW was the model chosen to carry out this task. The model grid was established as a 5m grid across the entire model domain. The 2011 ALS data was used exclusively to extract elevation data to the TUFLOW grid, which is described in **Figure 3.1-1**.

In terms of boundary conditions, these were set to a fixed water surface level, derived from PCC's 2018 Study. The downstream boundary condition is sufficiently downstream of the subject site to allow flood behaviour (and any potential impacts) at the site to be satisfactorily determined. Model domain and boundary condition details are described in **Figure 3.1-1**.

Manning's surface roughness 'n' values were categorised and mapped, with each of the roughness zones then ascribed roughness characteristics. The values initially used for model establishment were derived from consideration of various industry recommendations (including Chow (1959), Hicks *et al* (1991) and Arcement *et al* (1984)), and are consistent with those in the calibrated and validated PCC model (Table 2, 2018).

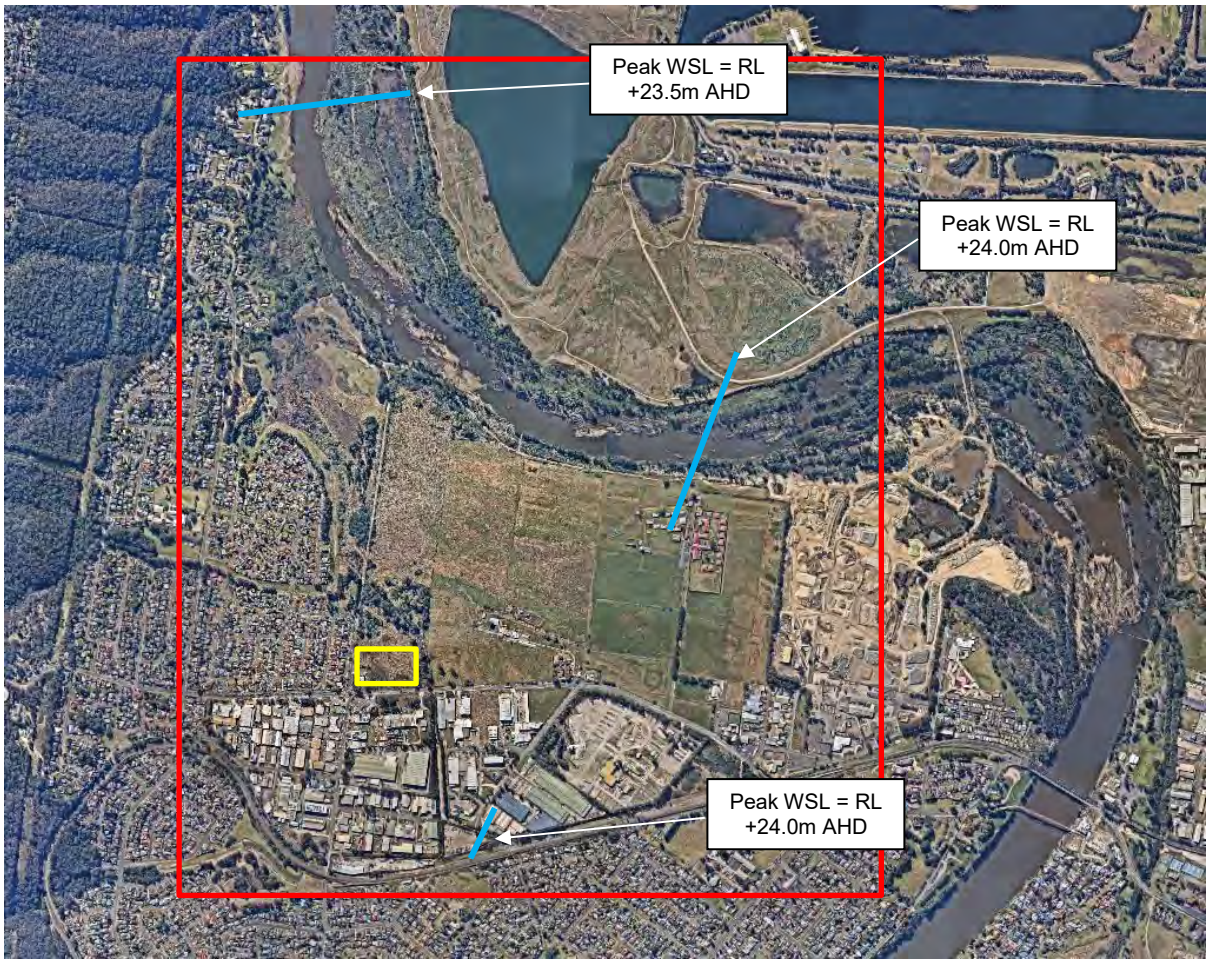

Figure 3.1-1 TUFLOW Grid and Boundary Condition Details

Note: TUFLOW 5m domain shown as red line. Subject site is shown indicatively in yellow. BC's shown indicatively as blue lines.

3.2. HYDRAULIC MODEL RESULTS

The model was run for the 1% AEP design event. A summary of the model results is described below in **Figure 3.2-1**. A full detailed set of model results is included as **Appendix B**. As can be seen in **Figure 3.2-1**, the peak 1% AEP flood depths vary across the site but are however relatively shallow across Lot 1, with peak flood depths reaching 250 mm along the northern boundary. Average peak flood depths across the lot in the 1% AEP design flood are less than 200 mm.

The entire area of Lot 1 is denoted as Low Provisional Hydraulic Hazard when assessed in accordance with Figure L-2 of the NSW Government's Floodplain Development Manual (2005).

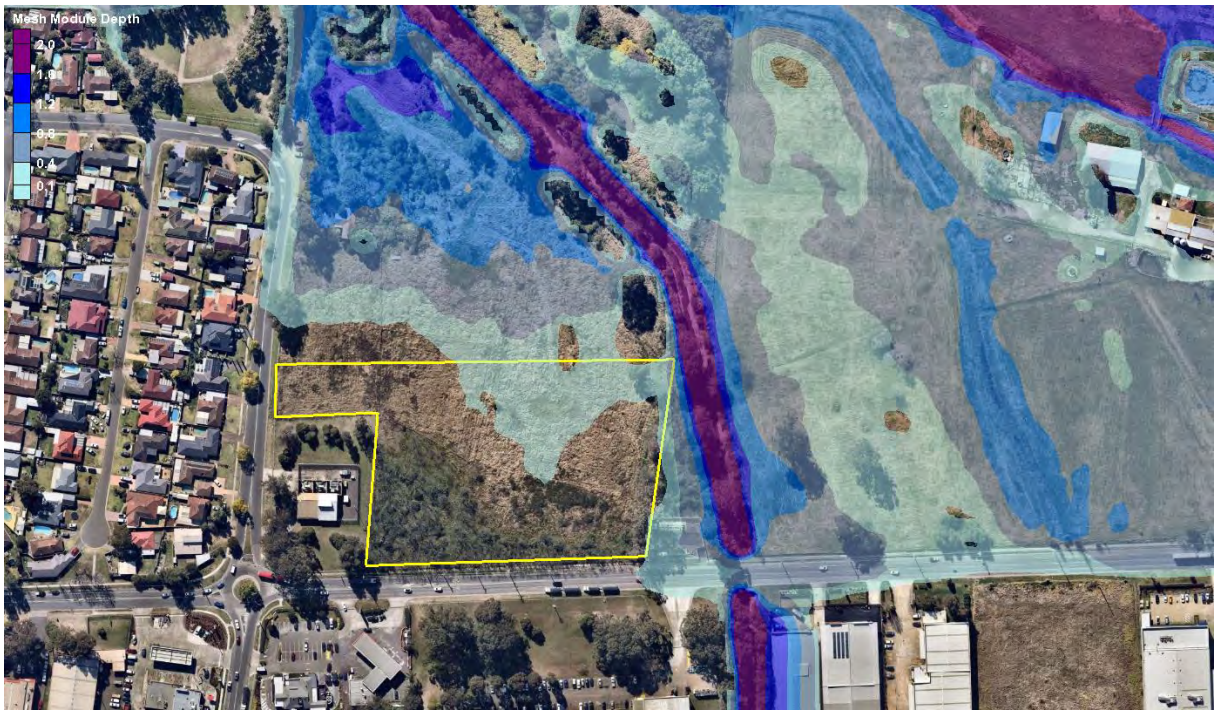

Figure 3.2-1 1% AEP Pre-Development Flood Extent and Depths

Note: Flood depths shaded 100 mm (light blue) to 2,000 mm (dark blue). All depths greater than 2,000 mm are all shaded dark blue.

4. HYDRAULIC MODELLING - POST DEVELOPMENT

4.1. HYDRAULIC MODEL DEVELOPMENT

The TUFLOW input files were modified to simulate the post-development scenario. The 3D TIN of the proposed cut and fill was provided to Rienco, and incorporated into the post-development modelling. No other changes were made to the model.

4.2. HYDRAULIC MODEL RESULTS

The model was re-run for the 1% AEP design event. A summary of the model results is described below in **Figure 4.2-1**. A full detailed set of model results is included as **Appendix B**. As can be interpreted from **Figure 4.2-1**, the proposed earthworks has facilitated a materially flood-free lot, and re-inundated the areas where the stockpiles were previously located.

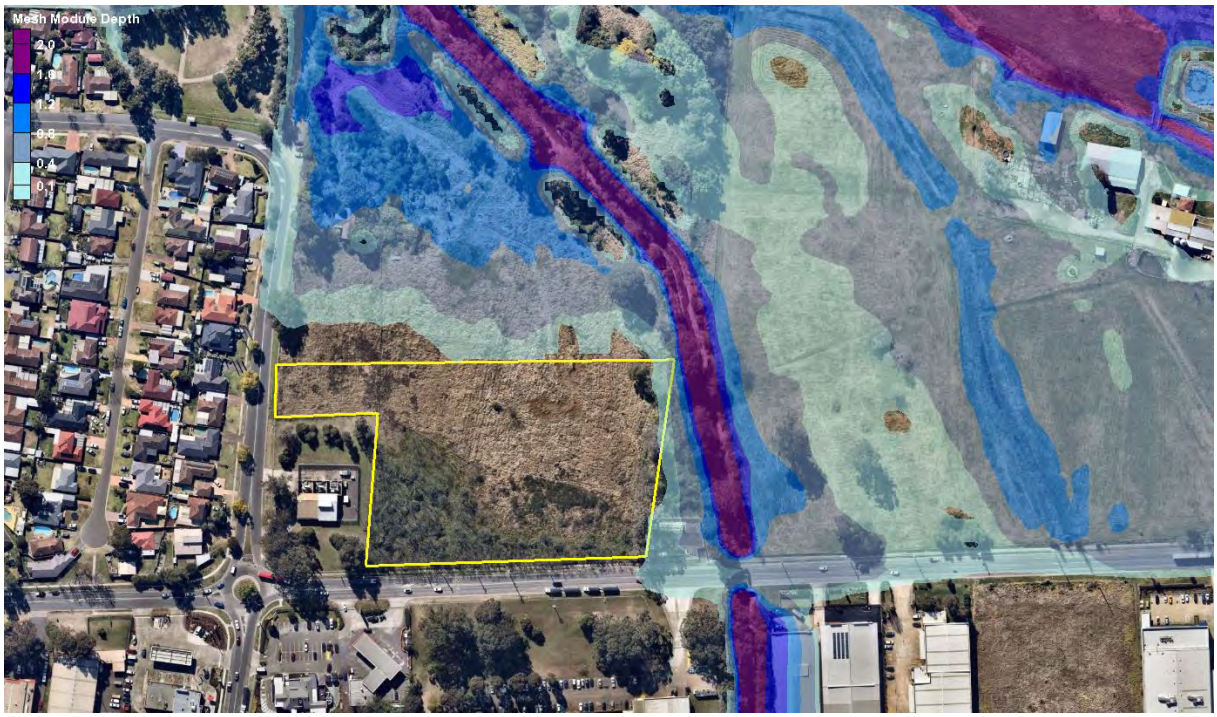

Figure 4.2-1 1% AEP Post-Development Flood Extent and Depths

Note: Flood depths shaded 100 mm (light blue) to 2,000 mm (dark blue). All depths greater than 2,000 mm are all shaded dark blue.

Whilst the modelling was only conducted for the 1% AEP design flood, this does not mean that consideration of a range of flood events was not possible. As noted in both the Nepean River Flood Study (2018) and the Emu Plains Overland Flow Flood Study (2020), the site is not flood affected by local or regional flooding in frequent events (i.e. 20yr ARI design flood). During this event, all runoff is confined to the western (Lapstone Creek) channel. Therefore, the proposed cut and fill could not influence more frequent flood behaviour. The above is also true in the 50yr ARI design flood.

In extreme flood events such as the Probable Maximum Flood (PMF), Lot 1 is inundated by several metres of runoff. In such an event, the minor cut and fill proposed would have an immaterial effect of flood behaviour. This is because not only does the proposed works balance flood storage, the depth-varying roughness effect applies and it is not plausible that the works could have any material influence on extreme flood behaviour.

5. PLANNING CONSIDERATIONS

5.1. REQUIREMENTS OF SECTION 9.1 DIRECTION

As the subject site is susceptible to flood events more frequent than the PMF event, it is defined under NSW legislation as 'Flood Prone Land'. This definition is consistent with the NSW Government's Floodplain Development Manual (2005). As the site is defined as Flood Prone Land, the Section 9.1 Direction (Section 4.3) applies to development on the subject site.

The Ministerial Section 9.1 Direction provides certain objectives and direction on what a relevant planning authority must do if this direction applies. **Table 5.1-1** describes each aspect of the Section 9.1 direction, and advice on how the proposed development complies.

Table 5.1-1 – Section 9.1 Direction Requirements

Section 9.1 Requirements	How the Proposal Addresses the Requirement
A planning proposal must include provisions that give effect to and are consistent with: (a) the NSW Flood Prone Land Policy, (b) the principles of the Floodplain Development Manual 2005, (c) the *Considering flooding in land use planning guideline 2021*, and (d) any adopted flood study and/or floodplain risk management plan prepared in accordance with the principles of the Floodplain Development Manual 2005 and adopted by the relevant council.	This report constitutes the provisions within the Planning Proposal that give effect to, and are consistent with, the NSW Flood Prone Land Policy and the principles of the Floodplain Development Manual 2005.
A planning proposal must not rezone land within the flood planning area from Recreation, Rural, Special Purpose or Environmental Protection Zones to a Residential, Business, Industrial or Special Purpose Zones.	If it is considered that the planning proposal does seek to do this, this is permitted as long as 9 (a) or (b) of Clause 4.3 of the S9.1 Directions is met. See further discussion below.
(a) permit development in floodway areas, (b) permit development that will result in significant flood impacts to other properties, (c) permit development for the purposes of residential accommodation in high hazard areas, (d) permit a significant increase in the development and/or dwelling density of that land, (e) permit development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate, (f) permit development to be carried out without development consent except for the purposes of exempt development or agriculture. Dams,	The planning proposal does not propose: • Development that will result in significant flood impacts to other properties. • Development for the purposes of residential accommodation in high hazard areas • Development for the purpose of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate • Development to be carried out without development consent except for the purposes of exempt development or

drainage canals, levees, still require development consent, (g) are likely to result in a significantly increased requirement for government spending on emergency management services, flood mitigation and emergency response measures, which can include but are not limited to the provision of road infrastructure, flood mitigation infrastructure and utilities, or (h) permit hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event.	agriculture. Dams, drainage canals, levees, still require development consent • A development which will result in a substantially increased requirement for government spending on flood mitigation measures, infrastructure or services. • Development where hazardous industries or hazardous storage establishments where hazardous materials cannot be effectively contained during the occurrence of a flood event. The planning proposal could be considered to propose: • A significant increase in the development and/or dwelling density of that land The planning proposal can propose a significant increase in the development of the land, as long as 9 (a) or (b) of Clause 4.3 of the S9.1 Directions are met. See further discussion below.
A planning proposal must not contain provisions that apply to areas between the flood planning area and Probable Maximum Flood to which Special Flood Considerations apply which: (a) permit development in floodway areas, (b) permit development that will result in significant flood impacts to other properties, (c) permit a significant increase in the dwelling density of that land, (d) permit the development of centre-based childcare facilities, hostels, boarding houses, group homes, hospitals, residential care facilities, respite day care centres and seniors housing in areas where the occupants of the development cannot effectively evacuate, (e) are likely to affect the safe occupation of and efficient evacuation of the lot, or (f) are likely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response measures, which can include but not limited to road infrastructure, flood mitigation infrastructure and utilities	The proposed IN2 zone would eventually facilitate development (with consent) that was contained between the flood planning area and Probable Maximum Flood. At this time however, special considerations are not considered applicable as they correspond with the Special Considerations clause of the Standard LEP Template which has not been adopted by PCC. Nonetheless, the planning proposal does not contain provisions which are contrary to any of Items (a) to (f) in the 9.1 Direction.
For the purposes of preparing a planning proposal, the flood planning area must be consistent with the principles of the Floodplain Development Manual 2005 or as otherwise determined by a Floodplain Risk Management Study or Plan adopted by the relevant council.	The flood planning area acknowledged in this report is consistent with the principles of the Floodplain Development Manual 2005, and as determined in the Nepean River Flood Study, being the 1% AEP peak flood surface level plus 500 mm.
A planning proposal may be inconsistent with the terms of this direction only if the planning proposal authority can satisfy the Secretary of the	

Department of Planning, Industry and Environment (or their nominee) that:	
(a) the planning proposal is in accordance with a floodplain risk management study or plan adopted by the relevant Council in accordance with the principles and guidelines of the Floodplain Development Manual 2005, or	Penrith City Council has not adopted a Floodplain Risk Management Study or Plan for the Nepean River.
(b) where there is no council adopted floodplain risk management study or plan, the planning proposal is consistent with the flood study adopted by the council prepared in accordance with the principles of the Floodplain Development Manual 2005 or	Penrith City Council has adopted a Floodplain Risk Management Study or Plan for the Nepean River.
(c) the planning proposal is supported by a flood and risk impact assessment accepted by the relevant planning authority and is prepared in accordance with the principles of the Floodplain Development Manual 2005 and consistent with the relevant planning authorities' requirements, or	The Planning Proposal is supported by this report, which has been prepared in accordance with the principles of the Floodplain Development Manual 2005 and consistent with the relevant planning authorities' requirements.
(d) the provisions of the planning proposal that are inconsistent are of minor significance as determined by the relevant planning authority.	The small portion of land being rezoned that could present *a significant increase in the development and/or dwelling density of that land* is considered of minor significance.

It can be seen from **Table 5.1-1** that the proposed development can readily meet the requirements of the Section 9.1 direction.

5.2. DEVELOPMENT RELATED IMPACTS ON FLOOD BEHAVIOUR

Figure 5.2-1 describes the impacts on peak flood surface levels in the 1% AEP event. A detailed map of these impacts is included in **Appendix B**.

Figure 5.2-1 1% AEP Peak Flood Surface Level Increases

There is no guidance provided in the Section 9.1 Directions regarding suitable flood impacts. DPIE's guidance on flood planning also offers no explicit guidance on how to assess the acceptability (or otherwise) of development related impacts on flood behaviour.

However Penrith City Council's DCP (2014) Part C3 does provide some guidance for acceptable impacts, noting that the cut and fill is not necessarily approved as part of the Planning Proposal and will (at some point) require further approvals. Clause 14 of the DCP (2014) is titled *Filling of Land At or Below the Flood Planning Level* provides guidance on the assessment of fill in the floodplain. It should be noted that the proposal is not strictly proposing 'fill' in the true context of floodplain filling, as it also provides for an overall earthworks balance and the net result of the proposal is no net fill.

Nonetheless, as an assessment of filling has been explicitly requested by DPIE, **Table 5.2-1** describes each aspect of the DCP's filling guidance, followed by commentary on how the proposal can comply with the DCP's guidance.

Table 5.2-1 – PCC DCP 2014 Guidance on Filling

Section 9.1 Requirements	How the Proposal Addresses the Requirement
Council will not grant consent to filling of floodways or high hazard areas	The site is not mapped as a floodway, or high hazard area in Council's Nepean River Flood Study (2018).
The filling of other land at or below the flood planning level will generally not be supported; however, Council will adopt a merits based approach	The earthworks is meritorious, as denoted within this report.
Flood levels are not increased by more than 0.1m by the proposed filling	Flood levels are not increased by more than 0.1m by the proposed earthworks, as quantified by the detailed modelling undertaken in this report.
Downstream velocities are not increased by more than 10% by the proposed filling	Downstream velocities are materially unaffected by the proposed earthworks, as quantified by the detailed modelling undertaken in this report.
Proposed filling does not redistribute flows by more than 15%	As flow is a function of depth and velocity, and given depth and velocity have not materially changed, the flow distribution in and around the cut and fill could not plausibly change.
The potential for cumulative effects of possible filling proposals in that area is minimal	The cumulative impacts of the proposal have merit, as there is no material flood impact and flood storage is balanced.
There are alternative opportunities for flood storage	There is no need for alternative opportunities to balance flood storage losses, as there are no losses from the proposal.
The development potential of surrounding properties is not adversely affected by the filling proposal	Development potential of surrounding properties is not adversely affected by the filling proposal, as quantified by the detailed modelling undertaken in this report. The filling is also offered with compensatory excavation.

The flood liability of buildings on surrounding properties is not increased	The flood liability of buildings on surrounding properties is not increased, as quantified by the detailed modelling undertaken in this report.
No local drainage flow/runoff problems are created by the filling	No local drainage flow/runoff problems are created by the filling, as quantified by the detailed modelling undertaken in this report.

To the extent that a DCP can reasonably be a relevant consideration for the Planning Proposal, it can be seen from **Table 5.2-1** that the proposed development can readily meet the DCP requirements for filling.

5.3. EVACAUTION

Once filled, the land is readily able to be evacuated in an orderly manner, for all events up to and including the 1% AEP design flood. Evacuation routes are described in **Figure 5.3-1**.

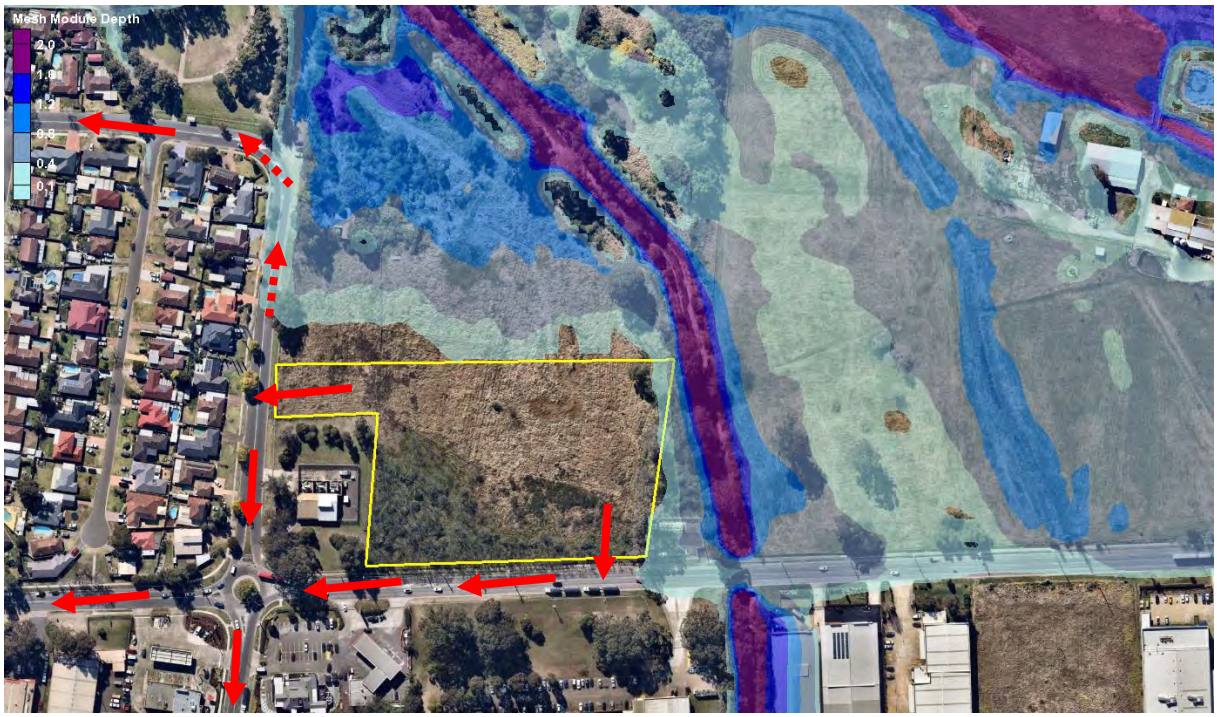

Figure 5.3-1 1% AEP Post-Development Flood Evacuation Routes

Depending on the future development layout of the site, flood-free access is available onto Russell Street or Old Bathurst Road. The preferred route on Russell Street would be south as it is flood free, however a northerly route is also available but would require trafficking through flood water at some (brief) point. The floodwater at this location, even at the peak, is relatively shallow and safe for vehicles and pedestrians.

In rarer events, such as the Probable Maximum Flood, evacuation can still be facilitated via the same routes, where warning times and evacuation orders are provided by the SES. This is no different to the normal evacuation procedures for Emu Plains, or the residential areas to the west of the site.

Any future development would be subject to a DA, and a flood emergency management plan could readily be developed as part of that DA, or as a condition of consent on the DA.

5.4. OTHER MATTERS

It is understood that at some time, a letter was prepared by Mr. Warwick Winn (General Manager of Penrith Council) and sent to the NSW Department of Planning, Industry and Environment (DPIE) regarding Councils concerns in relation to the implications of DPIE's new Flood Prone Land Planning Package.

Rienco has been supplied with DPIE's response to Penrith Council, dated 17th July 2021, and it is understood that Penrith Council are seeking some additional responses to the issues raised in the DPIE (response) letter.

The first Council concern addressed by DPIE is in relation to DA's. It must be noted that the current application before Council is a Planning Proposal, and DA related concerns are inappropriate at this stage. Nonetheless, the Council concern appears to relate to evacuation routes, and how a consent authority is to evaluate assessing a DA against clause 5.21 (2) (c) of the LEP, to determine if an application exceeds the capacity of evacuation routes.

Helpfully, DPIE have suggested the following:

1. If a development application increases the capacity of a development by more than 150 dwellings, or 200 employee vehicles for a commercial development, the Department will coordinate a response with Infrastructure NSW (INSW) and NSW SES to determine if the development will exceed the capacity of evacuation routes. These development applications can be sent through to resilience.planning@planning.nsw.gov.au.
2. If a development does not meet this condition INSW has advised it is unlikely to exceed the capacity of existing evacuation routes. The consent authority should be satisfied that the development will not exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, when assessing against clause 5.21 (2) (c).

In terms of the present planning proposal, the traffic report prepared by Positive Traffic indicated that up to 120 vehicle spaces would be required on site under Council's DCP. The proposal is estimated to generate less than 70 peak vehicle trips upon operation. The proposal will not increase capacity of development by more than 200 vehicles as specified in the Departments guidelines, and as per DPIE's advice, the consent authority should be satisfied that the development will not exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, when assessing against clause 5.21 (2) (c) for the DA.

The second concern raised by Council is in relation to climate change. It is unclear precisely what Council's concern is, however we do note that climate change is not itself an explicit requirement for consideration under the Section 9.1 Directions in relation to planning proposals. DPIE's *Considering flooding in land use planning (2021)* also makes no reference to climate change.

The Hawkesbury-Nepean Valley Regional Flood Study (2019) models the varying effects of climate change at the site. It notes that sea-level rise has no effect on flood levels at or around the subject site, however increases in rainfall intensity can influence peak 1% AEP flood levels by 300mm to 900mm, depending on the emissions scenario eventually adopted. These increases can be readily accounted for by Council's planning controls (DCP) when a DA is lodged for development on the site. At this time, Council's DCP (Clause C3) does not require explicit consideration or development controls for commercial or industrial development in relation to climate change. Nonetheless, when (or if) the DCP is updated to reflect the position of Council on climate change, then subsequent development could readily comply via traditional measures (i.e. additional freeboard, flood-proofing etc).

The third concern from Council appears to relate to the need to ensure that a development will not result in increased requirement for government spending on flood mitigation measures, infrastructure, or services. As stated previously in this report, this is already a requirement of the Section 9.1 Directions and there is no evidence to demonstrate that the Planning Proposal will result in increased requirement for government spending on flood mitigation measures, infrastructure, or services.

The final concern from Council appears to relate to Clause 5.21 and Clause 5.22 in the Penrith LEP. It is noted that Clause 5.22 is not adopted the Penrith LEP. Without knowing what the actual Council concern is, DPIE have responded to that concern noting that *developments proposed on land located within the FPA need to ensure that flood risk is addressed for the full range of flood events, as outlined in the Floodplain Development Manual 2005*.

We agree with this repose, and again note that this refers to DA's assessed under Clause 5.21 of the LEP on their merits. The current application before Council is a Planning Proposal. Nonetheless, if the Planning Proposal were to be approved as proposed, this would mean that the area rezoned to industrial is entirely flood free in the 1% AEP design flood. Under the provisions of Council's LEP (Clause 5.21) and DCP (Clause C3) it is not possible for land of such high flood immunity to be incompatible with those clauses. There is no ongoing concern over the suitability of future development on the land, as it relates to Council's LEP (Clause 5.21) and DCP (Clause C3).

6. CONCLUSIONS AND RECOMMENDATIONS

Based on the information contained within this report, it can be concluded that:

- The subject site is located in Emu Plains and is affected by mainstream regional flooding of the Nepean River in a 1% AEP design flood.
- Penrith City Council adopted catchment-wide flood studies quantifying pre-development design flood behaviour at the site, being:
    - Regional Flooding – Nepean River Flood Study (2018)
    - Local Catchment Flooding - Emu Plains Overland Flow Flood Study (2020)
- A detailed 2D TUFLOW model has been prepared for the subject site and surrounds. The model was run for the 1% AEP design flood event and replicates the design flood behaviour published in Council's Nepean River Flood Study (2018).
- The proposed development, specifically the cut and fill, was modelled as the 'post-development' scenario and the impact of the development was quantified by the hydraulic model.
- Flood behaviour for a range of design floods has been considered for the subject site and surrounds, from the 20 year ARI design flood up to and including the probable Maximum Flood.
- The flood-related impacts of the cut and fill earthworks has been quantified by the hydraulic model, and assessed meritoriously in this report against the requirements of Penrith City Council's DCP (2014) Part C3. There are no unacceptable impacts resulting from the earthworks, noting that the cut and fill is not necessarily approved as part of the Planning Proposal and will (at some point) require further approvals.
- The proposal meets the requirements of the NSW Governments Section 9.1 Direction Clause 4.3. Where the proposal is considered inconsistent with this Direction, as per Clause 9 of the Section 9.1 Direction these inconsistencies are supported by this Floodplain Risk Management Plan.
- The requirements of the NSW Government's Floodplain Development Manual (2005) have been considered. There are no specific additional requirements stemming from the application of the Floodplain Development Manual, as the S9.1 Directions are consistent with the Floodplain Development Manual.

Based on the information contained within this report, it is recommended this report is included in the submission to PCC for the proposed development.

Prepared by:

Anthony Barthelmess
Dip. Eng, MEng. MIEAust CPEng RPEQ NER
Registered Professional Engineer (Civil) and Design Practitioner (NSW)
Managing Director

7. REFERENCES AND BIBLIOGRAPHY

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BMT WBM, 2020. *Emu Plains Overland Flow Flood Study*. Report prepared for Penrith City Council.

Chow, V.T. (1959). *Open Channel Hydraulics*. McGraw Hill: New York.

Hicks D & Mason P (1991) *Roughness Characteristics of New Zealand Rivers*, Water Resources Survey DSIR Marine and Freshwater, Kilbirnie Wellington, New Zealand.

Abbreviations

	Abbreviation Description
AEP	Annual Exceedance Probability; The probability of a rainfall or flood event of given magnitude being equalled or exceeded in any one year.
AHD	Australian Height Datum: National reference datum for level
ALS	Air-borne Laser Scanning; aerial survey technique used for definition of ground height
ARI	Average Recurrence Interval; The expected or average interval of time between exceedances of a rainfall or flood event of given magnitude.
AR&R	Australian Rainfall and Runoff; National Code of Practice for Drainage published by Institution of Engineers, Australia, 1987.
EDS	Embedded Design Storm; synthesised design storm involving embedment of an AR&R design burst within a second design burst of much longer duration
FPDM	Floodplain Development Manual; Guidelines for Development in Floodplains published by N.S.W. State Government, 2005.
FSL	Flood Surface Level;
GIS	Geographic Information Systems; A system of software and procedures designed to support management, manipulation, analysis and display of spatially referenced data.
IFD	Intensity-Frequency-Duration; parameters describing rainfall at a particular location.
ISG	Integrated Survey Grid; ISG: The rectangular co-ordinate system designed for integrated surveys in New South Wales. A Transverse Mercator projection with zones 2 degrees wide (Now largely replaced by the MGA).
LEP	Local Environment Plan; plan produced by Council defining areas where different development controls apply (e.g. residential vs industrial)
LGA	Local Government Area; political boundary area under management by a given local council. Council jurisdiction broadly involves provision of services such as planning, recreational facilities, maintenance of local road infrastructure and services such as waste disposal.
MGA	Mapping Grid of Australia; This is a standard 6° Universal Transverse Mercator (UTM) projection and is now used by all states and territories across Australia.
MHI	Maximum Height Indicator; measuring equipment used to record flood levels
PMF	Probable Maximum Flood; Flood calculated to be the maximum physically possible.
PMP	Probable Maximum Precipitation; Rainfall calculated to be the maximum physically possible.
RCP	Reinforced Concrete Pipe;
km	Kilometre; (Distance = 1,000m)
m	Metre; (Basic unit of length)
m^2	Square Metre; (Basic unit of area)
ha	Hectare; (Area =10,000 m2)
m^3	Cubic Metre; (Basic unit of volume)
m/s	Metres/Second; (Velocity)
m^3/s	Cubic Metre per Second; (Flowrate)
s	Second; (basic unit of time)
PCC	Penrith City Council; name of the council with jurisdiction over the Penrith LGA

Technical Terms

Term	Description
Alluvium	Material eroded, transported and deposited by streams.
Antecedent	Pre-existing (conditions e.g. wetness of soils).
Catchment	Area draining into a particular creek system, typically bounded by higher ground around its perimeter.
Critical Flow	Water flowing at a Froude No. of one.
Culvert	An enclosed conduit (typically pipe or box) that conveys stormwater below a road or embankment.
Discharge	The flowrate of water.
Escarpment	A cliff or steep slope, of some extent, generally separating two level or gently sloping areas.
Flood	A relatively high stream flow which overtops the stream banks.
Flood storages	Those parts of the floodplain important for the storage of floodwaters during the passage of a flood.
Floodways	Those areas where a significant volume of water flows during floods. They are often aligned with obvious naturally defined channels and are areas which, if partly blocked, would cause a significant redistribution of flow.
Flood Fringes	Those parts of the floodplain left after floodways and flood storages have been abstracted.
Froude No.	A measure of flow instability. Below a value of one, flow is tranquil and smooth, above one flow tends to be rough and undulating (as in rapids).
Geotechnical	Relating to Engineering and the materials of the earth's crust.
Gradient	Slope or rate of fall of land/pipe/stream.
Headwall	Wall constructed around inlet or outlet of a culvert.
Hydraulic	A term given to the study of water flow, as relates to the evaluation of flow depths, levels and velocities.
Hydrodynamic	The variation in water flow, depth, level and velocity with time
Hydrology	A term given to the study of the rainfall and runoff process.
Hydrograph	A graph of flood flow against time.
Hyetograph	A graph of rainfall intensity against time.
Isohyets	Lines joining points of equal rainfall on a plan.
Manning's n	A measure of channel or pipe roughness.
Orographic	Pertaining to changes in relief, mountains.
Orthophoto	Aerial photograph with contours, boundaries or grids added.
Pluviograph	An instrument which continuously records rain collected
Runoff	Water running off a catchment during a storm.
Scour	Rapid erosion of soil in the banks or bed of a creek, typically occurring in areas of high flow velocities and turbulence.
Siltation	The filling or raising up of the bed of a watercourse or channel by deposited silt.
Stratigraphy	The sequence of deposition of soils/rocks in layers.
Surcharge	Flow unable to enter a culvert or exiting from a pit as a result of inadequate capacity or overload.
Topography	The natural surface features of a region.
Urbanisation	The change in land usage from a natural to developed state.
Watercourse	A small stream or creek.

APPENDIX A – SITE SURVEY

Figure A1.1: ALS Survey Levels at Subject Site

APPENDIX B – DETAILED MODEL RESULTS

APPENDIX B1 – 1% AEP MODEL RESULTS – PRE-DEVELOPMENT

Figure B1.1: 1% AEP Flood Levels – Pre-Development

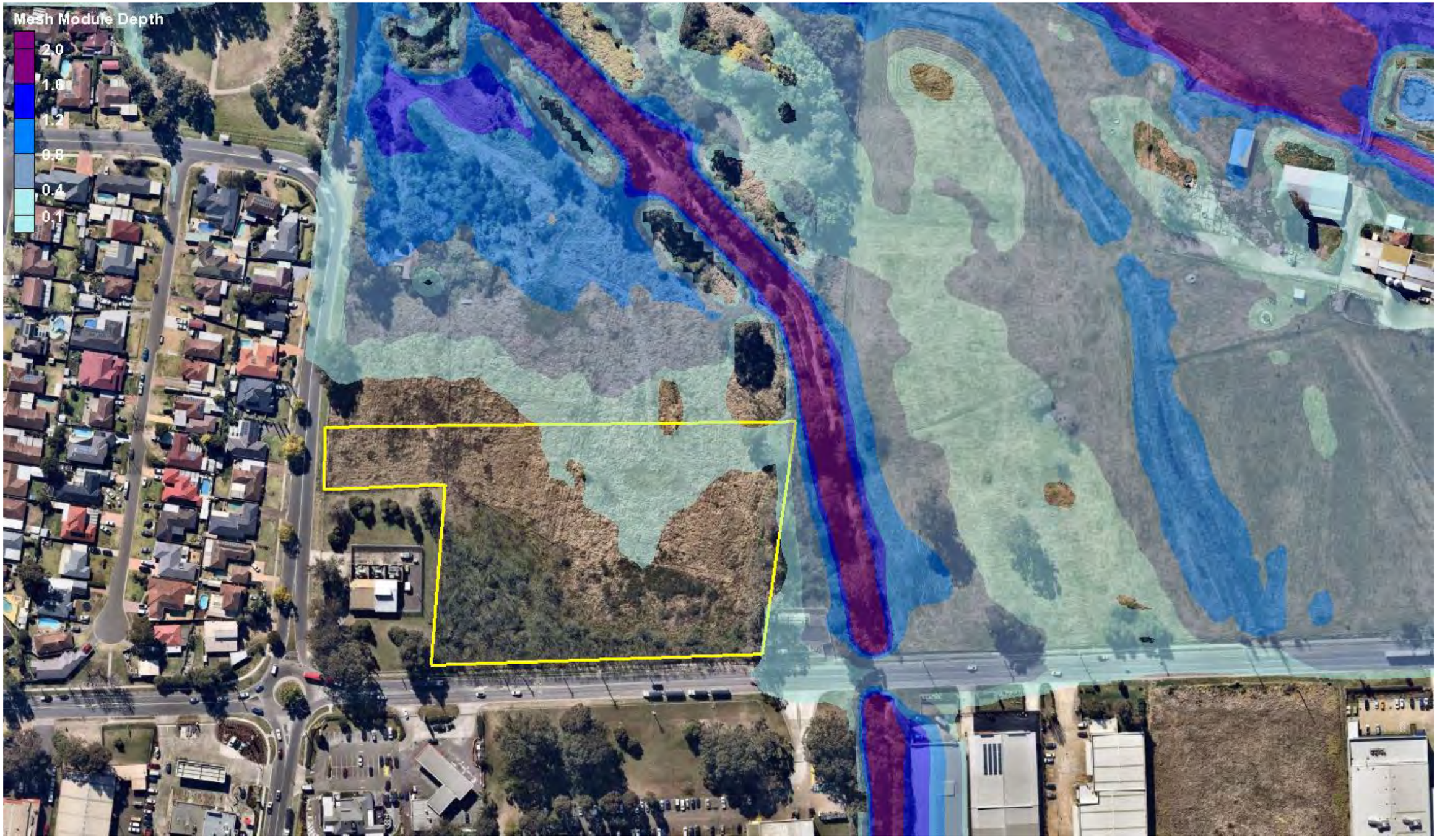


Figure B1.2: 1% AEP Flood Depths – Pre-Development

Note: Flood depths shaded from 0.1m (light blue) to 2.0m (dark blue). All depths over 2.0m shaded dark blue.

Figure B1.3: 1% AEP Flood Velocity – Pre-Development

Note: Flood velocity shaded from 0 m/s (yellow) to 1.0 m/s (orange). All velocity over 1.0 m/s shaded orange.

APPENDIX B2 – 1% AEP MODEL RESULTS – POST-DEVELOPMENT

Figure B2.1: 1% AEP Flood Levels – Post-Development

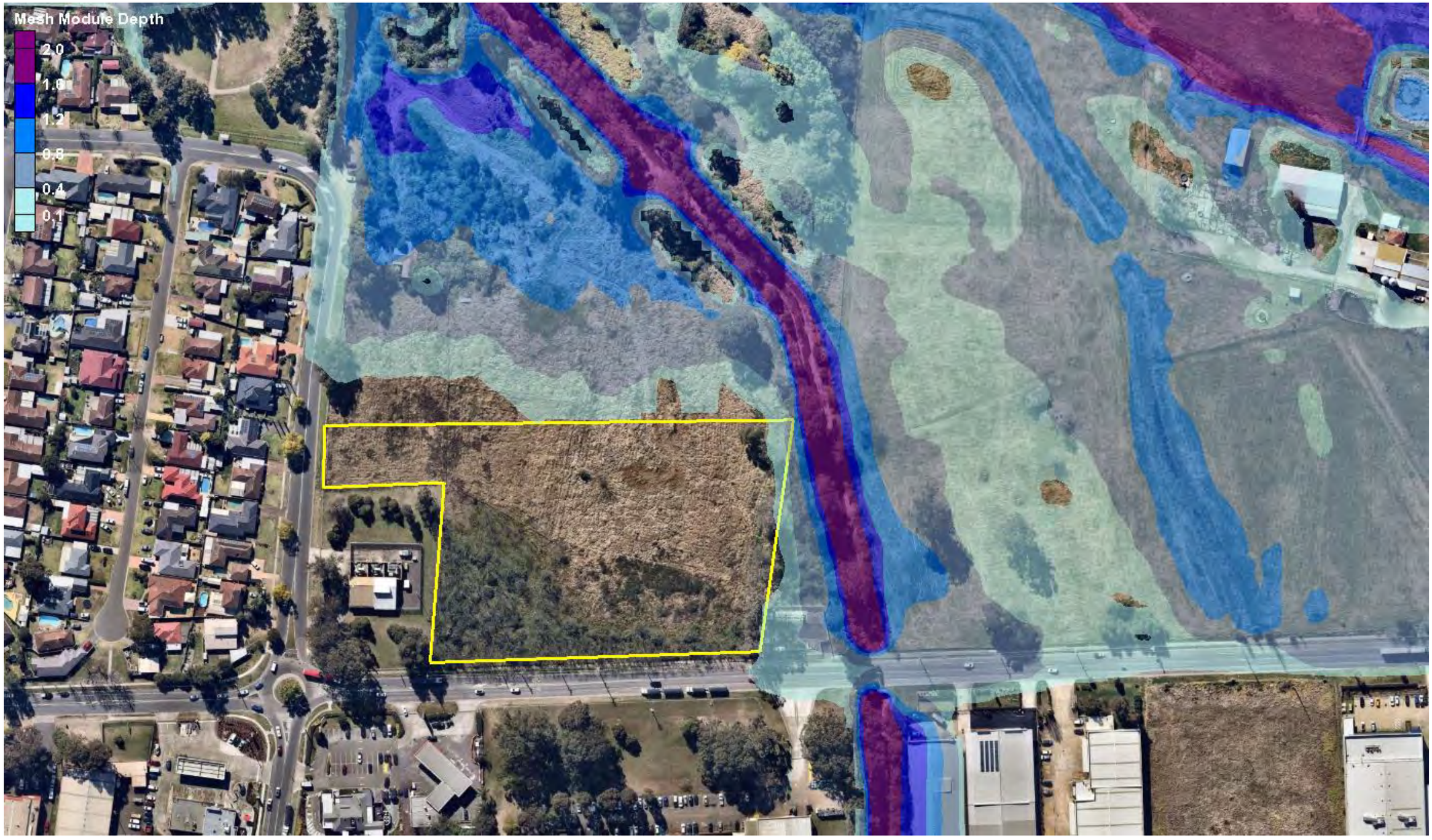


Figure B2.2: 1% AEP Flood Depths – Post-Development

Note: Flood depths shaded from 0.1m (light blue) to 2.0m (dark blue). All depths over 2.0m shaded dark blue.

Figure B2.3: 1% AEP Flood Velocity – Post-Development

Note: Flood velocity shaded from 0 m/s (yellow) to 1.0 m/s (orange). All velocity over 1.0 m/s shaded orange.

APPENDIX B3 – IMPACT MAP

Figure B3.1: 1% AEP Development Related Impacts to Peak Flood Surface Levels under Post-Development Conditions

APPENDIX 9
Servicing Review

NORTH WESTERN SURVEYS
LAND DEVELOPMENT CONSULTANTS

Date: 19th July 2021
Our Ref: 18326

Bernard Le Boursicot
B & G Trading Pty Ltd
Level 2. 123 Clarence Street
SYDNEY, NSW 2001

SERVICES AVAILABILITY

RE: Corner Old Bathurst Road and Russell Street Emu Plains, Lot 1 DP1273251

As per your instruction we have undertaken a desktop assessment of the availability of services for a proposed 6 lot industrial subdivision at the abovementioned site. After performing a Dial Before You Dig search and making applications with various service authorities we report as follows:

1. Electricity – Endeavour Energy
   An application for electricity supply to service the development was made to Endeavour Energy on 24/06/2021 with application number being UIS0959.
   A supply offer was issued by Endeavour Energy dated 8th July 2021 valid for 3 months. This supply offer indicates Endeavour Energy anticipates supply availability. Visual site inspection and DBYD search indicates electricity is available in the vicinity. To find out just what will be involved and what costs are likely to be incurred you must engage the services of a Level 3 ASP Accredited designer to undertake some design work and come up with a method of supply.

2. Sewer and Water -Sydney Water
   A Feasibility application was made to Sydney Water on 22nd June 2021 with Case No. 192459 inquiring about the availability of sewer and water for the proposal. Sydney water responded with a feasibility letter dated 28/06/2021.

   Water supply is available via a 300mm water main in Old Bathurst Road and also a 250mm water main in Russell Street. Water main extension may be required.

   Sewer is available however Sydney Water have only indicated that you would need to build a sewer main extension. Our engineers have made an initial inquiry and have suggested that part of the site could gravity drain to a DN225 main in Old Bathurst Road and the remainder of the site to another DN525 main which exists in Russell Street.

NORTH WESTERN SURVEYS ABN 60 003 336 829
OFFICE Unit 1, 11 Romford Road, Kings Park NSW 2148 POSTAL PO Box 1045, Blacktown NSW 2148
PHONE (02) 9831 2040 EMAIL nws@nwsurveys.com.au WEBSITE www.nwsurveys.com.au

3. Telecommunications - NBN
   An application was made to NBN Co on 24/06/2021 with application number STG-W000194300. In the process of making the online application it was necessary to check NBN availability before proceeding with the remainder of the application so it is assumed NBN is available for the development.
   DBYD search indicates underground telecommunication lines are available in both Russell Street and Old Bathurst Road. We still await correspondence from NBN at the time of writing.

4. Gas – Jemena
   Application for gas supply was made with Jemena on 24/06/2021. Jemena responded via email on 24/06/2021 indicating that gas supply was unfortunately not viable at this time. The nearest main is approx. 100m away and DBYD search indicates that a main exists in Russell Street however extension of the main is very costly in built up areas.

Availability does not mean that direct connection is available with regards to any particular service as extensions may need to be designed and constructed. We advise that pot holing and physical location and investigation of services prior to design is recommended as this will reveal any possible service clashes and reveal any possible costly service adjustments.

As part of this investigation we are providing an online link to all the service authority correspondence and DBYD searches we have obtained. We have also prepared and provided you with a compiled underground services plan that indicates the known services in existence at the time of writing. It is by no means comprehensive and as indicated earlier location of all services will need to be confirmed by pot holing. Special mention must be made of the existence of electricity zone substation and gas high pressure regulating station both adjoining the subject site. The high-pressure gas main is indicated on DBYD search in Old Bathurst Road fronting the subject site. Any works on Old Bathurst Road will need to consider this situation and any adjustment of this particular service, if required, may not be economically feasible.

Yours faithfully,

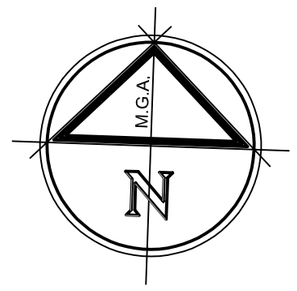
George Stojanovski
Registered Land Surveyor

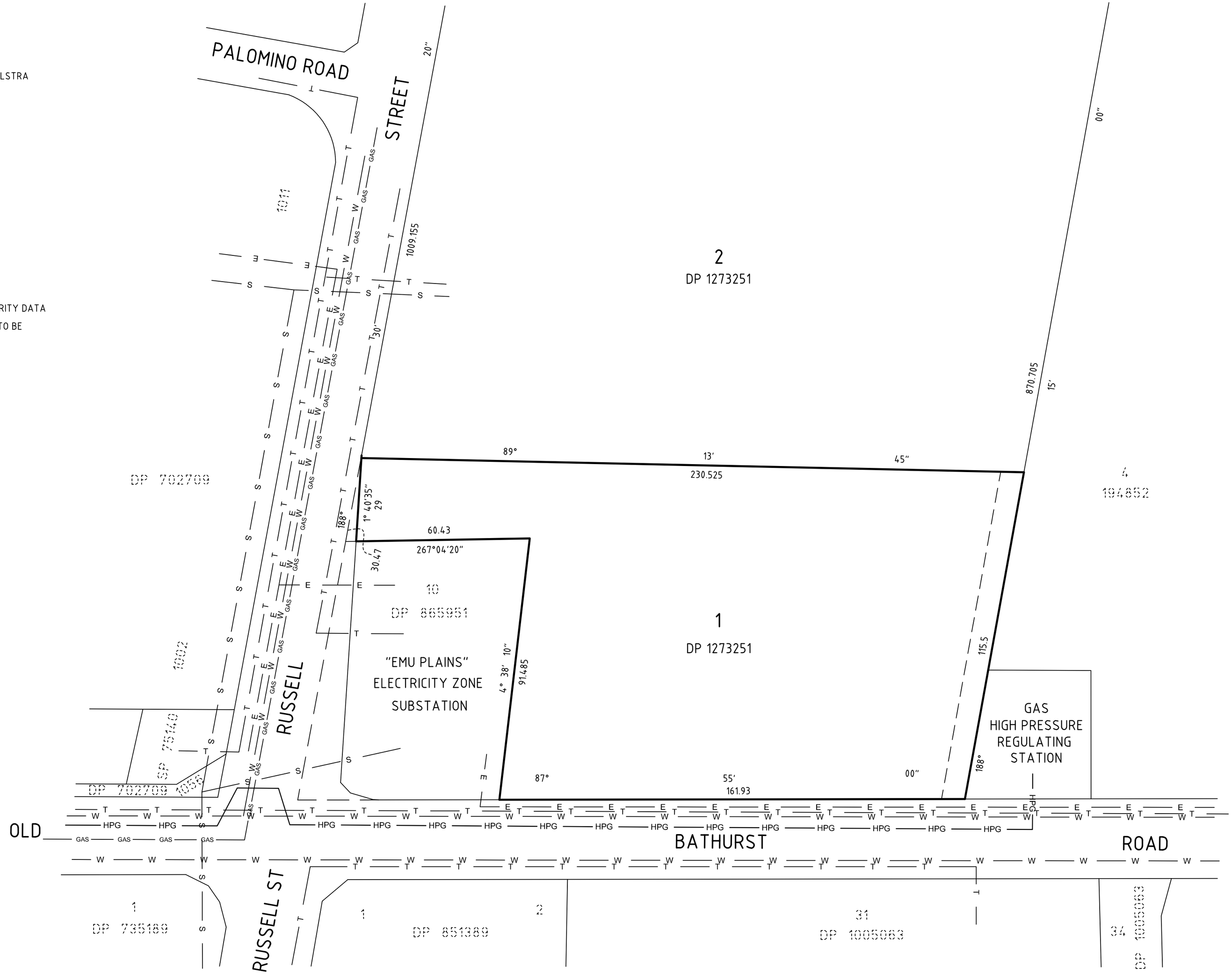
NOTES:

T	TELECOMMUMICATIONS NBN OR TELSTRA
W	WATER MAIN
E	ELECTRICITY UNDERGROUND
GAS	GAS MAIN
HPG	HIGH PRESSURE GAS MAIN
S	SEWER

NOTES:

- THIS PLAN IS COMPILED FROM D.B.Y.D AND SERVICES AUTHORITY DATA
- LOCATION OF SERVICES IS APPROXIMATE ONLY AND NEEDS TO BE INVESTIGATED BY POTHOLING FOR PHYSICAL LOCATION





PLAN REV.	DESCRIPTION	DATE
00	ORIGINAL ISSUE	-

SITE
AT CNR OF RUSSELL ST & OLD BATHURST RD
EMU PLAINS,
L.G.A PENRITH

NORTH WESTERN SURVEYS
LAND DEVELOPMENT CONSULTANTS
+ SURVEYING
CIVIL ENGINEERING
PROJECT MANAGEMENT
SUPERINTENDENCY
WATER SERVICING COORDINATION
PHONE (02) 9831 2040 EMAIL nws@nwsurveys.com.au WEBSITE www.nwsurveys.com.au

TITLE
PLAN OF COMPILED EXISTING
UNDERGROUND SERVICES

THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY

SURVEYED: N/A		PROJECT MANAGER: G.S
DRAFTED: N.V	PLAN DATE: 19/07/2021	PLAN 1
SCALE @ A2: 1:1000	PLAN REV: 00	1
GRID/DATUM:		PROJECT REFERENCE: 18326

APPENDIX 10
Drainage Review

1-4 OLD BATHURST ROAD, EMU PLAINS

CONCEPT STORMWATER STRATEGY

PREPARED ON BEHALF OF Urbanco

PROJECT NO. 18326-A

DATE: 22 Jun 2022

+ SURVEYING
CIVIL ENGINEERING
PROJECT MANAGEMENT
SUPERINTENDENCY
WATER SERVICING COORDINATION

www.nwsurveys.com.au

NORTH WESTERN SURVEYS
LAND DEVELOPMENT CONSULTANTS

NORTH WESTERN SURVEYS
LAND DEVELOPMENT CONSULTANTS

ANTHONY J. COTTER
M.I.E.M.S.
Managing Director

JAMES GIBSON
MIEAust CPeng NER
Civil Engineer

REV	DESCRIPTION	AUTHOR	REVIEWER	DATE
A	Concept Storm Water Plan	T.K.	D.G.	22 Jun 2022

TABLE OF CONTENTS

1 INTRODUCTION

North Western Surveys has been commissioned by Urbanco to prepare a concept drainage strategy for the proposed re-zoning of Lot 1 in DP 1273251, 1-4 OLD BATHURST ROAD, EMU PLAINS (LGA Penrith City Council).

The concept proposes a below ground OSD storage system if required when further analysis of the downstream receiving system is undertaken. A WSUD system to achieve councils stormwater quality targets.

1.1 Scope of Work

This report addresses these objectives and controls by providing:

- Concept stormwater plan of the lot set into the existing surrounding details;
- Concept section demonstrating potential discharge to existing receiving system;
- Preliminary OSD storage calculation; and
- Concept WSUD solution;

2 SITE DESCRIPTION

2.1 Existing Property

The subject site is located approximately 2km north of the intersection of Great Western Hwy A44 and the M4 Motorway (see Figure 2.1).

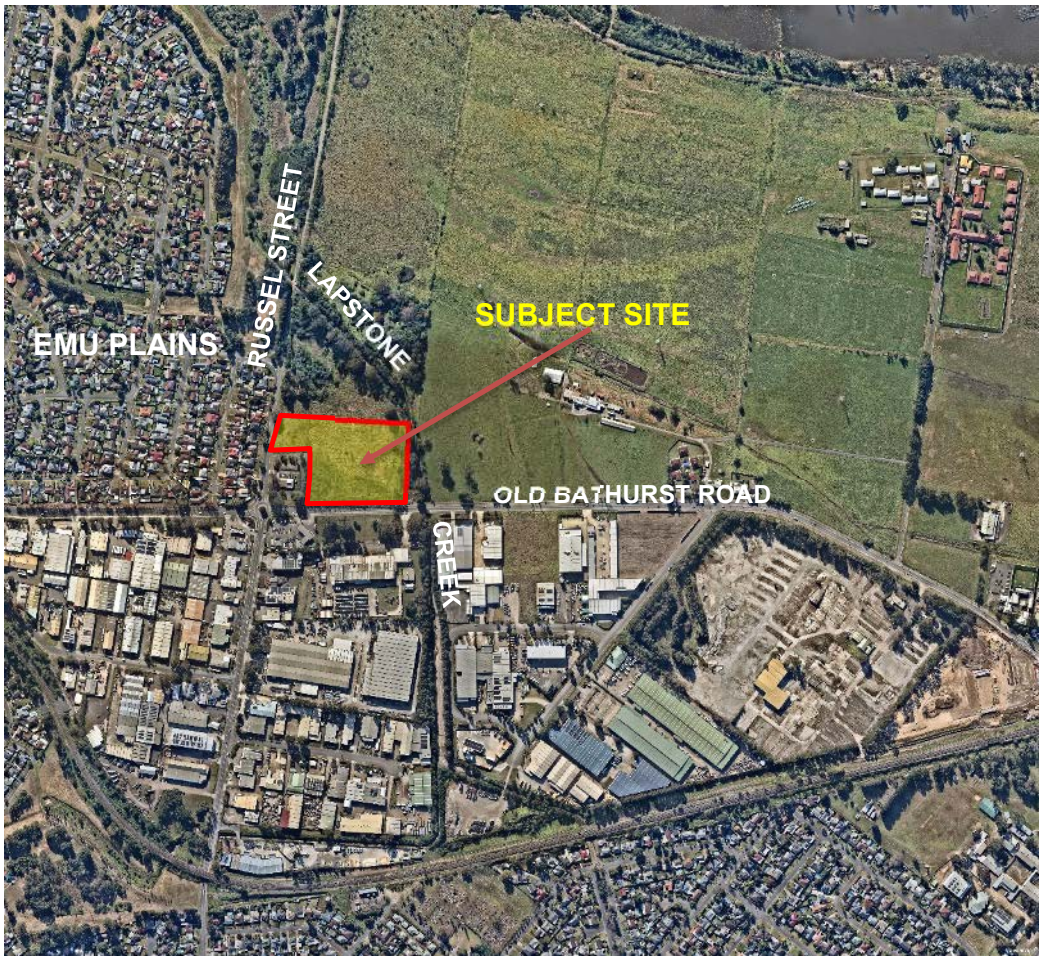


Figure 2.1 - Site Locality Plan

The property is predominantly vegetated with a grassed field in the northern part and dense trees in the southern part. The property is located adjacent to a crest on Old Bathurst Road and generally drains to the north to Lapstone Creek.

3 STORMWATER QUANTITY MANAGEMENT

3.1 General

Any development will produce a change in the land use and therefore result in a general increase in runoff. This is mainly due to an increase in impervious areas such as concrete from new roads and retail/industrial areas as well as roofs and driveways. This net increase will need to be addressed during detailed design and construction in order to adhere to Council guidelines which require the development maintaining the existing "natural" hydrological regime under ultimate catchment development condition or a non-worsening of flows.

Mitigation of this increase is undertaken by the design of a detention tank. The detention will also rely on the drains within the proposed road system to cater for rainfall runoff from the proposed site.

3.2 Catchment Areas

The existing catchment of the subject site is 2.08 hectares. The point of interest (POI) of the catchment, located to the north of the site (see Figure 3.1) will be used to generate maximum runoff ensuring downstream experiences no increase in runoff flows.

We note that upstream catchments bypass the site via existing drainage infrastructure.

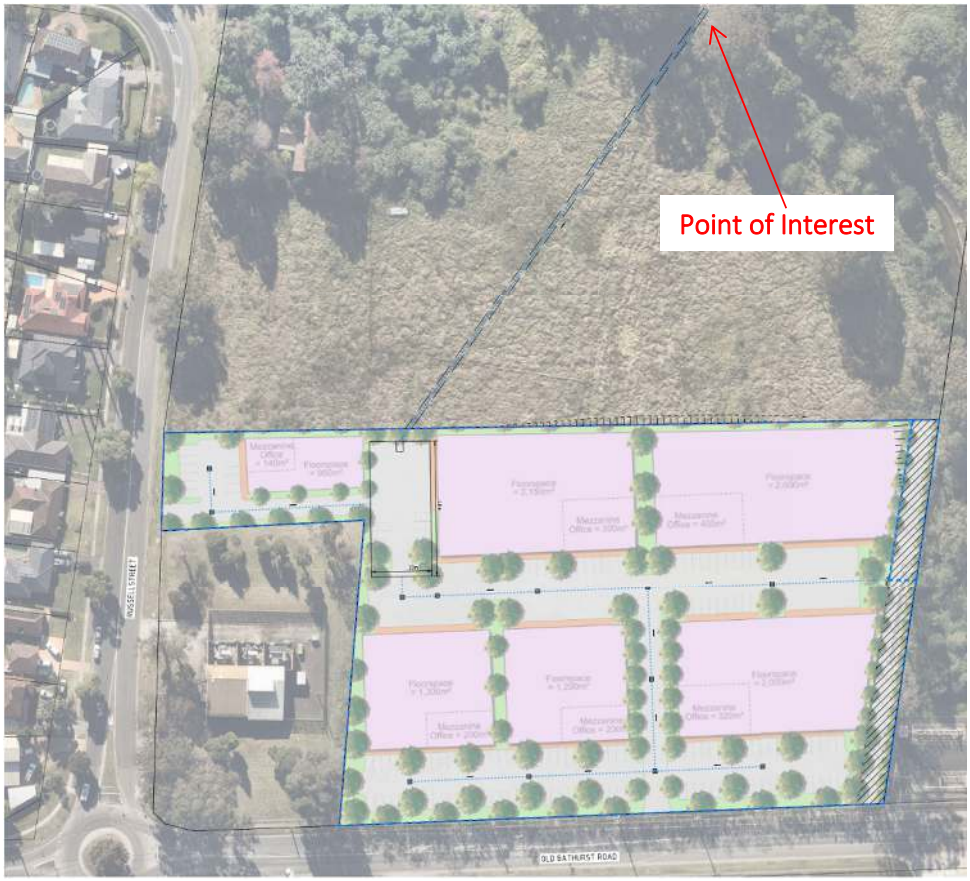


Figure 3.1 - Point of Interest Catchment Area

3.3 Pre and Post Development Hydrology

3.3.1 General

The requirement for the provision of OSD for this development will be based on an assessment of the impact of the proposed development works on the downstream peak flows and flood levels. As part of the concept design of the proposed works, a hydrological anlysis will be undertaken to determine if the post-development run-off flows will have a negative impact downstream.

Given the proximity of the site to the downstream creek and the proposed stormwater will connect directly to the downstream creek, it is expected that the hydroloigcal analysis would demonstrate that the peak flows from the development site would arrive at the discharge location prior to the peak of the main channel flows. In this instance, any post-development runoff from the proposed development may have no negative impact on the downstream peak flows or flood levels in which case OSD would not be required.

In the absence of a detailed hydrological analysis, we have also considered the potential need for OSD in the instance that the post-development flows do have a negative impact on the dowmstream peak flows an flood levels. If OSD is required for the proposed development, the detention system can is to be located at the downstream end of this catchment and willl detain runoff and reduce the post-development peak flows to pre-development levels.

Compliance to Council's Water Sensitive Urban Design (WSUD) and On-site detention (OSD) requirements can be achieved through the provision of a below ground storage tank. Based on Penrith City Council's engineering guidelines, the sizing of OSD storage has been estimated utilising the simplified OSD method (Table 7 and 8 of Penrith City Council's Stormwater Drainage Guidelines for Building Developments). It is estimate that up to 5% of the development site may bypass the OSD system and as such a PSD of 89.5L/s/ha and an SSR of 331m^3/ha would be adopted. Based on the cathment are of 2.08ha, a total of approximately 690m^3 of storage will be required and as shown on the concept stormwater plan provided in Appendix A, this can be provided via an below ground tank approximately 20m x 40m x 0.9m deep.

3.4 Flooding

The site is shown in Council's documents to be within a flood-affected area. Flood affects will be mitigated by filling the site areas affected to above the 1% AEP local flood level and restoring an equal amount of flood storage removed. All buildings will have adequet freeboard as per council specifications.

4 STORMWATER QUALITY MANAGEMENT

4.1 Construction Phase

During the construction, and until site stabilization has been achieved, all measures shall be in accordance with Managing Urban Stormwater, Soils and Construction ('The Blue Book').

These measures include, but not limited to;

- Sediment fencing downslope of any construction and around stockpiles with no length of the exposed area being greater than 80 meters,
- Providing a temporary sediment basin until site stabilization is achieved,
- Site access points to be fitted with shakedown pads or similar,
- Areas to the site not disturbed to be cordoned off using parawebbing or similar,
- Drainage outlets to be fitted with temporary sediment fencing,
- Diversion mounds to divert clean runoff around the proposed disturbed areas,
- Upon completion of each work area within the site, exposed areas to be stabilized with measures suitable to the season, and
- Dust control measures during construction including reuse of sediment basin water on areas marked for stabilization.

4.2 Proposed Stormwater Quality Measures

The proposed system has been developed by incorporating a combination of rainwater tanks, litter baskets, bio-filtration and mechanical filteration. The proposed system has been developed to achieve Council's pollutant reduction targets by treating captured runoff prior to discharge to receiving system.

4.2.1 Rainwater Tanks

Rainwater re-use tanks will be installed to capture roof run-off, retain a significant proportion of rainfall falling on roof areas and will be connected to provide for toilet flushing and outdoor irrigation. Daily usage demand for re-use will be incorporated in the detailed moelling of the WSUD treatment train.

4.2.2 Litter Basket Pit Inserts

Litter basket pit inserts are provided as pre-treatment removing litter, debris and other pollutants. These pit insets, such as an OceanGuard (Ocean Protect) units can be provided in the inlet pits within the carpark and landscaping areas as appropriate.

4.2.3 Mechanical Filtration

Mechanical filtration is provided as tertiary treatment to capture nutrients and suspended solids. Filter cartridges such as Stormfilter (OceanProtexct) unitscan be installed within the below ground OSD tank or within a standalone tank.

5 CONCLUSION AND RECOMMENDATIONS

This report has been prepared in support of the re-zoning application at Lot 1 in DP 1273251, 1-4 OLD BATHURST ROAD, EMU PLAINS on behalf of our client Urbanco. The concept strategy outlines the required stormwater management measures for the subject lot.

Below ground OSD storage (if required) and water quality treatment systems will be implemented in accordance with councils water management guidelines.

The existing watercourse downstream of the site will not experience an increase in flows and the runoff is treated to industry standard with regards to water quality.

6 REFERENCES

Engineers Australia (1987), *Australian Rainfall and Runoff*, Volumes 1 & 2

Landcom (now UrbanGrowth NSW) (2004), *Managing Urban Stormwater, Soils and Construction ('The Blue Book')*, Volume 1, 4th Edition, March 2004

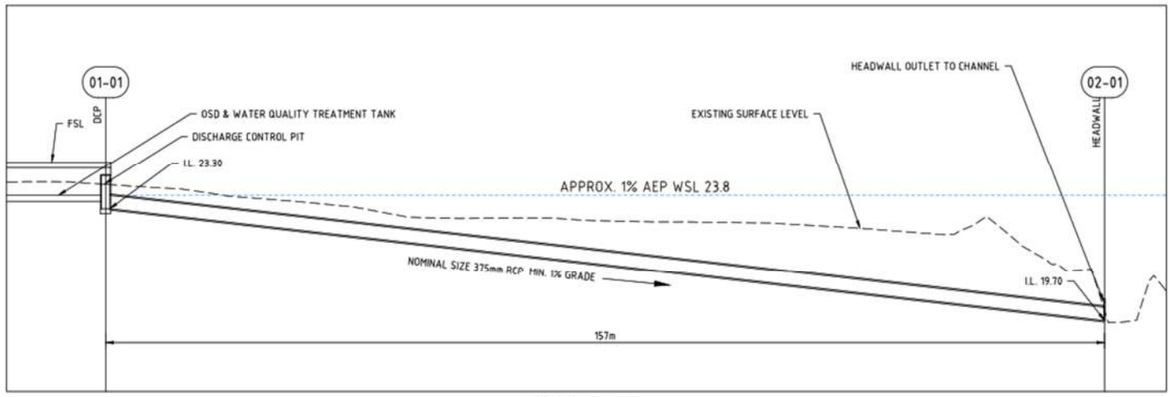
Penrith City Council (2014), *Penrith Development Control Plan 2014*

Penrith City Council (2016), *Stormwater Drainage Guidelines for Building Developments*

Penrith City Council (2013), *Design Guidelines for Engineering Works for Subdivisions and Developments*

Penrith City Council (2013), *Water Sensitive Urban Design (WSUD) Policy 2013*

Appendix A – Concept Stormwater Strategy



SECTION A
N.T.S.

LEGEND

INLET PITS

STORM WATER PIPE

PLAN REV.	DESCRIPTION	DATE	DESIGN	DRAFT	DESIGN CHECK	DRAFT CHECK
-	FOR INFORMATION ONLY	22/06/2022	T.K.	T.K.	-	-

HORIZONTAL SCALE (@A1): 1:500
0 5 10 15 20 25 30 35 40 45 50
SCALE 1:500 (A1) SCALE 1:1000 (A3)
VERTICAL SCALE (@A1): -

CLIENT/ PROJECT
-
-

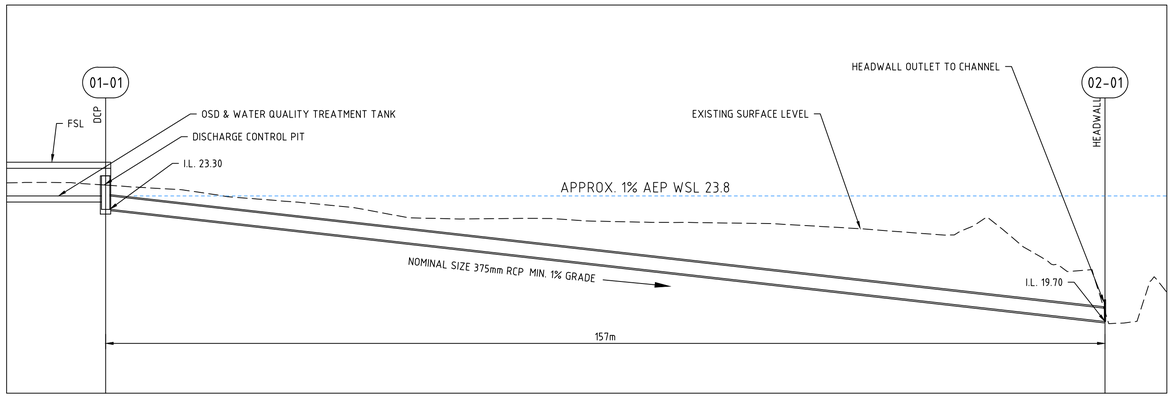
SITE
LOT 1
DP 1273251
1-4 OLD BATHURST ROAD
EMU PLAINS
L.G.A. PENRITH CITY COUNCIL

NORTH WESTERN SURVEYS
LAND DEVELOPMENT CONSULTANTS
SURVEYING
CIVIL ENGINEERING
PROJECT MANAGEMENT
SUPERINTENDENCY
WATER SERVICING COORDINATION
PHONE (02) 9831 2040 EMAIL nws@nwsurveys.com.au WEBSITE www.nwsurveys.com.au

TITLE
CONCEPT DRAINAGE PLAN

THIS PLAN MUST NOT BE USED FOR CONSTRUCTION UNLESS SIGNED AS APPROVED BY PRINCIPAL CERTIFYING AUTHORITY

PROJECT MANAGER: GEORGE STOJANOVSKI
PLAN DATE: 22/06/2022
PLAN: -
PLAN REV: -
PROJECT REFERENCE: 18326



SECTION A -

N.T.S.

LEGEND

- INLET PITS
- STORM WATER PIPE

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