Proposed Supermarket, Pambula

(Lot 19, 20 DP758825, 35-37 Quondola St & Lot 15, DP1204078 36, Merimbola St)

Flood Assessment

Revision 1
June 2022

Catchment Simulation Solutions

Proposed Supermarket, Pambula

Flood Assessment

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This assessment has been undertaken by the undersigned in accordance with Australian Rainfall and Runoff and the NSW Floodplain Development Manual.

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1 INTRODUCTION

Kel and Jeanette Stolzenhein plan to construct a new supermarket with associated car parking, bottle shop and café on parcels of land at Lot 19 - 20 DP758825 35-37 Quondola St & Lot 15 DP1204078 36 Merimbola St, Pambula. The location of the proposed development sites are shown in **Figure 1**, which is enclosed in **Appendix A**.

The outcomes of computer flood modelling completed as part of the *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (Catchment Simulation Solutions, 2021) shows that there is potential for inundation across the site during significant rainfall in both the local catchment, as well as the wider Pambula River catchment. As a result, Bega Valley Shire Council has requested a site-specific flood assessment in accordance with Chapter 5.8.1 of the Bega Valley Development Control Plan, 2013.

In recognition of this, Kel and Jeanette Stolzenhein engaged Catchment Simulation Solutions to prepare a flood assessment for the proposed works on the site. The assessment aimed to:

- confirm the potential for inundation of the existing property from mainstream and local overland flooding;
- confirm the development controls that would need to be implemented to ensure the flood risk is appropriately managed across the site (in accordance with the Bega Valley Development Control Plan, 2013); and,
- ensure the development does not increase the flood risk across neighbouring properties.

The following report summarises the outcomes of the assessment.

2 PRE-DEVELOPMENT FLOOD BEHAVIOUR

To understand the potential flood liability of the existing site and the impact that the development may have on flood behaviour, it is first necessary to define flood behaviour for 'existing' or 'pre-development' conditions. The *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021) undertook detailed modelling of the catchment under 'existing' conditions and included the development of an XP-RAFTS hydrologic model and a TUFLOW hydraulic model to describe the rainfall-runoff processes, and define flood depths, levels, extents and hazard across the catchment.

2.1 XP-RAFTS Modelling

The *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021) focused on "mainstream" flood behaviour along the Pambula and Yowaka Rivers and their adjoining floodplains. The outcomes of the flood study determined that the 1% AEP critical storm duration for the mainstream river areas was most commonly 720 minutes, and this duration is considered appropriate for defining the potential for inundation of the development site from the Pambula River. However, it was acknowledged that the development site can be potentially impacted by overland flooding from the local catchment. Therefore, the existing XP-RAFTS hydrologic model was refined to provide an improved understanding of local catchment flood behaviour. This included the following changes:

- The ARR219 "point" temporal patters were adopted to allow consideration of storm durations less than 12 hours (instead of the "areal" temporal patterns)
- The areal reduction factor was set to 1 (i.e.,: no areal reduction was applied to reflect the contributing local catchment area being less than 1 km^2)
- Probability neutral burst losses were applied instead of the regional calibrated loss as it provided a more conservative estimate of runoff
- Storm durations of 5 minutes to 540 minutes were considered.

The XP-RAFTS model was then re-run for the 1% AEP event and the results interrogated and determined that the following duration/temporal pattern combinations produced the critical flows at the development site:

- 10-minute duration, temporal pattern 5775
- 15-minute duration, temporal pattern 5804
- 60-minute duration, temporal pattern 5969
- 120-minute duration, temporal pattern 6033

The updated inflow hydrographs produced by the above duration/temporal pattern combinations were then adopted for use within the TUFLOW model to define critical local catchment flood behaviour at the development site.

In addition to the above local catchment events, the 720-minute duration (temporal pattern 6262) was retained to define mainstream flooding behaviour for the Pambula River (as per the flood study).

2.2 TUFLOW Modelling

The TUFLOW hydraulic model that was used as part of the previous flood study was also used as part of the current study to define existing flood behaviour. However, a review of the existing TUFLOW model in the vicinity of the development site was completed to ensure it was fit for purpose for the current assessment. This review resulted in some minor modifications to the model, namely:

- The inclusion of additional culverts under driveways along Merimbola Street adjacent to the development site (including the entry into the development site at 36 Merimbola St) and reconfiguration of roadside swale alignments to suit
- Minor modifications to material (land use) definition within and immediately adjacent to the site to reflect hardstand areas and gravel surfaces
- Inclusion of detailed ground survey of the site collected by Caddey Searl & Jarman Surveyors in July 2020. A copy of the survey data is provided in **Appendix B**.

Plate 1 shows the location of the additional culverts and extent of the survey data included within the model.

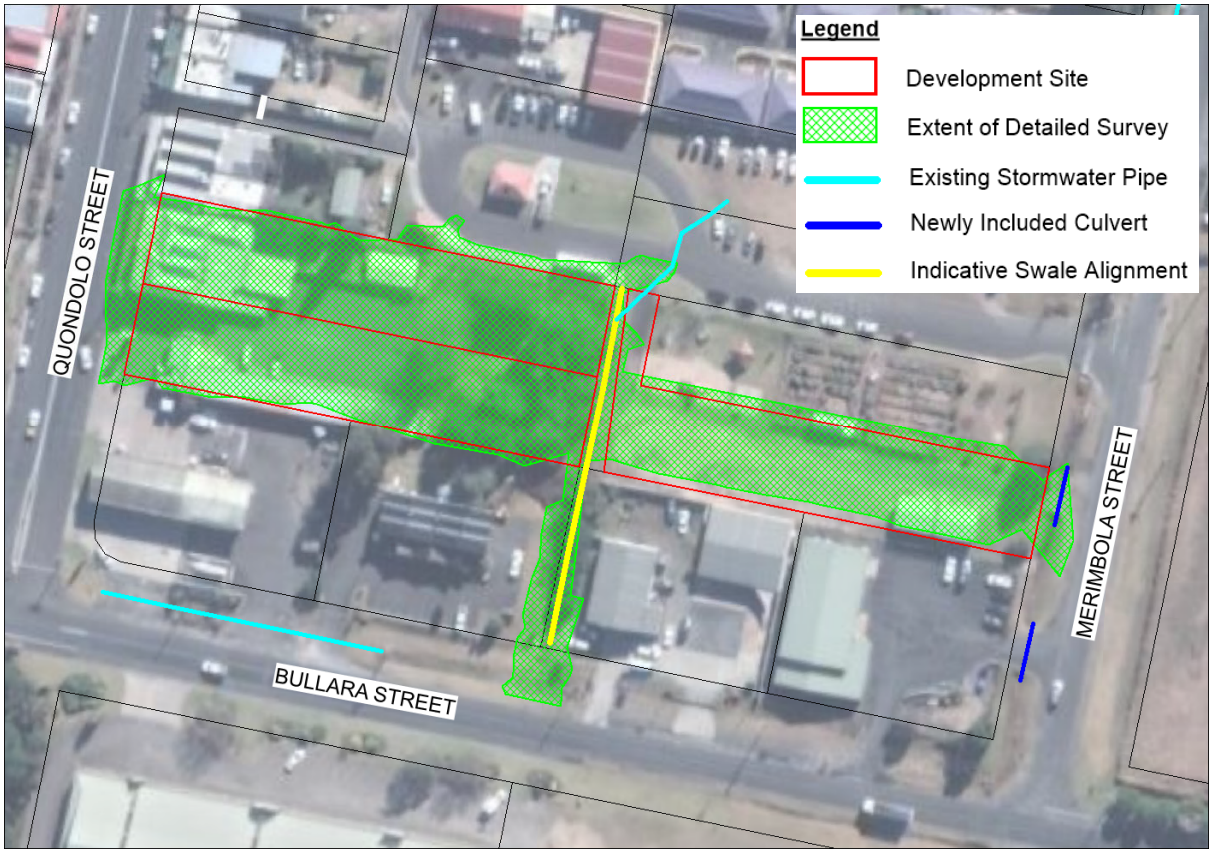

Plate 1 Extent of detailed survey and additional culverts included within the existing conditions TUFLOW model.

2.3 Results

The updated TUFLOW model was used to simulate the 1% AEP flood for existing conditions considering both local catchment and regional (mainstream) flooding. As per the flood study, simulations reflecting 'design blockage' based on Australian Rainfall and Runoff 2019 Blockage Guidelines were undertaken, together with 'no blockage' simulations, with the results enveloped to form the design flood behaviour.

Peak floodwater depths and flood level contours were extracted from the results of the modelling and are presented in **Figure 2** for the local catchment flooding, and **Figure 3** for mainstream flooding. Peak flood levels at points (A through F) within and around the development site were also extracted from the flood modelling results and are presented in **Table 1**. The location of the points is shown on **Figure 2** and **Figure 3**. Peak velocity-depth product (VxD) results were also extracted and are presented in **Figure 4** and **Figure 5** for local and mainstream flooding respectively.

Table 1 Peak Flood Levels at locations within and around the development site under existing conditions

Location	1%AEP Peak Flood Level (mAHD)	
	Local Catchment Flooding	Mainstream Flooding
A	3.18	3.66
B	3.09	3.66
C	3.08	3.66
D	3.08	3.66
E	3.08	3.66
F	2.8	3.66

Figure 2 shows that at the peak of the local catchment 1%AEP flood, inundation is predicted to occur within a Council drainage swale that separates 35-37 Quondola St from 36 Merimbola St. This inundation is predicted to extend into the rear of 35-37 Quondola St. Peak 1% AEP depths across this section of the site are predicted to reach 0.6 metres, however, the depths decrease moving towards the middle of the site. The western half of the lot is predicted to remain "flood free" during the 1% AEP local catchment flood. No inundation of 36 Merimbola St is predicted due to local catchment flooding. A peak 1%AEP flood level of 3.18m AHD is predicted at the northern boundary of the lots, however inundation is more commonly characterised by a level pool with a peak level of 3.08m AHD.

Figure 3 indicates that with mainstream 1%AEP flooding from the Pambula River, water is predicted to inundate the broader Pambula River floodplain (including Bullara Street) and "backup" along the drainage swale and into the rear of 35-37 Quondola St. Depths of up to 1.1 metres are predicted across the rear of the lot. A small area of 36 Merimbola St is also predicted to be inundated (directly adjacent to the drainage swale), however, the majority of the lot remains above the peak 1% AEP flood level. A peak mainstream 1%AEP flood level of 3.66m AHD is predicted and does not vary across the overall site.

Figure 4 and **Figure 5** shows that under both local and mainstream 1%AEP flooding conditions, the existing VxD across the inundated portions of the development sites remains below $0.2m^2/s$. A VxD of this magnitude indicates that flood behaviour across the sites is very benign, with extremely low velocities.

3 Post-Development Flood Behaviour

3.1 Description of the Proposed Development

The proposed development will involve the demolition of the existing Royal Willows Hotel, bottle shop and motel. Two Colourbond sheds will also be demolished.

A new supermarket, café and bottle shop will be constructed within 35-37 Quondola St. Ground level carparking will be provided beneath part of the supermarket, as well as across the rear of 35-37 Quondola St. Culverts will provide access across the Council-owned drainage swale to 36 Merimbola St where additional carparking will be provided. A driveway along the southern side of the supermarket will provide drive-through bottle shop access. Plans of the proposed development are included in **Appendix C**.

3.2 Post-Development Flood Assessment

3.2.1 Model Updates

To assess the potential for the proposed works to impact on existing flood behaviour, the TUFLOW hydraulic model that was used to define 'existing' flood behaviour was updated to include the proposed development and simulate design flood behaviour for 'post-development' conditions. This involved the following model modifications:

- The representation of the existing buildings was removed and replaced with the proposed supermarket footprint. Solid walls beneath the supermarket were represented as complete flow obstructions
- Land use (hydraulic roughness) was altered to reflect areas of carparking and roadways (including the carparking located beneath the supermarket)
- Topography was altered to reflect the design plans included in **Appendix C**. The works will include both cut and fill in similar proportions
- 5 x 1.2mW x 0.9mH culverts were installed beneath the crossing of the Council drainage swale and a 25% blockage factor applied as per Australian Rainfall and Runoff 2019 Blockage Guidelines for the 'design blockage' simulations (and 0% blockage applied for the 'no blockage' simulations
- The culvert under the existing driveway on Merimbola St was extended to reflect the wider entrance into the proposed carpark on 36 Merimbola St

Plate 2 shows the proposed site layout and culvert locations included within the 'post-development' model.

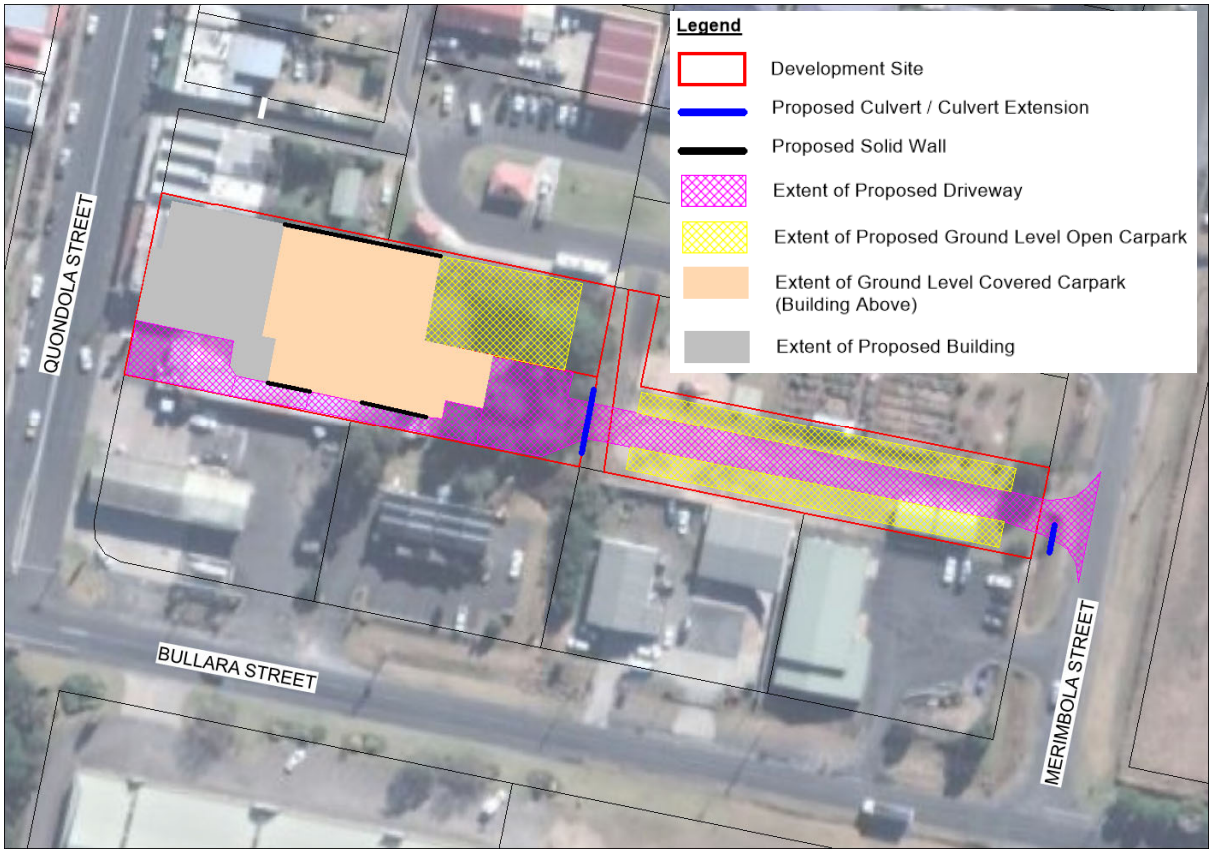

Plate 2 Extent of proposed development in TUFLOW model.

3.2.2 Results

The updated model was used to re-simulate the 1% AEP flood for 'post-development' conditions under both local catchment and mainstream flooding conditions.

Peak floodwater depths and levels were extracted from the results of the modelling and are presented in **Figure 6** for the local catchment flooding, and **Figure 7** for regional (mainstream) flooding. Peak flood levels at points (A through F) within and around the development site for existing and proposed conditions were extracted from the flood modelling results and are presented in **Table 1**. The location of the points is shown on **Figure 6** and **Figure 7**.

Table 2 Peak Flood Levels at locations within and around the development site under existing and proposed conditions

Location	1%AEP Peak Flood Level (mAHD)			
	Existing Conditions		Proposed Conditions	
	Local Catchment Flooding	Mainstream Flooding	Local Catchment Flooding	Mainstream Flooding
A	3.18	3.66	3.20	3.66
B	3.09	3.66	3.10	3.66
C	3.08	3.66	3.09	3.66
D	3.08	3.66	Nil	3.66
E	3.08	3.66	Nil	3.66
F	2.80	3.66	2.81	3.66

Peak velocity-depth product (VxD) results were also extracted and are presented in **Figure 8** and **Figure 9** for local and mainstream flooding respectively.

Figure 6 shows that with the proposed development in place, peak 1%AEP flood depths for local catchment flooding conditions are restricted to the Council drainage swale, with depths of over 0.5 metres. The proposed terrain changes associated with the development is predicted to result in no inundation across proposed carparking areas or roadways. The peak flood level at the north of the site is predicted to reach 3.20m AHD, dropping to 3.09m AHD at the upstream face of the culverts beneath the driveway.

Figure 7 indicates that with mainstream 1%AEP flooding, flood depths of up to 1.1 metres are concentrated within the Council drainage swale. A peak level of 3.66m AHD is predicted within the swale. Minor inundation of the carparking and roadway areas within 35-37 Quondola St are predicted with maximum depths of less than 0.1 metres.

Figure 8 and **Figure 9** indicate that under both local and mainstream 1%AEP flooding conditions, the post-development VxD across the inundated portions of the development sites remain below 0.2m^2/s.

Flood Impact Assessment

The changes to site topography, inclusion of the culverts and driveway crossing, and new building on the site has the potential to impact on existing 1% AEP flood behaviour in the vicinity of the site under both local and mainstream flooding conditions. To quantify this impact, flood level and velocity-depth product (VxD) difference mapping was prepared. The difference mapping was prepared by subtracting peak 'existing' water levels and velocity-depth product results from 'post-development' water levels and velocity-depth product results. The flood level difference maps for the 1% AEP event for local and mainstream flooding conditions is provided in **Figure 10** and **Figure 11** respectively, and the velocity-depth product difference maps are provided in **Figure 12** and **Figure 13**.

The results presented on **Figure 10** indicate that the proposed works are not predicted to produce any significant impact on existing flood levels outside of the development site under local flood conditions. The most significant change is within the site, where the area upstream of the new culverts/driveway crossing of the Council drainage swale is predicted to experience flood level increases of 0.02 metres. Some increases of up to 0.12 metres are predicted outside of the site at the driveway crossover of the carpark to Merimbola St, however, these increases are localised to the immediate vicinity of the driveway and are a result of the altered terrain as the driveway transitions to the level of Merimbola St. These increases do not impact any private property or the trafficable roadway surface and produce small flood level reductions of up to 0.04 metres on the downstream side of the crossover. **Figure 10** also indicates that the carparking area at the rear of 35-37 Quondola St is predicted to become flood free during a local 1%AEP flood event as a result of the proposed earthworks.

Figure 11 shows that with mainstream flooding, no flood level increases are predicted outside of the development site, however, the ground level carparking area is shown to become newly inundated as a result of the earthworks (cut) undertaken to form a level surface (however, as previously discussed, these depths are < 0.1m).

The VxD differences shown on **Figure 12** for the local 1%AEP flood event indicates that only a very minor increase in VxD of 0.1m^2/s is predicted immediately upstream of the driveway crossover onto Merimbola Street and does not extend onto the roadway surface or adjacent private properties.

Figure 13 indicates that in the mainstream 1%AEP flood event, the VxD is predicted to increases by up to 0.3m^2/s along the southern boundary of the development site, along what will be a driveway. These increases are primarily a result of velocity increases due to the altered land use from scattered trees/vegetation to a smooth driveway surface. It is noted that the increases shown on **Figure 13** appear to cross the southern lot boundary, however, as the model is utilising a 4 metre grid size, it is unable to reliably define sub-4m size flood behaviour. As the material/ground surface changes are restricted to the development site, it is considered that the VxD impacts would also be contained to the development site.

Overall, the proposed development is not predicted to produce any significant increases in 1% AEP flood level or velocity-depth product across private property or roadways, under both local and mainstream flooding conditions.

4 SENSITIVITY SIMULATIONS

4.1 Cumulative Impact Assessment

As part of the current assessment, it was considered appropriate to assess the cumulative impacts that similar developments in the area may have on local flood behaviour (noting that individual developments may not have a significant impact in isolation, but may translate to a significant impact when considered together). The *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021) undertook a cumulative development (future catchment conditions) assessment for the entire catchment. This included a representation of intensified development in all residential and industrial zones of the catchment. However, as this assessment assumed full development to the extent possible under the existing LEP zoning, it was not considered to provide a good representation of similar developments to that proposed within the current assessment.

Therefore, a new cumulative impact assessment was undertaken using the following methodology:

- Any inundated lots within 1 surrounding block to the proposed development that were significantly or completely undeveloped were identified,
- Fill to 3.6mAHD was applied to these lots across an area of roughly 40% of the total lot area (reflecting a similar proportion of fill to the current development)
- Fill was applied starting from the least impacted area of each lot (based on the mainstream flooding extents) and extended into the more highly impacted sections of the lot until the relevant proportion of fill was applied
- The land use of the filled portion was designated as impervious roadway/carparking area.

The resulting fill extents are shown on **Plate 3**. These fill extents were applied to the "post-development" TUFLOW model discussed in chapter 3 to reflect the cumulative development scenario.

The updated TUFLOW model was used to simulate the 1% AEP flood event for cumulative development conditions under both local catchment and mainstream flooding. Flood level differences were then calculated by subtracting peak 'existing' water levels and velocity-depth product from 'cumulative development' water levels and velocity-depth product. The flood level differences for the 1% AEP event for local and mainstream flooding conditions is provided on **Plate 4** and **Plate 5** respectively, and the velocity-depth product difference maps are provided in **Plate 6** and **Plate 7**.

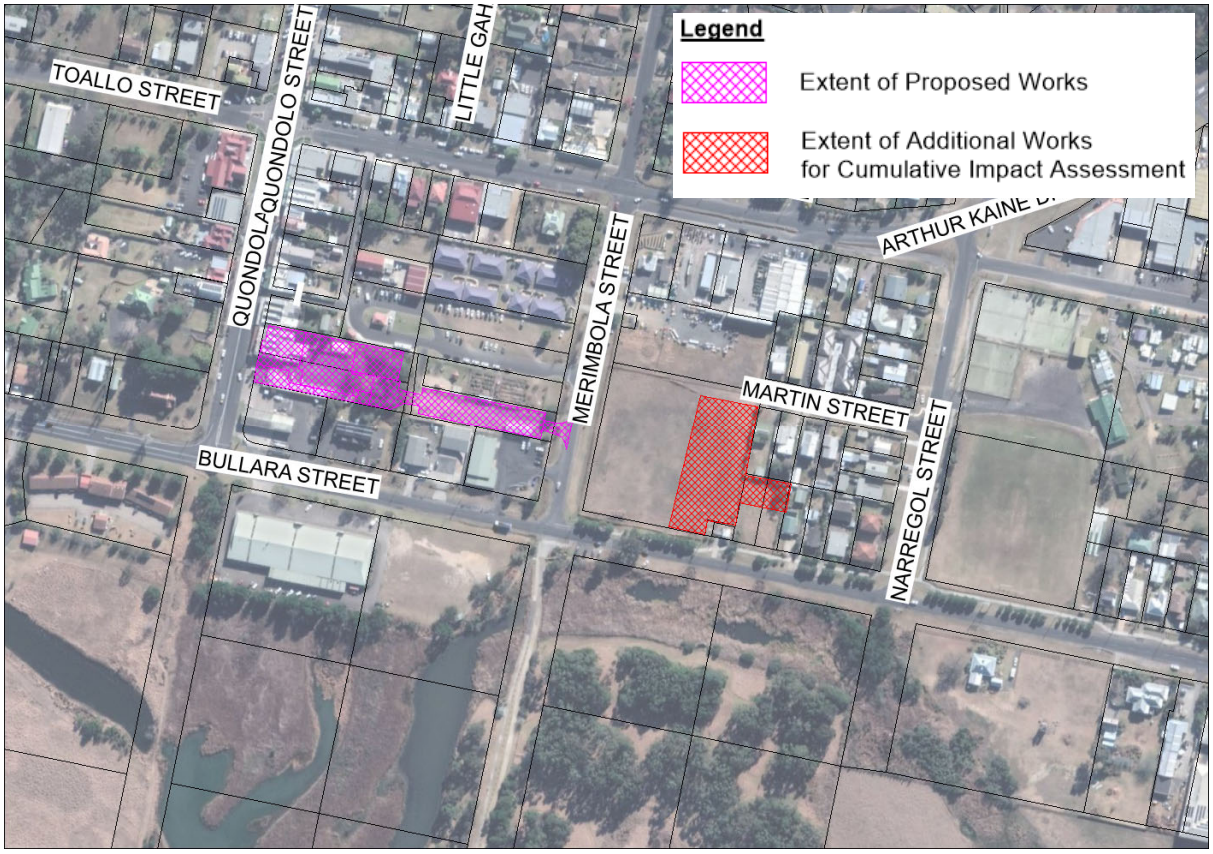

Plate 3 Additional fill areas considered as part of the cumulative impact assessment.

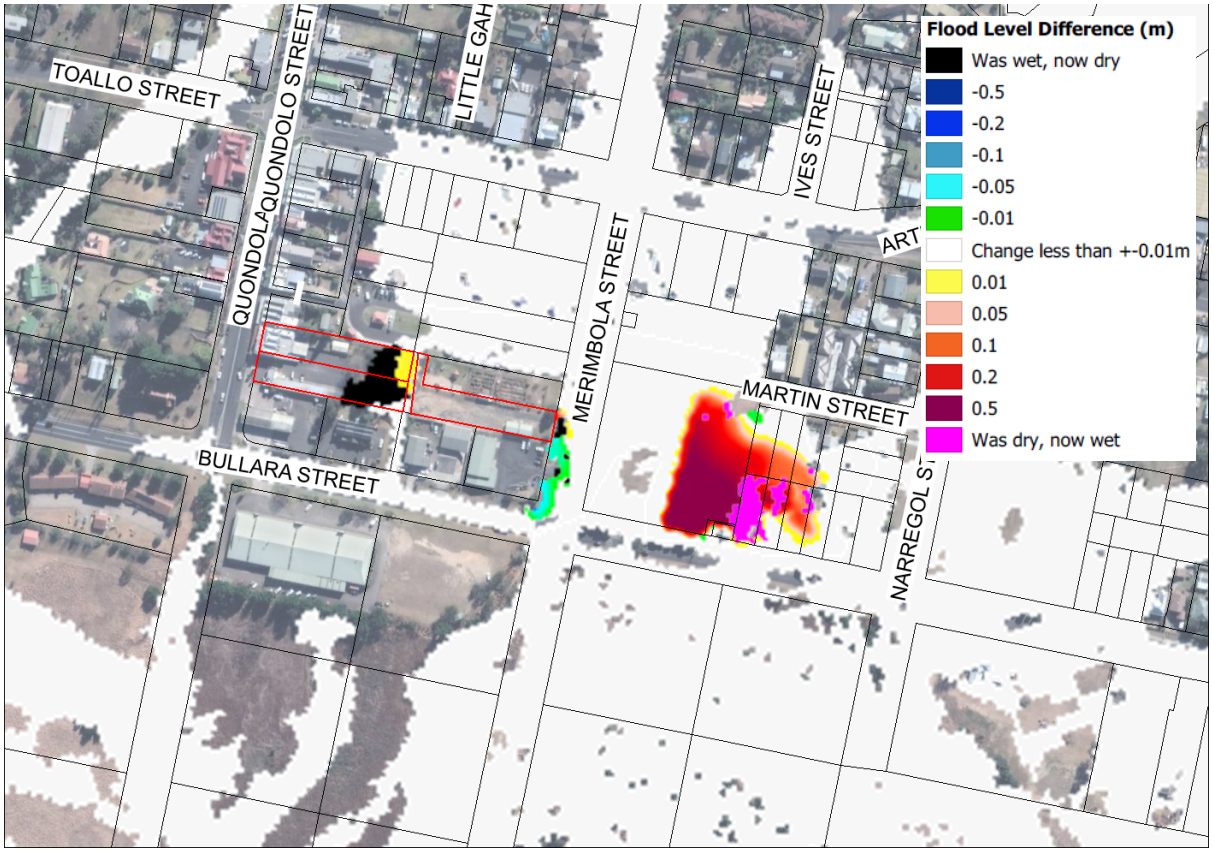

Plate 4 Peak flood level differences due to cumulative development under local flood conditions

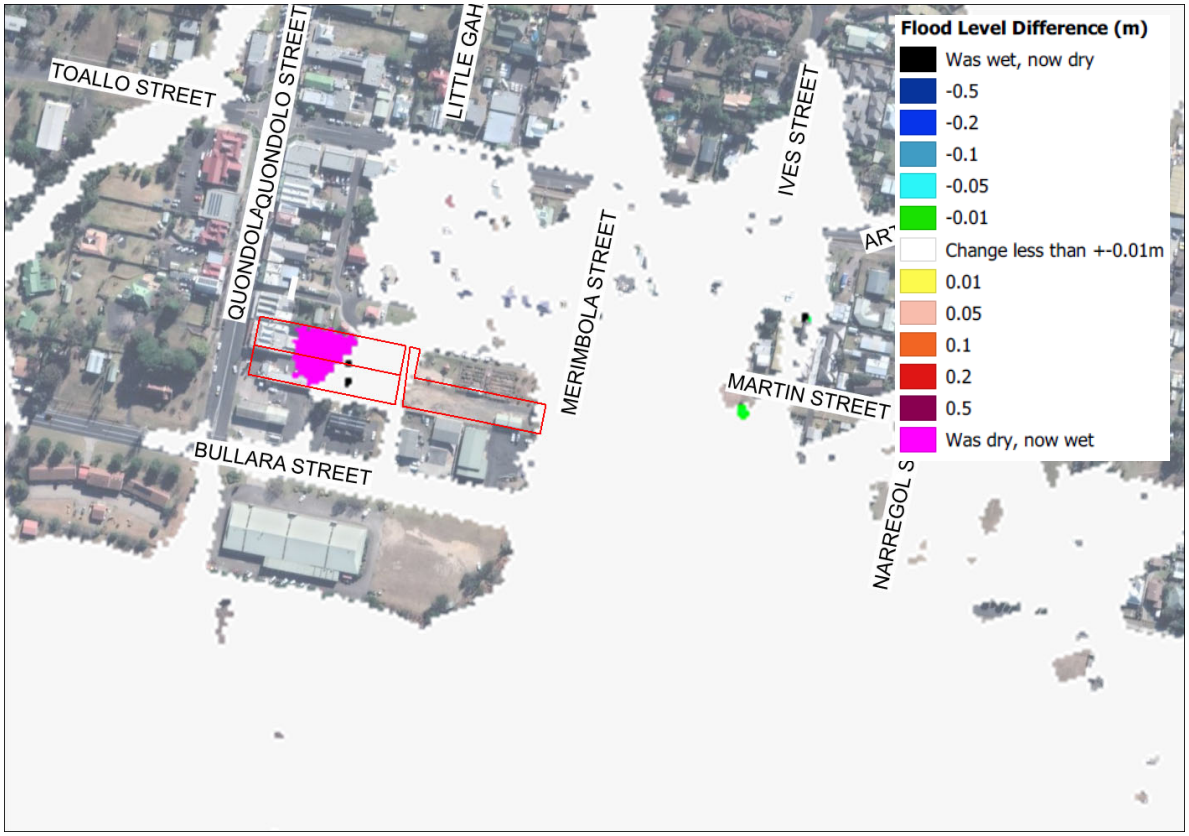

Plate 5 Peak flood level differences due to cumulative development under mainstream flood conditions

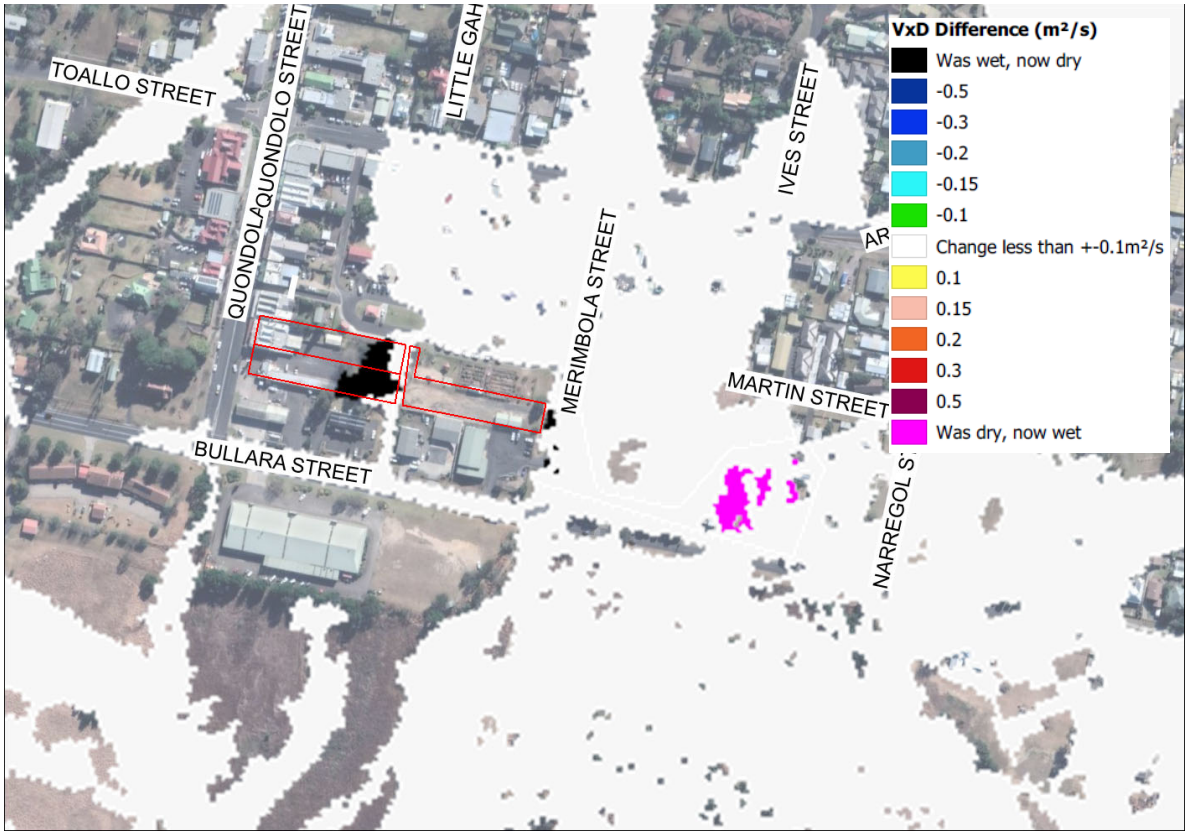

Plate 6 Peak velocity-depth product differences due to cumulative development under local flood conditions

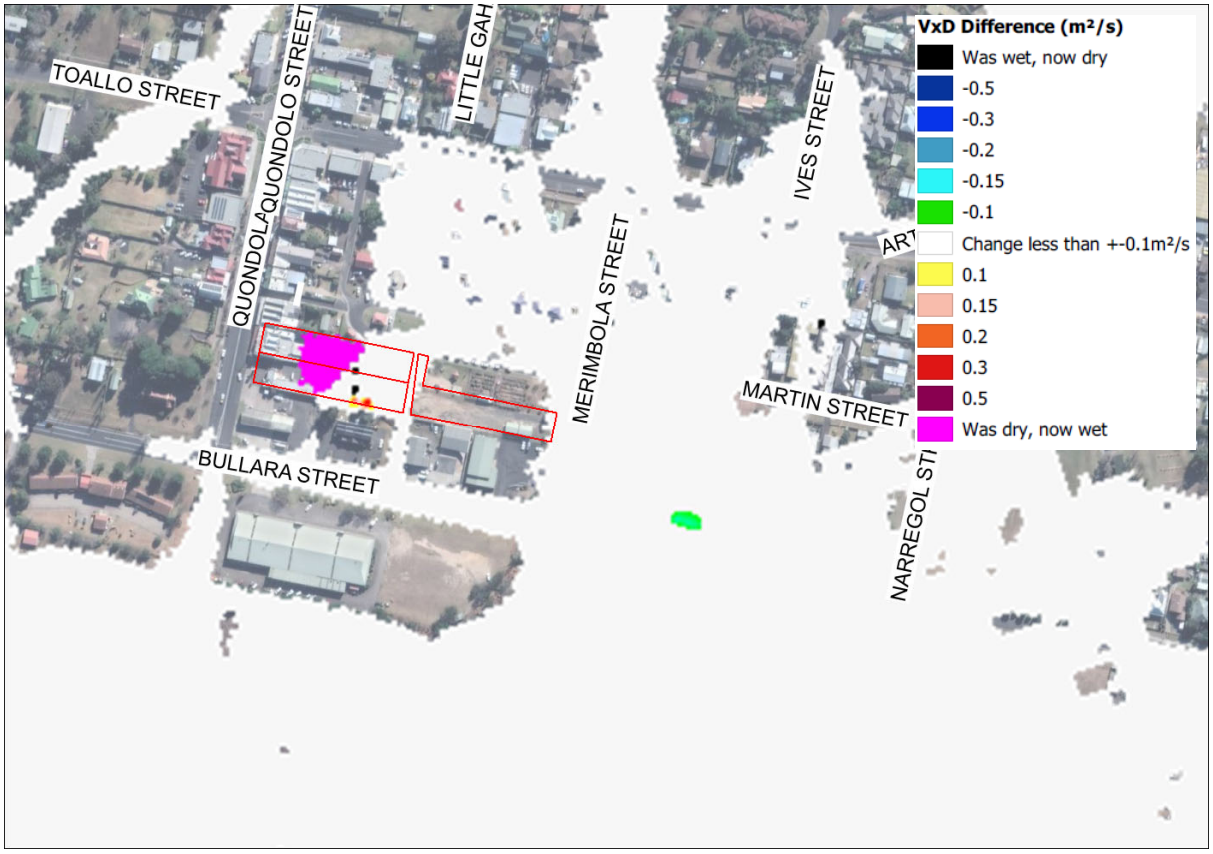

Plate 7 Peak velocity-depth product differences due to cumulative development under mainstream flood conditions

The flood level differences shown on **Plate 4** indicate that under local catchment flooding conditions, the additional filling included in the vicinity of the development site produces flood level increases. However, these increases are localised around the additional works, including onto some adjacent private properties, however, do not contribute to impacts across the wider floodplain. If development were to occur at the location of the additional works, it would be subject to detailed design and a flood assessment, and therefore the impacts shown on **Plate 4** would be unlikely to actually occur.

Plate 5 indicates that with mainstream flooding, the additional works do not have any impact on flood levels as the works are 'drowned out'.

Plate 6 shows that there is no widespread impact to VxD under local catchment flooding, and **Plate 7** shows that some decrease in VxD is predicted to the south of the additional works, however, development of these additional works would be subject to detailed design and a flood assessment to confirm the actual impact prior to being undertaken.

Although some localised flood impacts are predicted under a cumulative development scenario, no widespread impact to flood behaviour (levels and VxD) are predicted across the wider floodplain. Therefore, the proposed development is not considered to adversely contribute to cumulative impacts within the floodplain, both under local and mainstream flooding conditions.

4.2 Climate Change Assessment

Climate change has the potential to impact on existing flood behaviour which, in turn, could impact on the proposed development. The *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021) undertook a climate change assessment which assessed the impacts of sea level rise and increased rainfall intensity (both individually and in combination). In order to assess the impact that climate change may have on the proposed works, additional simulations were undertaken to represent a combination of a 0.4 metre increase in sea level (2050 projection) and an 18% increase in rainfall intensity (reflected by the 0.5% AEP rainfall estimates and roughly equates to the RCP8.5 2090 projection). Note that this scenario was undertaken within the flood study and was also adopted for the current assessment as it provides the most realistic available representation of impacts of climate change within the design life of the premises.

The rainfall and sea level increases were applied to the 1% AEP local catchment and mainstream events and the updated models were used to re-simulate the 1% AEP flood for existing and post-development conditions.

Flood level and velocity-depth product difference grids were then calculated by subtracting the existing conditions flood levels and VxD from the proposed conditions flood level and VxD results. The resultant difference grids provide a description of the magnitude and location of changes to flood behaviour as a result of the proposed works under climate change conditions. The flood level difference results are presented on **Plate 8** and **Plate 9** for local and mainstream flooding respectively, and VxD differences are shown on **Plate 10** and **Plate 11**.

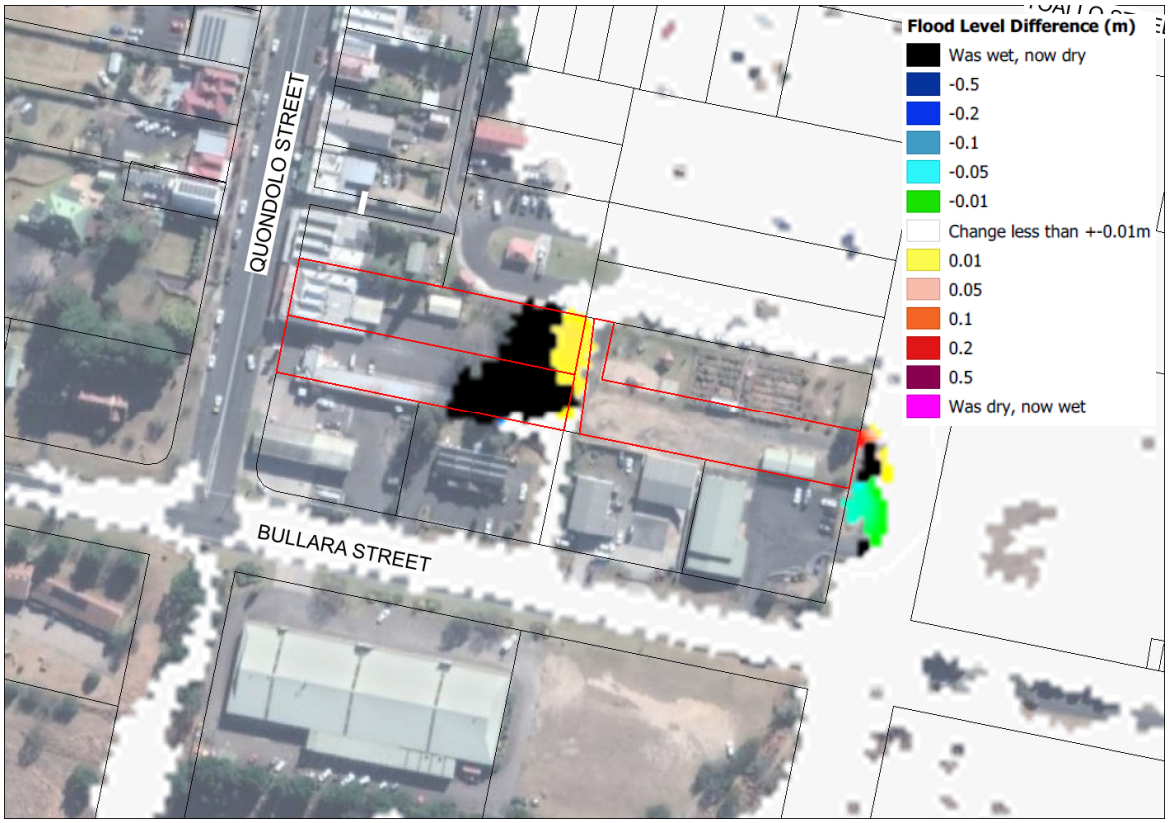

Plate 8 Peak flood level differences due to climate change under local flood conditions

Plate 9 Peak flood level differences due to climate change under mainstream flood conditions

Plate 10 Peak velocity-depth product differences due to climate change under local flood conditions

Plate 11 Peak velocity-depth product differences due to climate change under mainstream flood conditions

The flood level differences presented on **Plate 8** indicate that increases in flood level of up to 0.03 metres are predicted upstream of the culverts and driveway crossing of the Council drainage swale, and up to 0.18 metres upstream of the driveway crossover to Merimbola St.

Plate 9 indicates that with mainstream flooding, no changes to flood level are predicted, and only areas of new inundation within the ground level carparking area are present (i.e., similar to the outcomes of the flood assessment for existing climate conditions documented in Chapter 3).

The VxD differences shown on **Plate 10** indicates that under local flooding conditions, the impact of the proposed works under climate change conditions is insignificant, with no VxD increases recorded.

Plate 11 indicates that the VxD is predicted to increases by up to 0.1m^2/s along the driveway near the southern boundary of the development site. As previously discussed, these increases are considered to be contained within the development site.

Overall, the impact of the proposed works on flood behaviour under climate change conditions is considered to be similar to existing climatic conditions, with little variation in flood liability to the proposed works, and negligible impact on flood levels or VxD.

5 COUNCIL REQUIREMENTS

5.1 Bega Valley Development Control Plan 2013

The *'Bega Valley Development Control Plan'* (Bega Valley Shire Council, 2013 [updated 2022]) outlines requirements for developments within the Shire. Section 5.8.1 relates to flood planning considerations and specifically applies to development on flood prone land within the LGA.

The requirements for development on land located at or below the Flood Planning Level are summarised in **Table 1**. Also included in **Table 1** are comments that describe how each requirement will be addressed. The Flood Planning Level for commercial development is defined as the peak 1%AEP flood level + 0.5 metres. As discussed, mainstream flooding produces the highest peak 1%AEP flood level of 3.66m AHD, resulting in a Flood Planning Level of 4.16m AHD for the site.

Table 3 Summary of requirements of the Bega Valley Development Control Plan 2013 for development on land located at or below the Flood Planning Level

Requirement	Comment
A) Buildings and structures will be designed and constructed with appropriate water resistant materials	The habitable floor level of the supermarket (6.31mAHD), café (6.31mAHD) and bottle shop (5.5mAHD) will all be located above the Flood Planning Level of 4.16m AHD. The ground level carparking access will be constructed of water resistant materials (concrete, glass, tiles, steel). Electrical components of the escalators will be water proofed below the Flood Planning Level.
B) Building foundations will be designed by a suitably qualified geotechnical engineer to be suitable for grounds with potentially reduced bearing capacity under flood conditions	Not certified as part of the current assessment, however it is considered that a suitable geotechnical design of the building footings will achieve this outcome.
C) Development must comply with the principles of ecologically sustainable development taking into account floodplain ecology and integrity	The works will be undertaken within the principles of ecologically sustainable development by considering the natural watercourse integrity during and after construction.
d) Any fill or excavation must be minimised and must not adversely affect neighbouring properties or the overall flood behaviour and flood storage volume	**Figure 10** to **Figure 13** demonstrate that the proposed works (including some filling and some cut) do not adversely affect neighbouring properties or overall flood behaviour and storage volumes in the 1%AEP event.

e) Development in areas designated as flood storage is not permitted unless it can be demonstrated that there will be no decrease in net flood storage available on the site	Although the rear of 35-37 Quondola St has been designated as a flood storage area as per Figure 39.4 of the *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021), **Figure 10** to **Figure 13** demonstrate that the proposed works (involving a relative balance of cut and fill,) do not produce any measurable impact on 1%AEP flood storage (as demonstrated by the lack of flood impacts).
f) All development applications must demonstrate that the proposed structure can withstand the force of floodwater, debris and buoyancy through a report prepared by a suitably qualified and experienced engineer	Not certified as part of the current assessment. However, based on the shallow 1%AEP depths (<0.1 metres) and low VxD (<0.2m^2/s) experienced by the structure at the peak of the 1%AEP flood event, it is considered that this can be achieved.
g) All habitable rooms within residential development must be at or above the flood planning level	The proposed development is for a commercial premises. Notwithstanding, all habitable areas (supermarket, café, bottle shop) are located above the Flood Planning Level.
h) Flood free access is required for all dwellings, caravan parks, schools, hospitals and other public building	The proposed development is for a commercial premises only. Notwithstanding, flood free pedestrian access in the 1%AEP event is available from the supermarket, café and bottle shop to Quondola Street. Vehicular access in the 1%AEP event is also available to Quondola St with shallow depths of inundation within the carpark (<0.1m). It is noted that the vehicular egress to Quondola Street is normally for bottle shop patrons only, however, as described in the flood emergency response plan, this will be opened as an emergency egress route from the site if flooding is expected/experienced. It is also noted that the exit is a left turn only and a U-turn is required at Bullara Street to move north on Quondola Street and out of the floodplain.
i) No excavated underground car parking in commercial and industrial development is permitted on land at or below the flood planning level. Ground floor parking is however appropriate	No excavated underground car parking is proposed, with ground level car parking provided only.
j) All development applications for industrial and commercial development must be supported by a flood emergency plan. Appropriate warning and advisory signage must be prominently visible at entry/exit points	A flood emergency plan is described in **Section 6**.
Additional requirements for Pambula) Landfill in and around the town of Pambula must physically join the natural terrain at or above Australian Height Datum 4.5m.	The development joins to Quondola St which is located at >5mAHD adjacent to the development site.

The *'Bega Valley Development Control Plan'* (Bega Valley Shire Council, 2013 [updated 2022]) also outlines the requirements of the flood assessment report that needs to accompany a development application. These requirements are outlined in **Table 2** along with how each requirement is addressed.

Table 4 Summary of requirements of the Bega Valley Development Control Plan 2013 for flood assessment reports

Requirement	Comment
Suitable contour plan	Contours of the site and surrounding area are provided on **Figure 1**
A certificate of a suitably qualified practicing Structural Engineer relating to the footings and parts of the development likely to be affected by flood waters or excessive moisture	Not certified as part of this report, however, this will be submitted separately as part of the future application for the issuing of a Construction Certificate
The location of the building	The location of the proposed building is shown on **Plate 2** and on **Figure 6** through **Figure 13**
Details of the drainage of the site	Not included as part of this report, however, this will be submitted separately as part of the future application for the issuing of a Construction Certificate
A statement by the applicant/owner indicating any proposed landfill	Not included as part of this report, however, this will be submitted separately as part of the future application for the issuing of a Construction Certificate
A statement showing the proposed height of the floor above the highest known flood level	The habitable floor level of the supermarket (6.31mAHD), café (6.31mAHD) and bottle shop (5.5mAHD) will all be located well above the 1%AEP flood level of 3.66mAHD. The PMF flood level on the site (from mainstream flooding) is ~7.5mAHD, which is between 1.2 and 2 metres above the proposed flood levels.
A certificate from a suitably qualified practicing Structural Engineer relating to the load bearing capacity of the foundation material	Not certified as part of the current assessment, however it is considered that the geotechnical design of the building footings will achieve this.
The proposed use of the area of the building which will be affected by flood water	No area of the building will be affected by flood water. The carparking area will only be impacted by shallow depths (<0.1m) at the peak of the 1%AEP event.
For some development a Hydraulic Impact Assessment may also be required	A hydraulic impact assessment has been undertaken and indicates that the proposed development does not produce adverse impacts to neighbouring properties or overall flood behaviour in the 1%AEP event (under existing and potential future climate conditions).

5.2 Bega Valley LEP2013 Requirements and Matters to be Considered

The Bega Valley Local Environmental Plan (2013) outlines a number of requirements and matters that need consideration when deciding to grant development consent on flood liable land.

Section 5.21(2) and 5.21(3) of LEP2013 primarily deals with ways in which the proposed development will interact and impact on existing flood behaviour, and how flood risk is managed. These requirements are largely addressed by floor levels being located above the flood planning level, however, further details of how the proposed development intends to meet each specific requirement are summarised in **Table 3**.

Table 3 Bega Valley LEP2013 requirements and matters to be considered

Council Requirement	Does Development Meet this Requirement?
Section 5.21(2)	
a) The development is compatible with the flood function and behaviour on the land	The rear of 35-37 Quondola St has been designated as a flood storage area as per Figure 39.4 of the *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021). As such, the works do not impede any floodway areas or produce any impact on 1%AEP flood storage
b) The development will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties	**Figures 10** through **Figure 13** show that the proposed development will not adversely affect flood behaviour (i.e., levels, VxD) across other developments or properties.
c) The development will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood	**Figure 8** and **Figure 9** indicate that the velocity-depth product across inundated portions of the site does not exceed 0.2m^2/s at the peak of the 1%AEP flood event, and large portions of the overall development are not predicted to become inundated. The supermarket, café and bottle shop are all located above the Flood Planning Level. As such, the need for evacuation is not considered likely during most floods in the catchment (although can be safely undertaken via pedestrian or vehicular access to Quondola St), and therefore there is unlikely to be additional burden on existing evacuation routes. It is noted that the vehicular egress to Quondola Street is normally for bottle shop patrons only, however, as described in the flood emergency response plan, this will be opened as an emergency egress route from the site if flooding is expected/experienced. It is also noted that the exit is a left turn only and a U-turn is required at Bullara Street to move north on Quondola Street and out of the floodplain.
d) The development incorporates appropriate measures to manage risk to life in the event of a flood	
e) The development will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses	**Figure 10** through **Figure 13** show that the proposed development will not adversely affect flood behaviour (i.e., levels, VxD) across any riparian corridors, riverbanks or watercourses.

Council Requirement	Does Development Meet this Requirement?
Section 5.21(3)	
f) The development needs to consider the impact of the development on projected changes to flood behaviour as a result of climate change	An assessment of flooding under climate change conditions has been undertaken as part of **Section 4.2** of the current study and indicates similar outcomes to existing climatic conditions (negligible impact under climate change conditions).
g) The development needs to consider the intended design and scale of buildings resulting from the development	The proposed development adheres to the allowable design and scale set out in the Bega Valley DCP, and the works are intended to be sympathetic to the locality.
h) The development needs to consider whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood	**Figure 8** and **Figure 9** indicate that the velocity-depth product across inundated portions of the site does not exceed 0.2m^2/s at the peak of the 1%AEP flood event, and large portions of the overall development are not predicted to become inundated. The supermarket, café and bottle shop are all located above the Flood Planning Level. As such, the risk to life in a 1%AEP flood is very low and evacuation can be safely undertaken via pedestrian or vehicular access to Quondola St. It is noted that the vehicular egress to Quondola Street is normally for bottle shop patrons only, however, as described in the flood emergency response plan, this will be opened as an emergency egress route from the site if flooding is expected/experienced. It is also noted that the exit is a left turn only and a U-turn is required at Bullara Street to move north on Quondola Street and out of the floodplain.
i) The development needs to consider the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion	The flood behaviour on the site has been defined for the 1% AEP event and appropriate controls applied as per Councils DCP2013. This includes habitable floor areas being located above the Flood Planning Level. No allowance to modify, relocate or remove buildings as a result of flooding or coastal erosion is considered necessary.

6 FLOOD EMERGENCY RESPONSE PLAN

As previously discussed, peak 1%AEP flood depths for local catchment flooding conditions are restricted to the Council drainage swale, and with mainstream flooding, only shallow depths of inundation are predicted across the carparking and roadway areas (i.e., depths of only <0.1 metres, and a VxD of < 0.2m^2/s). As such, flood behaviour in the 1%AEP event is not considered hazardous to any pedestrians or vehicles within the development site, and evacuation is not considered necessary. Additionally, the supermarket, café and bottle shop all have direct access to Quondola Street which is located outside of the 1%AEP flood extent for both local and mainstream flooding. However, Merimbola Street is exposed to inundation and should not be entered from the site at the peak of the 1%AEP flood event.

Based on this flood behaviour, no evacuation is considered necessary from the site in flood events up to and including the 1%AEP event. However, appropriate management of staff and customers is required to ensure the risk to life is managed (including avoiding Merimbola Street during times of flooding).

There is also the potential for floods larger than the 1% AEP event to occur. This includes the probable maximum flood (PMF), which is the largest flood that could occur. Figure 25.4 from the *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021) indicates that in the PMF, the development site is completely inundated, together with Merimbola and Quondola St adjacent to the site.

In recognition of the potential for the site to be impacted by flooding during particularly large floods, and the flood liability of Merimbola St adjacent to the site, a Flood Management Plan has been prepared and is enclosed in **Appendix D.** The plan summaries key flooding information (e.g., flood levels) and the preferred emergency response strategy to employ during future floods. A copy of the plan should be placed within a prominent position of the site and staff introduced to the plan on commencement of employment to ensure appropriate actions are undertaken in the event of a large flood.

A key requirement of the flood emergency response plan is the closing of the Merimbola Street boom gate if flooding is expected/occurring on Merimbola Street to prevent egress into potentially dangerous flood water, and the opening of the boom gate past the bottle shop to Quondola Street (this egress route is usually limited to bottle shop patrons only). It is noted that the exit to Quondola Street is a left turn only and a U-turn is required at Bullara Street (the intersection of Quondola and Bullara Street is not inundated at the peak of the 1%AEP event) to move north on Quondola Street and out of the floodplain.

7 SUMMARY

This report has summarised the outcomes of a flood assessment that was completed to quantify the potential impacts that construction of a supermarket, café and bottle shop and associated driveway/carparking areas at Lot 19 - 20 DP758825 35-37 Quondola St & Lot 15 DP1204078 36 Merimbola St, Pambula may have on existing flood behaviour within the vicinity of the site from both local and mainstream flood events.

The assessment was completed using a TUFLOW computer flood model that was originally developed as part of the *'Pambula River, Pambula Lake and Yowaka River Flood Study'* (CSS, 2021). The TUFLOW model was refined as part of the current study and was used to simulate the 1% AEP design flood for both 'existing' as well as 'post-development' conditions with both local and mainstream flood events.

The results of the flood simulations indicate that under existing conditions, the rear section of 35-37 Quondola St will experience inundation in the 1%AEP event. Under post-development conditions, the proposed earthworks prevent significant inundation of areas frequented by people and vehicles, and that the proposed building is to be constructed above the 1%AEP flood level (and Flood Planning Level). The modelling has also demonstrated that the proposed development will not significantly impact on local flood behaviour outside of the site. Furthermore, the velocity-depth product is also shown to remain below $0.2m^2/s$ within the site indicating a low flood hazard/risk.

A range of additional simulations were completed to assess the potential impacts of climate change and cumulative impacts of similar development in the locality. The outcomes of the base case and additional simulations have demonstrated that the proposed development is not predicted to produce any adverse impacts to surrounding properties, and has met the requirements of:

- Section 5.8 of the Bega Valley DCP 2013 [Amended 2022]
- Section 5.21 of the Bega Valley LEP 2013

A flood emergency response plan has also been prepared for the site to ensure staff and customers are aware of the flood risk, and what to do before, during and after a flood event.

8 REFERENCES

- Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) (2019) Australian Rainfall and Runoff: A Guide to Flood Estimation, © Commonwealth of Australia (Geoscience Australia).
- Bega Valley Shire Council (2013 [updated 2022]) *Bega Valley Development Control Plan 2013*
- Bega Valley Shire Council (2013 [updated 2022]) *Bega Valley Local Environment Plan 2013*
- Catchment Simulation Solutions (2021) *Pambula River, Pambula Lake and Yowaka River Flood Study*, Prepared for Bega Valley Shire Council

APPENDIX A
FIGURES

Figure 1:

35-37 Quondola St & 36 Merimbola St Pambula Development Site Locality

Legend

- Development Site
- Ground Level Contour (mAHD) (1m Interval)

Aerial photograph : NSW SixMaps

N

0 90 180 270 360 m

Scale: 1:8000 (at A3)

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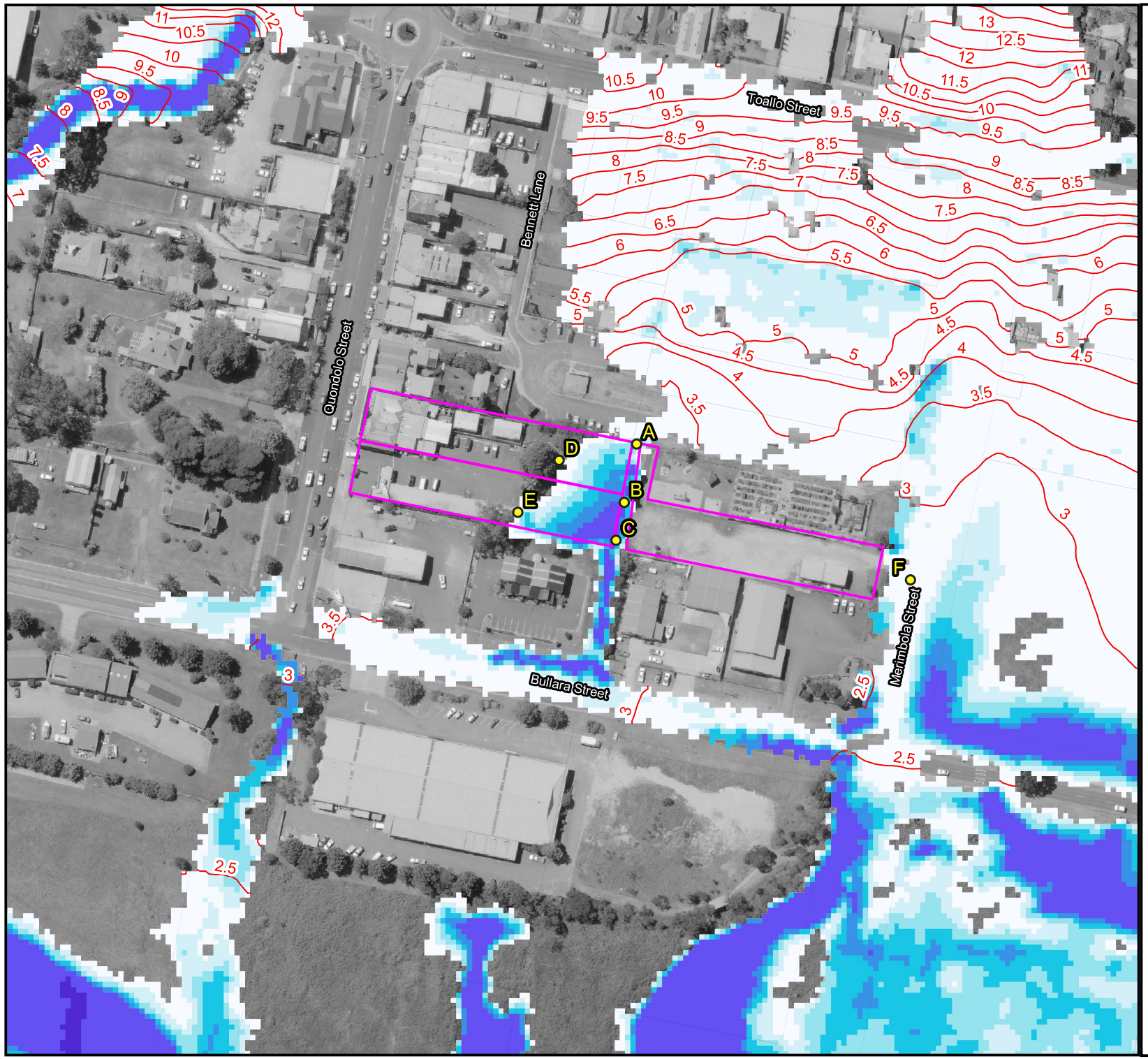

Figure 2:

Existing 1%AEP Flood Depths and Levels for Local Flooding

Legend

- Reporting Location
- Development Site
- Peak Water Level Contour (mAHD) (0.5m Interval)

Depths (m)

- 0.0 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- 0.3 to 0.4
- 0.4 to 0.5
- 0.5 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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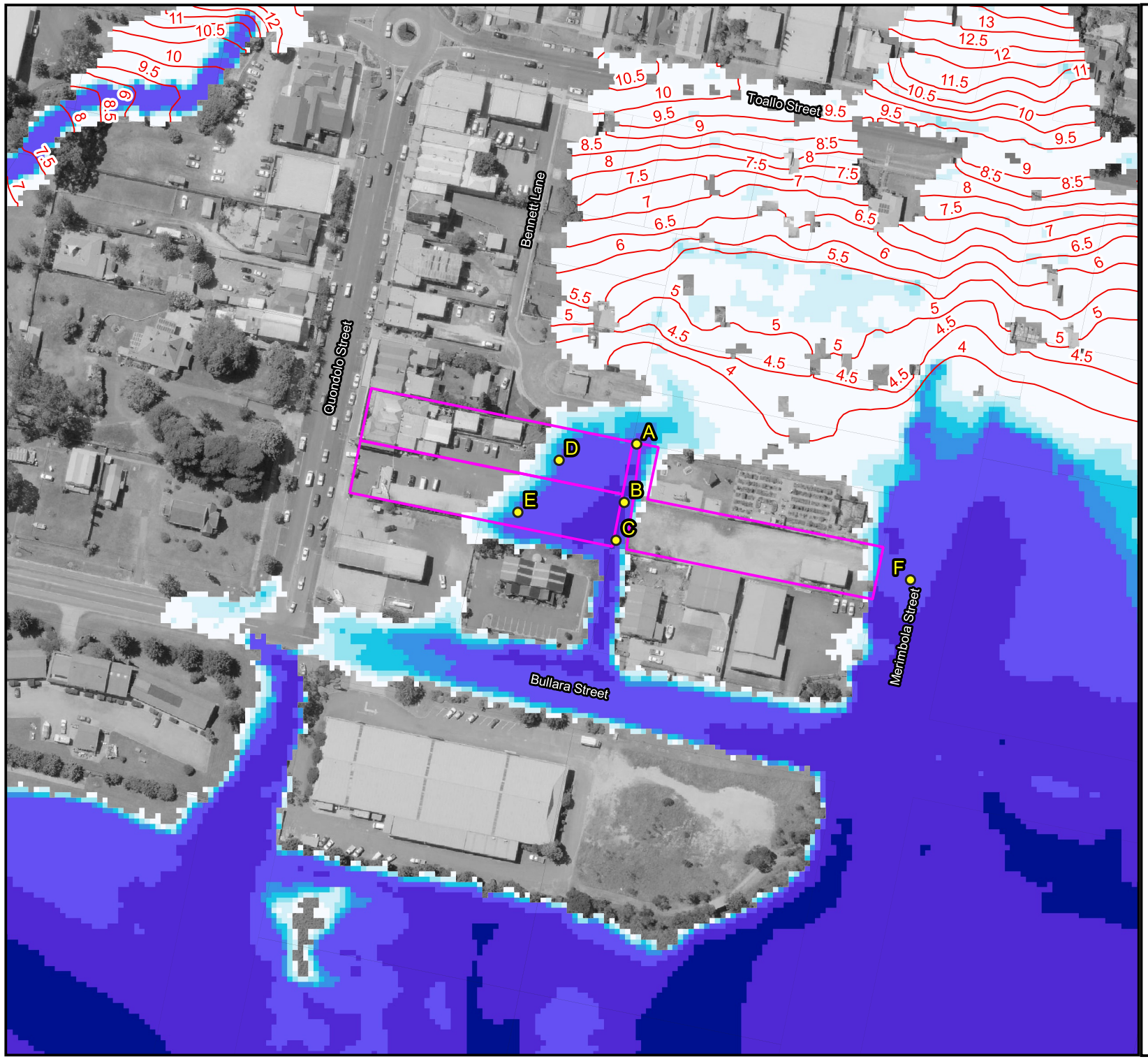

Figure 3:

Existing 1%AEP Flood Depths and Levels for Mainstream Flooding

Legend

- Reporting Location
- Development Site
- Peak Water Level Contour (mAHD) (0.5m Interval)

Depths (m)

- 0.0 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- 0.3 to 0.4
- 0.4 to 0.5
- 0.5 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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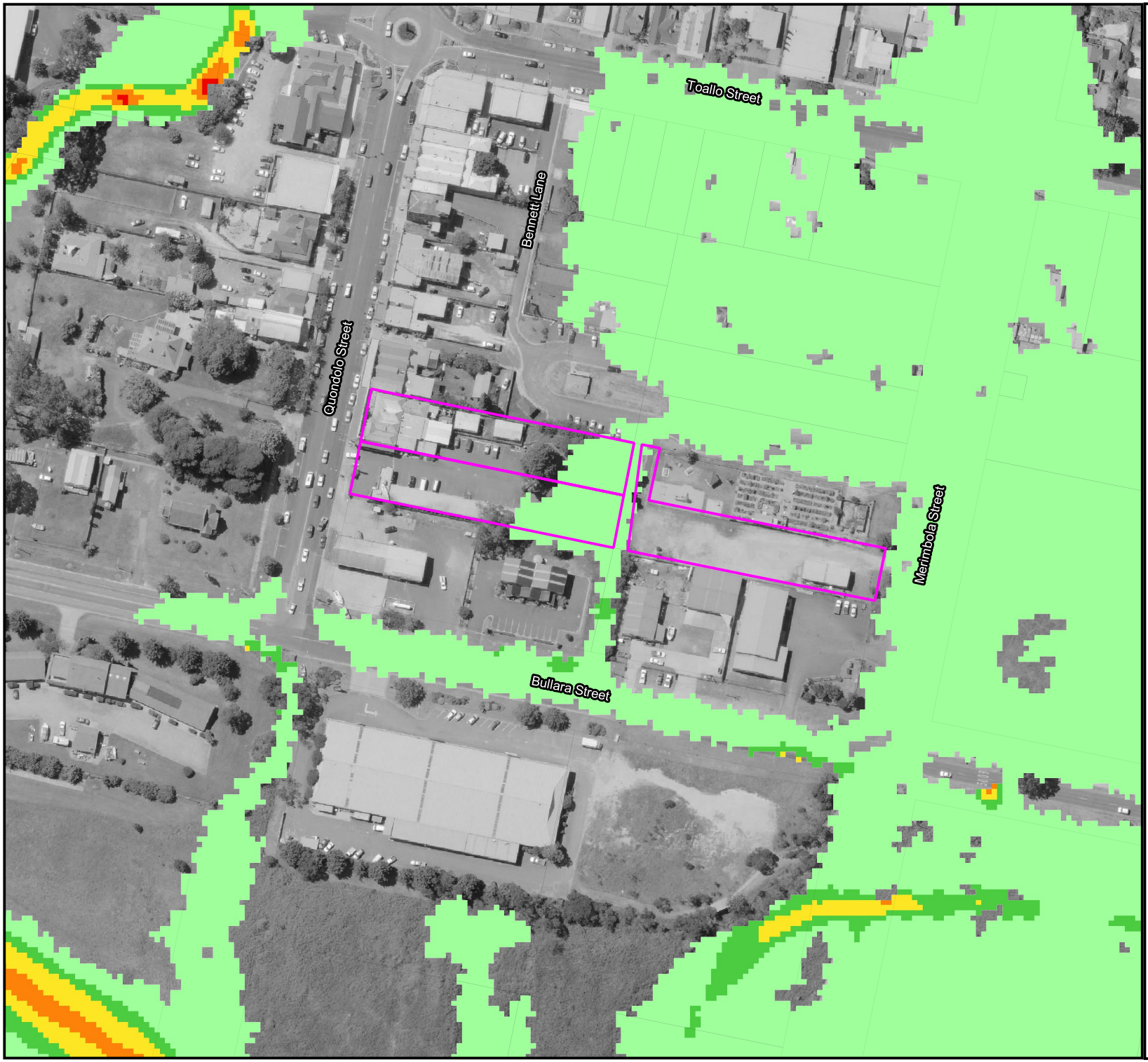

Figure 4:

Existing 1%AEP Velocity-Depth Product for Local Flooding

Legend

- Development Site

Velocity x Depth (m²/s)

- 0.0 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

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0 20 40 60 80 m

Scale: 1:2000 (at A3)

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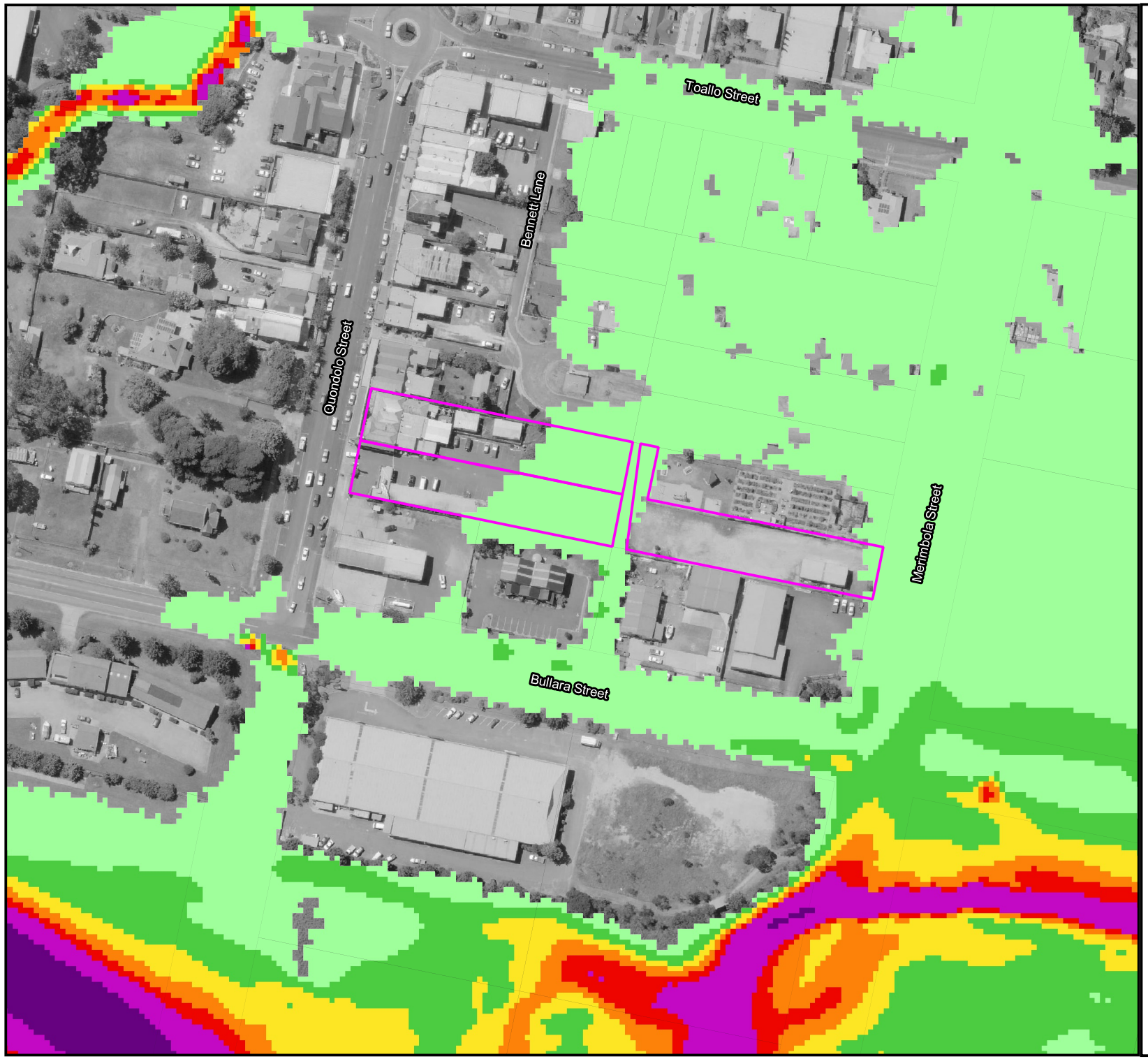

Figure 5:

Existing 1%AEP Velocity-Depth Product for Mainstream Flooding

Legend

- Development Site

Velocity x Depth (m²/s)

- 0.0 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

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0 20 40 60 80 m

Scale: 1:2000 (at A3)

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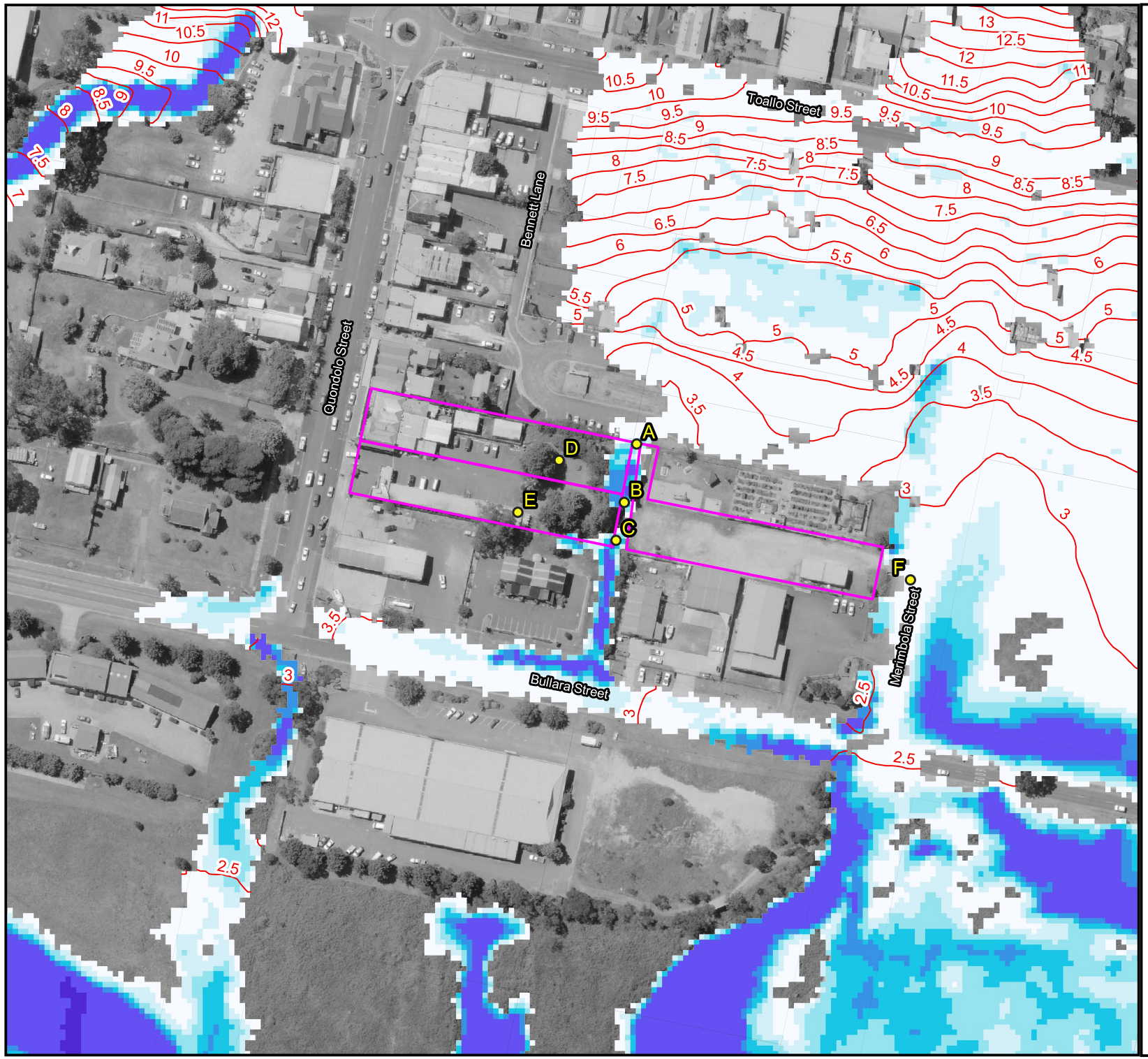

Figure 6:

Post-Development 1%AEP Flood Depths and Levels for Local Flooding

Legend

- Reporting Location
- Development Site
- Peak Water Level Contour (mAHD) (0.5m Interval)

Depths (m)

- 0.0 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- 0.3 to 0.4
- 0.4 to 0.5
- 0.5 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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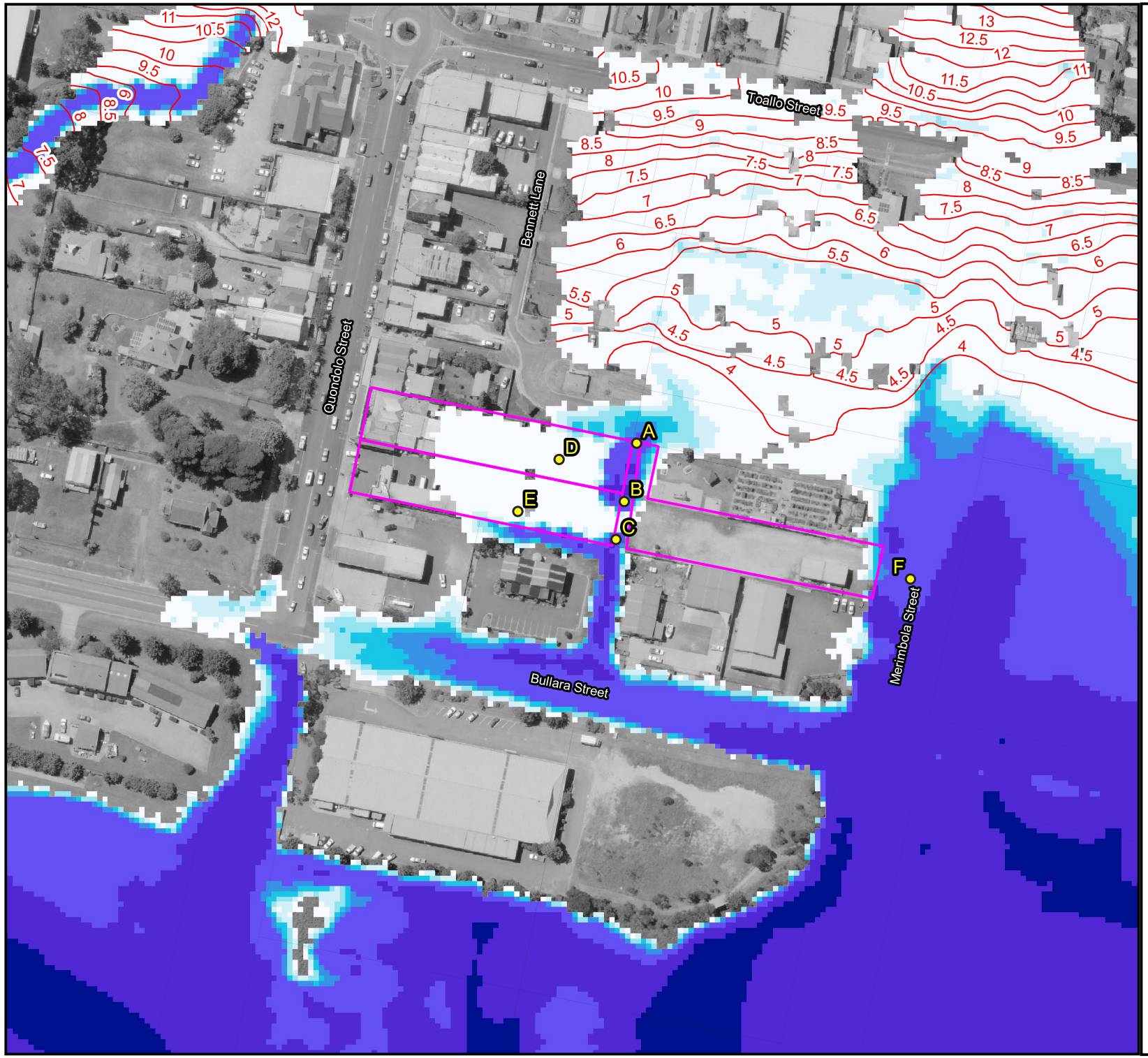

Figure 7:

Post-Development 1%AEP Flood Depths and Levels for Mainstream Flooding

Legend

- Reporting Location
- Development Site
- Peak Water Level Contour (mAHD) (0.5m Interval)

Depths (m)

- 0.0 to 0.1
- 0.1 to 0.2
- 0.2 to 0.3
- 0.3 to 0.4
- 0.4 to 0.5
- 0.5 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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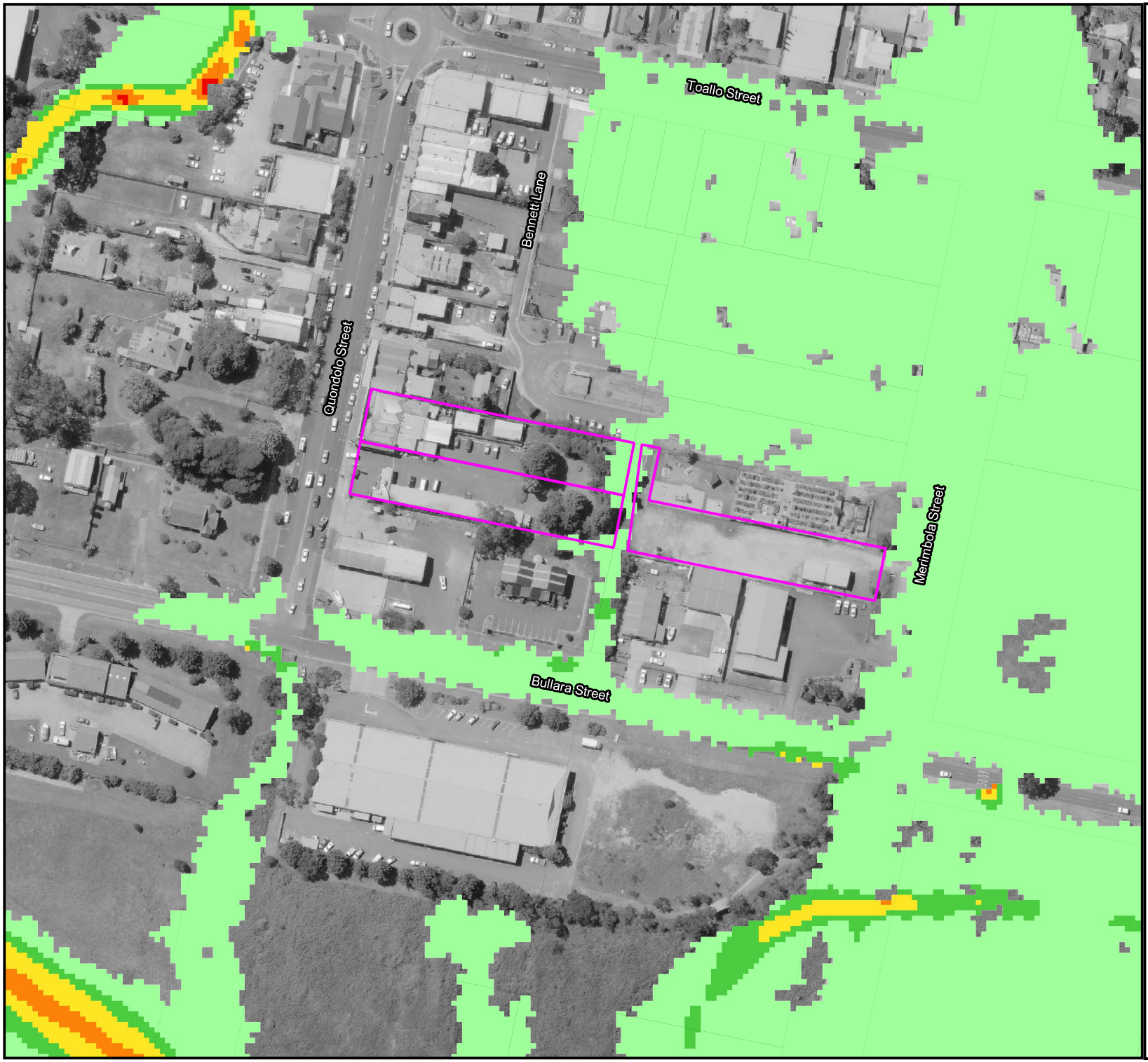

Figure 8:

Post-Development 1%AEP Velocity-Depth Product for Local Flooding

Legend

- Development Site

Velocity x Depth (m²/s)

- 0.0 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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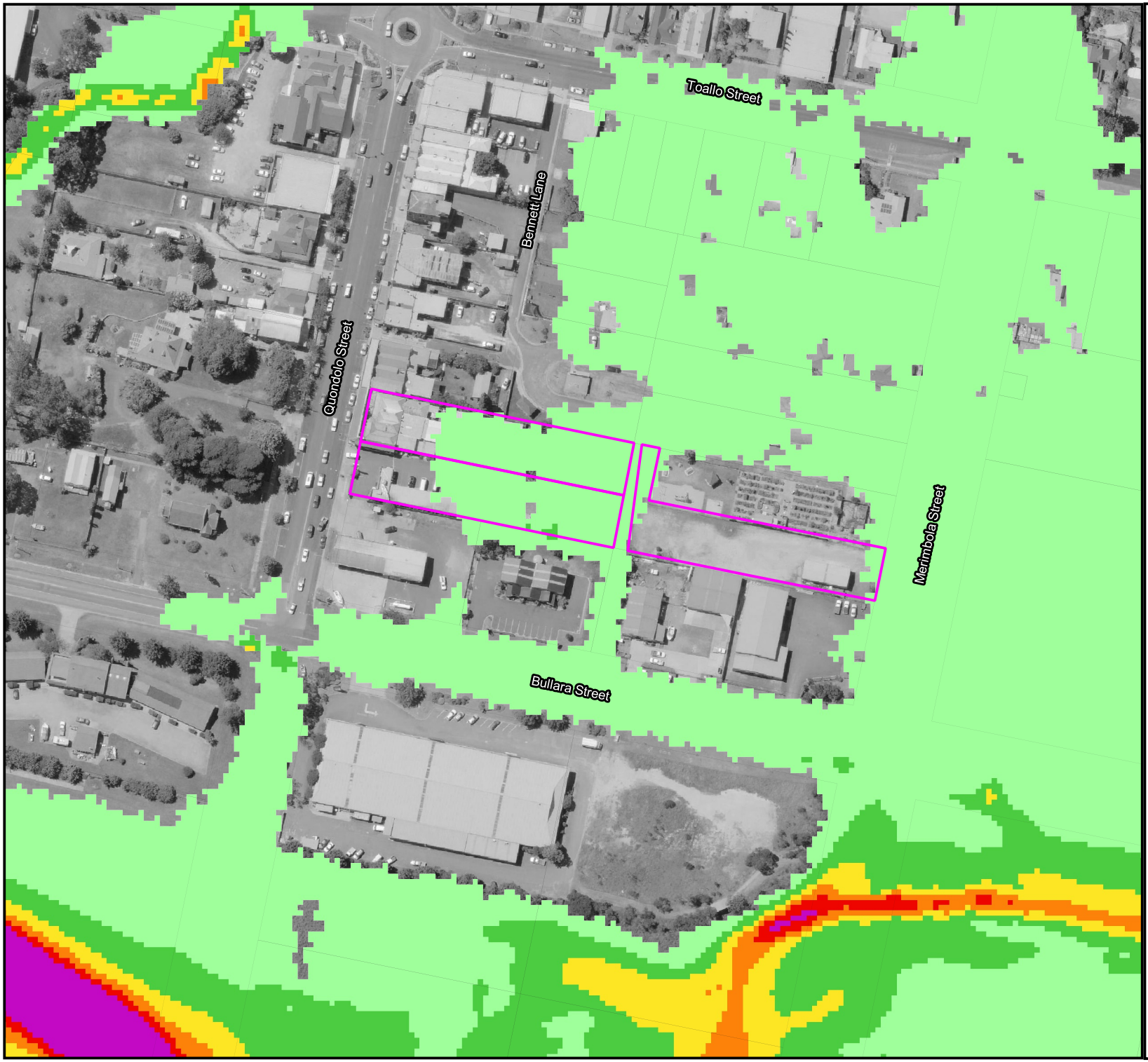

Figure 9:

Post-Development 1%AEP Velocity-Depth Product for Mainstream Flooding

Legend

- Development Site

Velocity x Depth (m²/s)

- 0.0 to 0.2
- 0.2 to 0.4
- 0.4 to 0.6
- 0.6 to 0.8
- 0.8 to 1.0
- 1.0 to 2.0
- > 2.0

Aerial photograph : NSW SixMaps

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0 20 40 60 80 m

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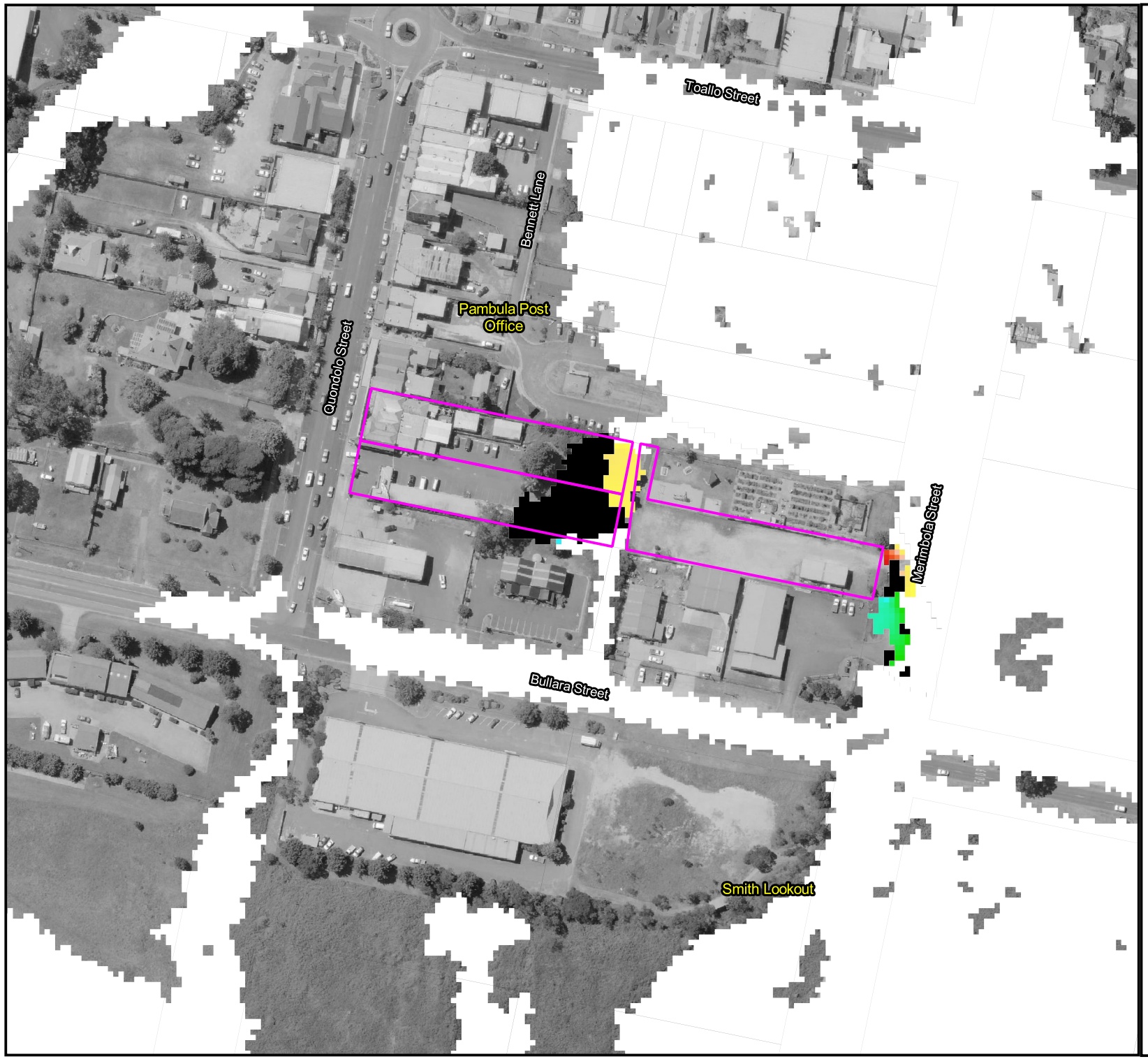

Figure 10:

1%AEP Flood Level Differences for Local Flooding

Legend

- Development Site

Flood Level Difference (m)

- Was wet, now dry
- -0.5
- -0.2
- -0.1
- -0.05
- -0.01
- Change less than +-0.01m
- 0.01
- 0.05
- 0.1
- 0.2
- 0.5
- Was dry, now wet

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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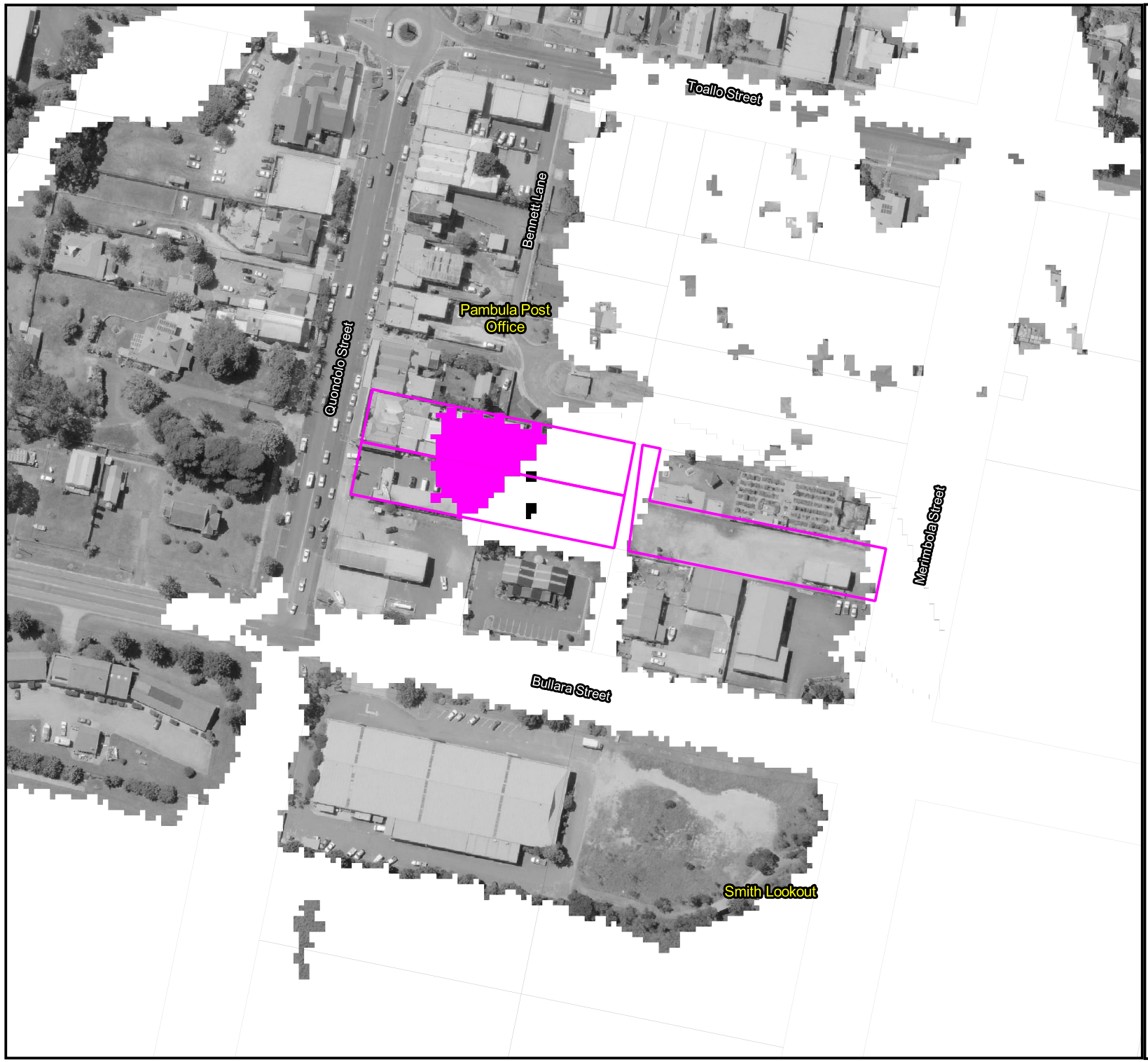

Figure 11:

1%AEP Flood Level Differences for Mainstream Flooding

Legend

- Development Site

Flood Level Difference (m)

- Was wet, now dry
- -0.5
- -0.2
- -0.1
- -0.05
- -0.01
- Change less than +-0.01m
- 0.01
- 0.05
- 0.1
- 0.2
- 0.5
- Was dry, now wet

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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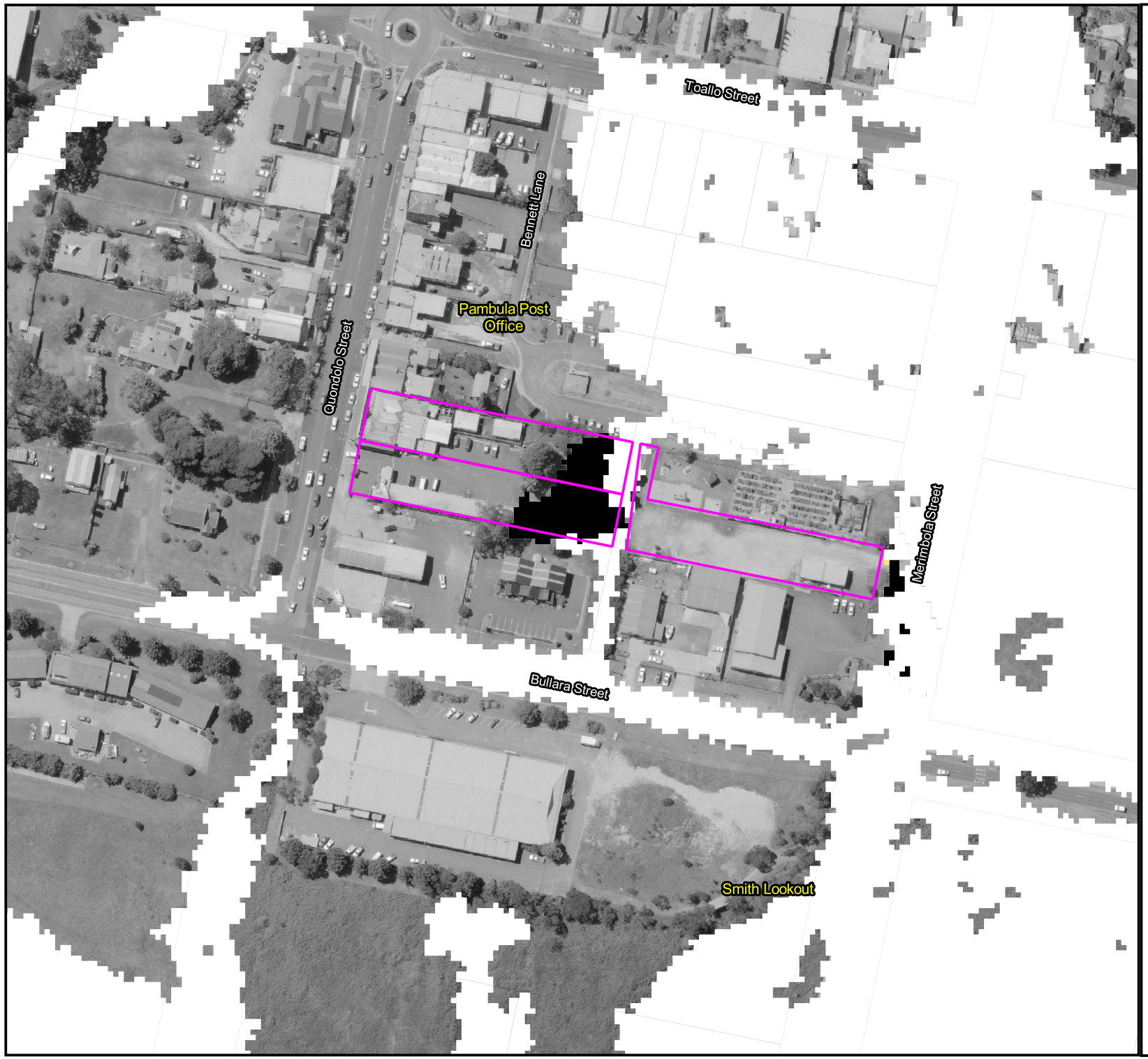

Figure 12:

1%AEP Velocity-Depth Product Differences for Local Flooding

Legend

- Development Site

VxD Difference (m²/s)

- Was wet, now dry
- -0.5
- -0.3
- -0.2
- -0.15
- -0.1
- Change less than +-0.1m²/s
- 0.1
- 0.15
- 0.2
- 0.3
- 0.5
- Was dry, now wet

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

Prepared by:
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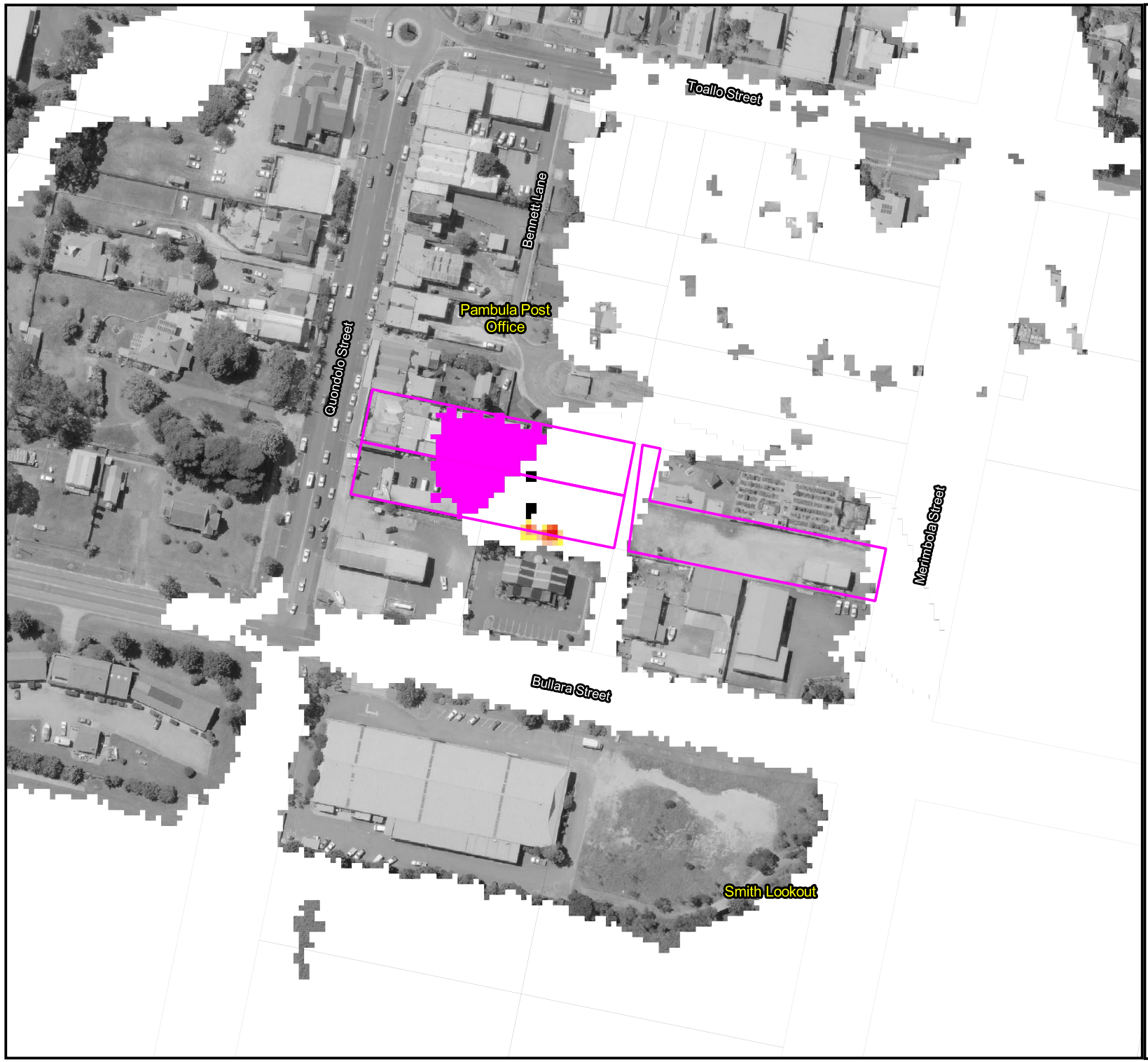

Figure 13:

1%AEP Velocity-Depth Product Differences for Mainstream Flooding

Legend

- Development Site

VxD Difference (m²/s)

- Was wet, now dry
- -0.5
- -0.3
- -0.2
- -0.15
- -0.1
- Change less than +-0.1m²/s
- 0.1
- 0.15
- 0.2
- 0.3
- 0.5
- Was dry, now wet

Aerial photograph : NSW SixMaps

N

0 20 40 60 80 m

Scale: 1:2000 (at A3)

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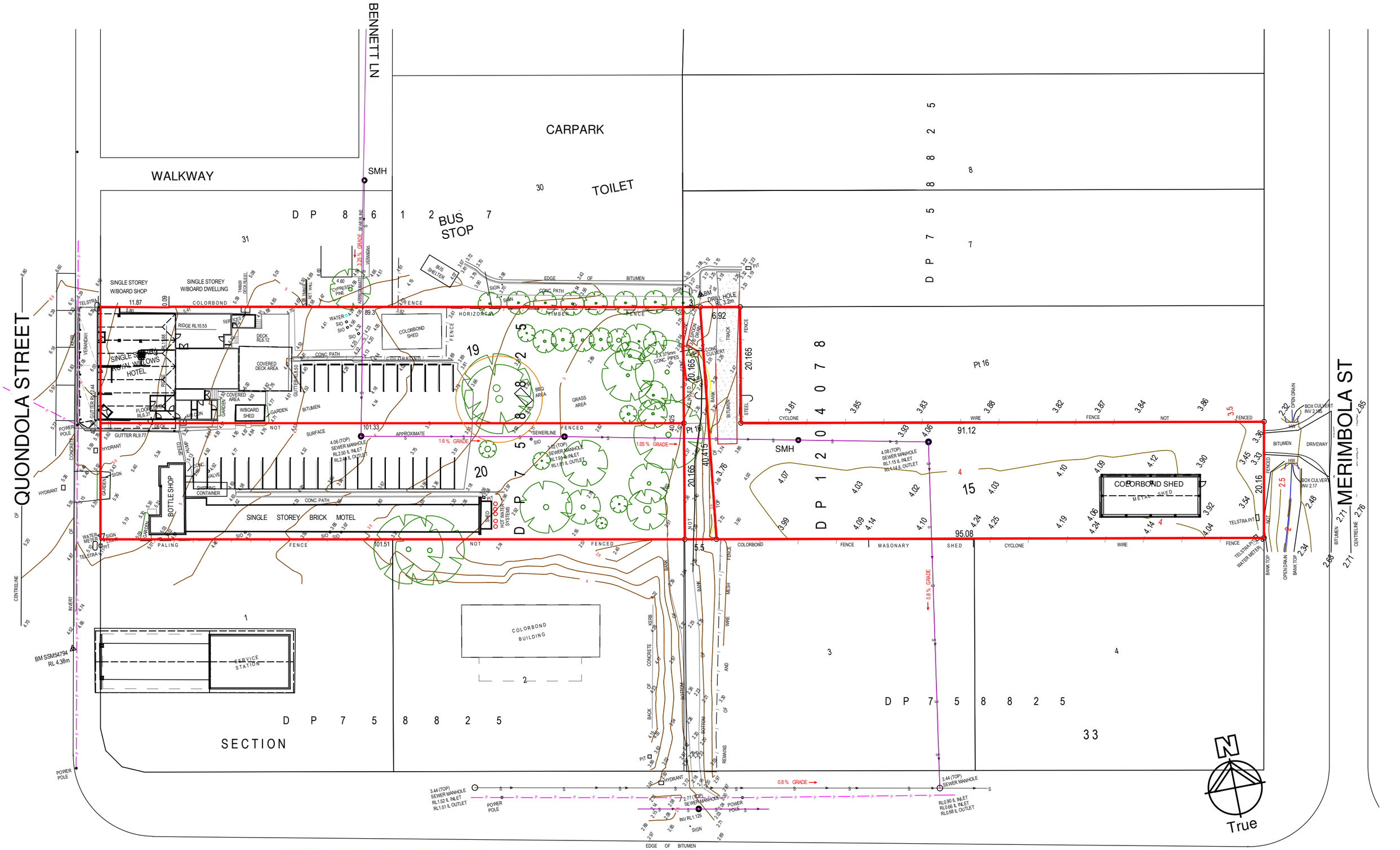
APPENDIX B
DETAILED GROUND SURVEY OF EXISTING SITE



Caddey Searl & Jarman SURVEYORS

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

1 : 600

EXISTING SITE PLAN

0m 12m 24m

SCALE 1:600 @ A3

DA APPROVALS 20211117

SITE SURVEY	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET V-101

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APPENDIX C
DEVELOPMENT PLANS

PLAN OF PROPOSED SUPERMARKET DEVELOPMENT AT LOTS 19 & 20 DP758825 35-37 QUONDOLA ST & LOT 15 DP1204078 SEC 33 36 MERIMBOLA ST PAMBULA

GORDON BUILDING DESIGN P/L
PO BOX 320 BEGA 2550
200A CARP ST, BEGA
+61 2 6492 1723
office@gordondrafting.com.au
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

DA APPROVALS 20211117

GENERAL NOTES

1. Do not obtain dimensions by scaling
2. All owners, builders, sub-contractors and suppliers must verify all dimensions and levels before commencing any work or making any shop drawings.
3. These drawings are to be read with all other contract documents and requirements of the relevant Controlling Authority.
4. The title boundaries as shown have been determined by plan dimensions only and not by field survey.
5. Services shown have been located where possible by field measurement. If not able to be located, services have been plotted from relevant authority records.
6. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of underground services and detailed locations of all services.
7. Proposed lot boundaries dimensions and areas are subject to survey.
8. Building works to be set out by a registered surveyor.

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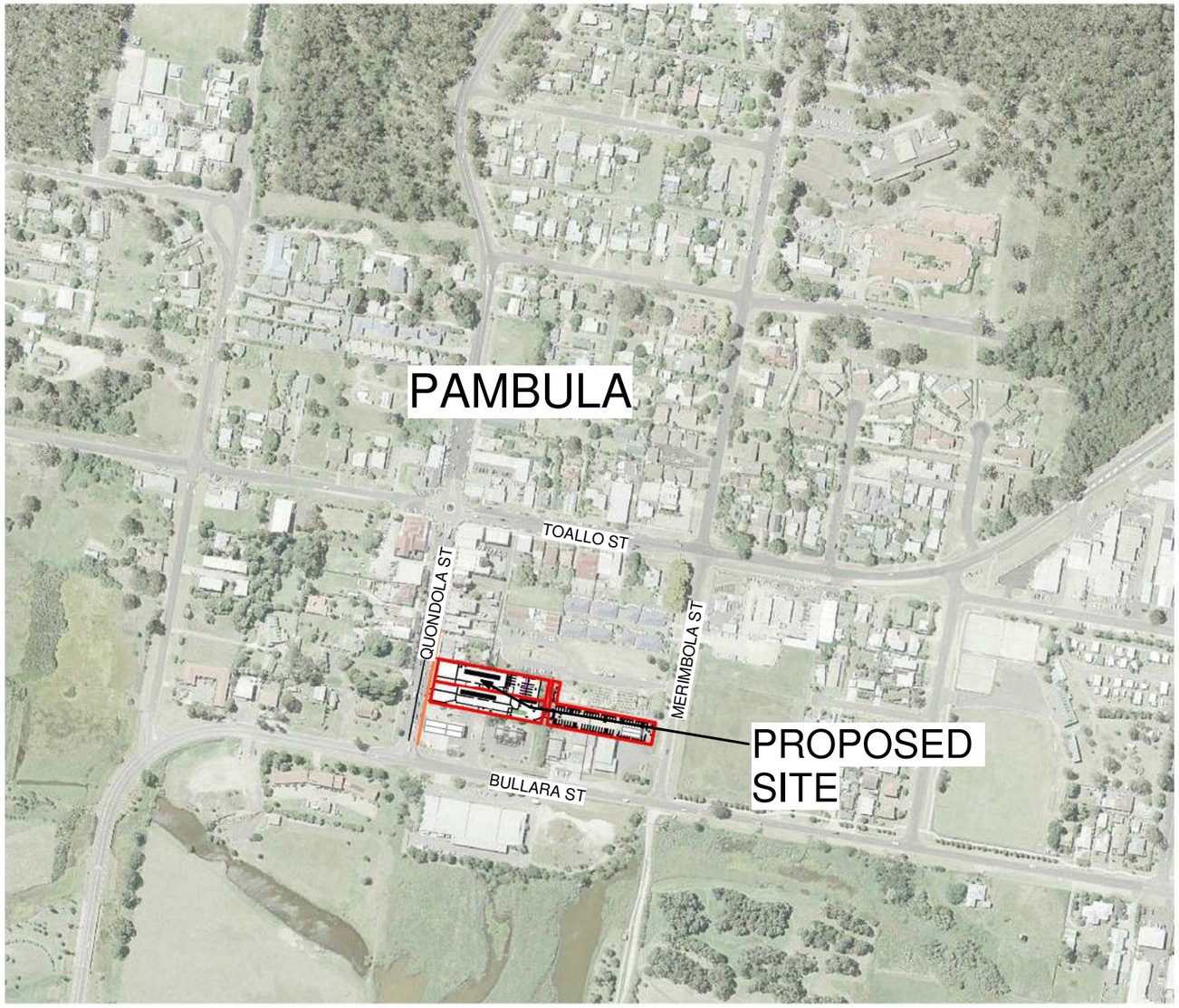
COVER SHEET	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-001

DRAWINGS	
A-001	COVER SHEET
A-002	LOCATION PLAN
A-003	SITE PLAN
A-101	MAIN FLOOR LEVEL
A-102	PARKING LEVEL
A-110	ROOF PLAN
A-120	UPPER FLOOR AREAS
A-121	LOWER FLOOR AREAS
A-201	ELEVATIONS 1
A-202	ELEVATIONS 2
A-301	SECTIONS
A-302	SECTIONS
A-601	BUILDING CODE INFO
A-602	PARKING SCHEDULE
A-901	PHOTO RENDERING VIEW FROM SW
A-910	NORTHWEST PERSPECTIVE
A-911	SOUTHWEST PERSPECTIVE
A-912	NORTHEAST PERSPECTIVE
A-913	SOUTHEAST PERSPECTIVE
A-921	RENDERED WEST ELEVATION
A-922	RENDERED EAST ELEVATION
A-923	RENDERED NORTH ELEVATION
A-924	RENDERED SOUTH ELEVATION
A-990	SAFETY NOTES
RA101	SITE EXISTING
RA102	DEMOLITION
V-101	SITE SURVEY



1 : 5000

LOCATION PLAN

GENERAL NOTES

1. Do not obtain dimensions by scaling
2. All owners, builders, sub-contractors and suppliers must verify all dimensions and levels before commencing any work or making any shop drawings.
3. These drawings are to be read with all other contract documents and requirements of the relevant Controlling Authority.
4. The title boundaries as shown have been determined by plan dimensions only and not by field survey.
5. Services shown have been located where possible by field measurement. If not able to be located, services have been plotted from relevant authority records.
6. Prior to any demolition, excavation or construction on the site, the relevant authority should be contacted for possible location of underground services and detailed locations of all services.
7. Proposed lot boundaries dimensions and areas are subject to survey.
8. Building works to be set out by a registered surveyor.

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ZONING - B2 LOCAL CENTRE

True

PLAN OF PROPOSED SUPERMARKET DEVELOPMENT AT LOTS 19 & 20 DP758825 35-37 QUONDOLA ST & LOT 15 DP1204078 SEC 33 36 MERIMBOLA ST PAMBULA

GORDON BUILDING DESIGN P/L
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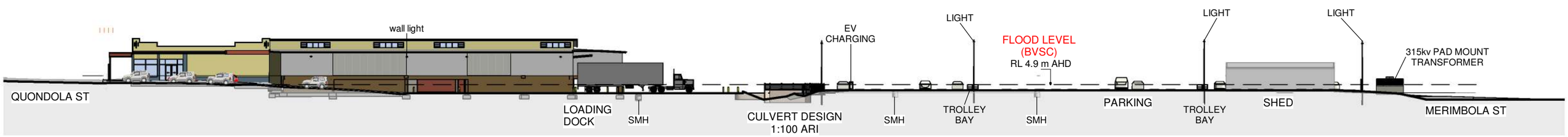
BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

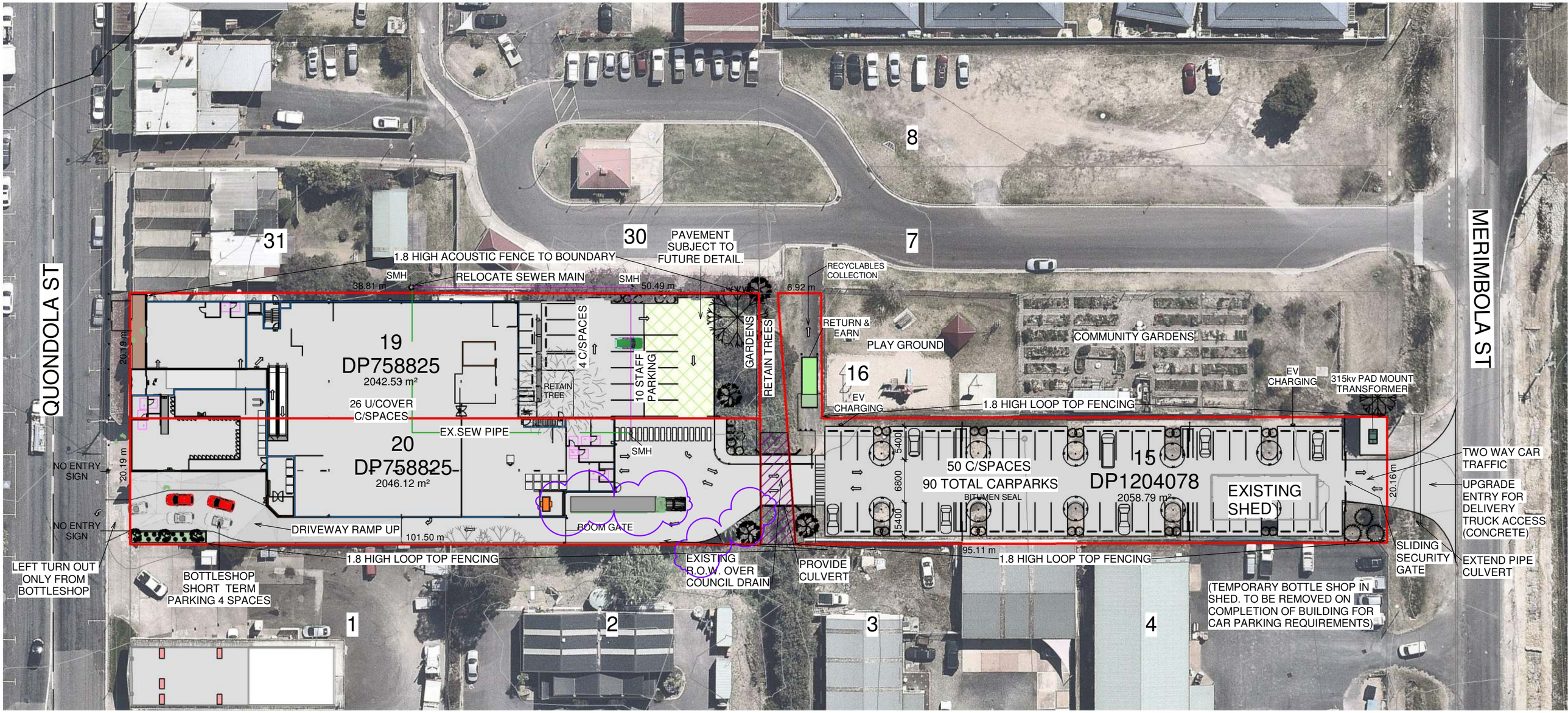
0m 100m 200m
SCALE 1:5000 @ A3

DA APPROVALS 20211117

LOCATION PLAN	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-002



SITE LONG SECTION



GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

1 : 600

SITE PLAN

True

0m 12m 24m

SCALE 1:600 @ A3

DA APPROVALS 20211117

SITE PLAN	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-003

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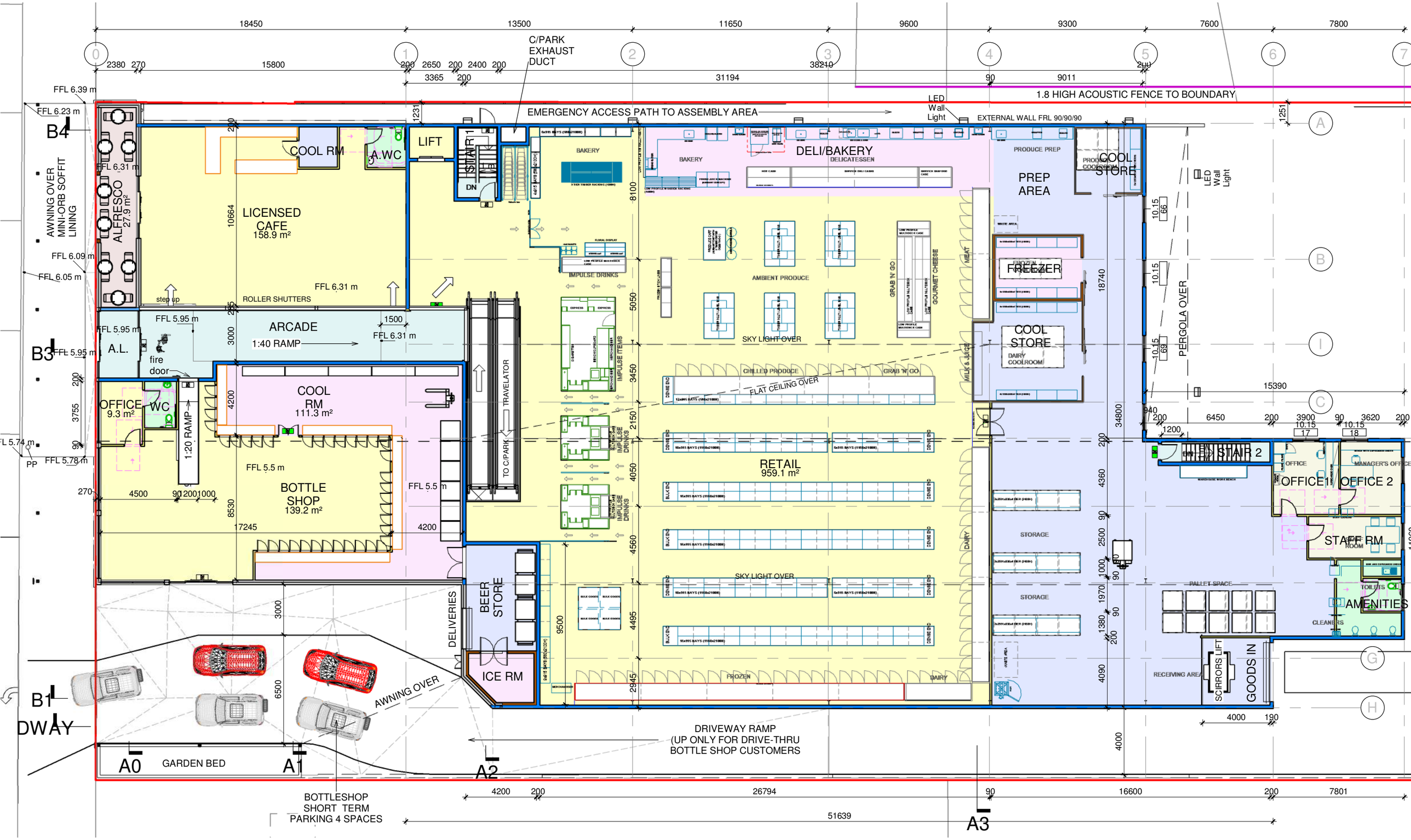

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

1 : 200

FLOOR PLAN

True

SCALE 1:200 @ A3

DA APPROVALS 20211117

MAIN FLOOR LEVEL

07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-101

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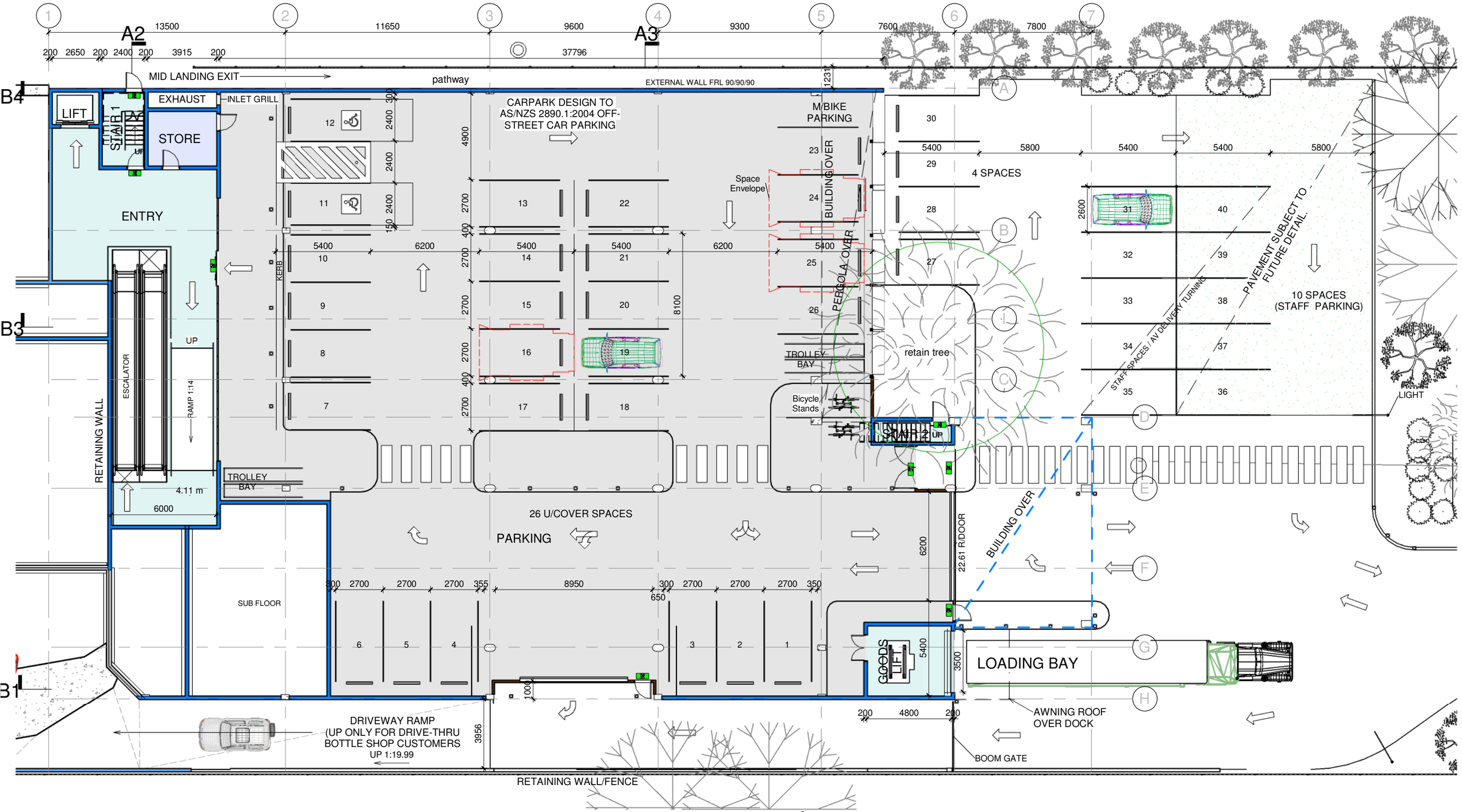

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

1 : 200

CARPARK

N

True

0m 4m 8m

SCALE 1:200 @ A3

DA APPROVALS 20211117

PARKING LEVEL

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-102

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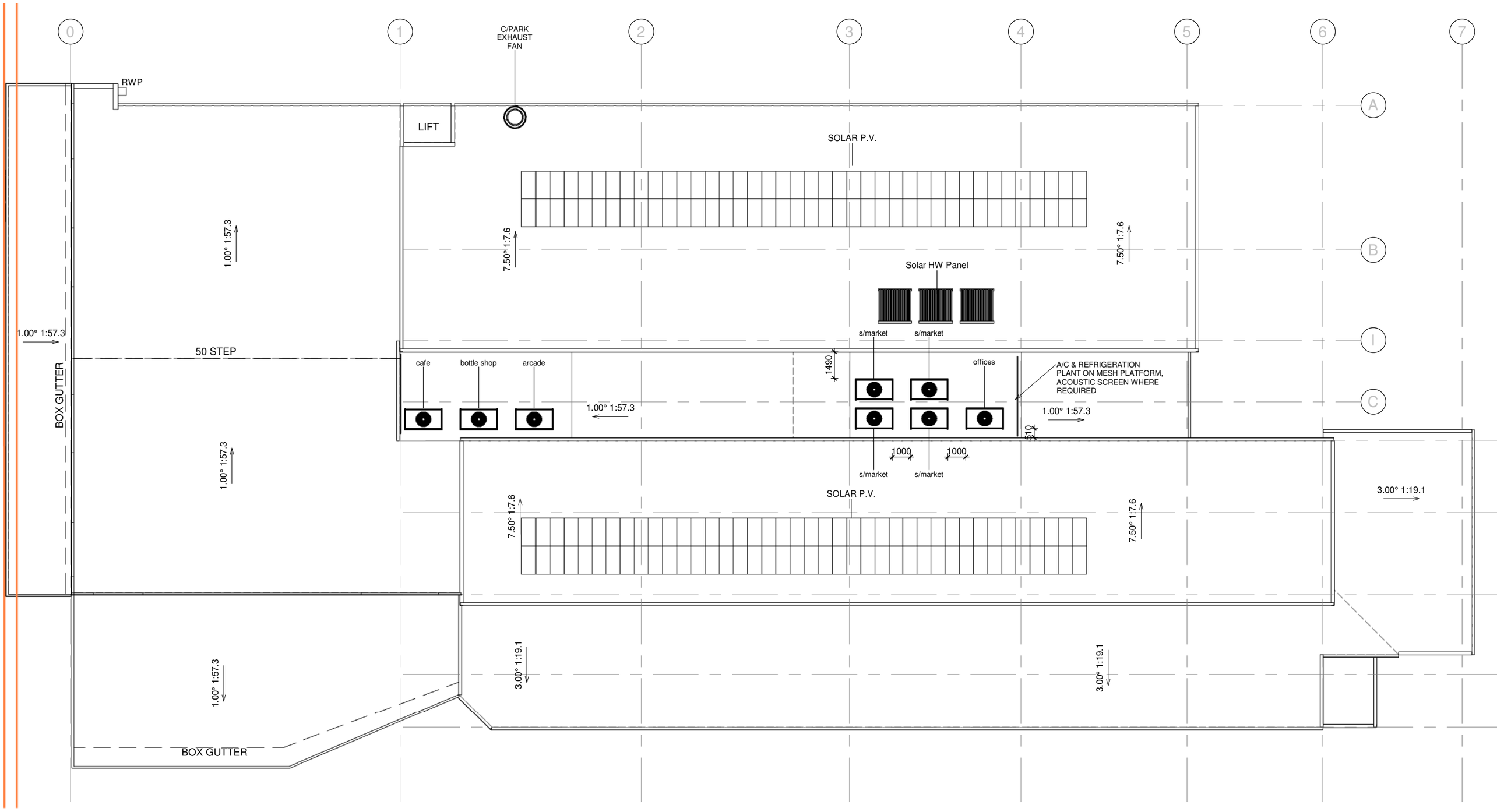

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

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1 : 200

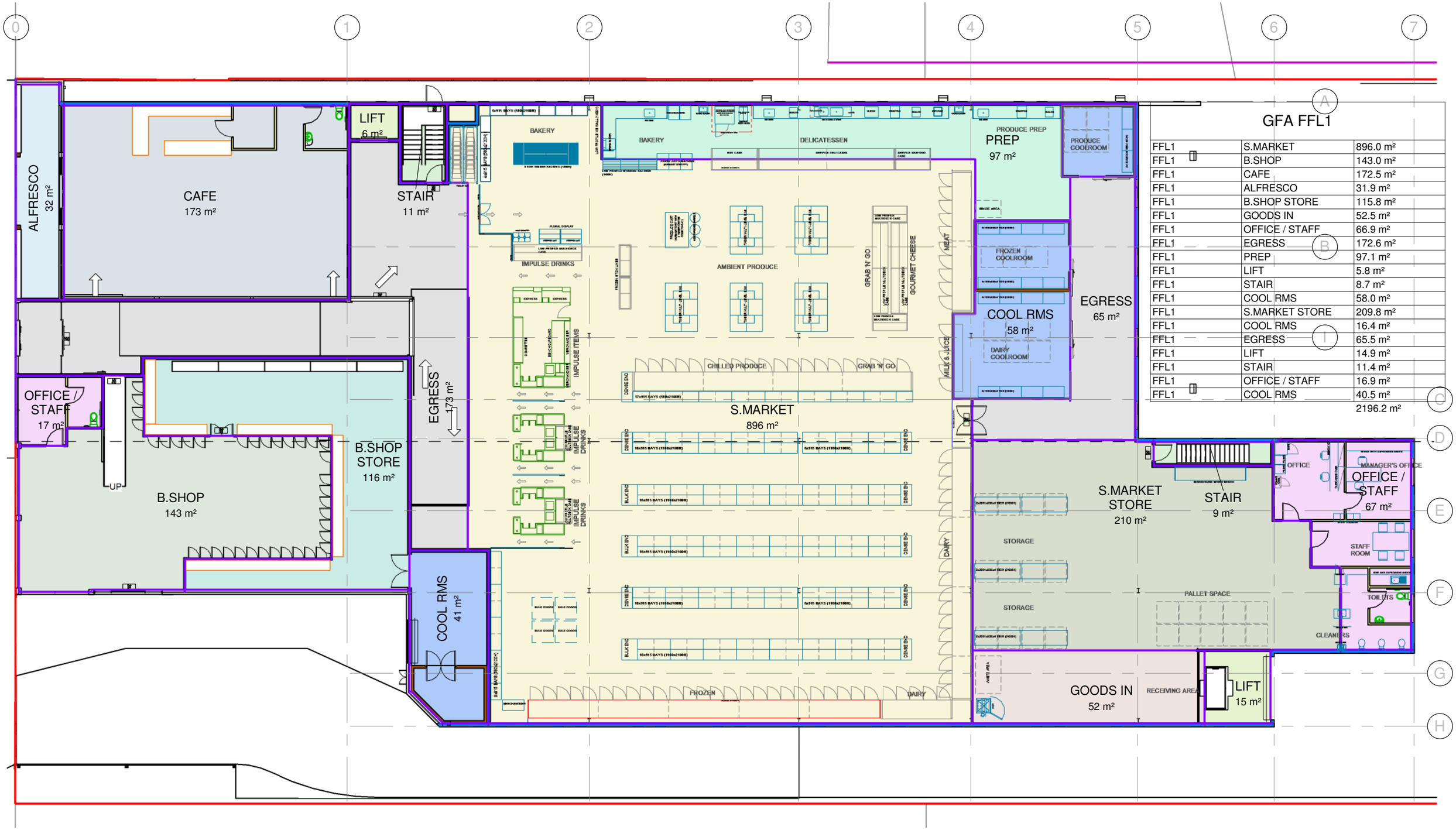
ROOF PLAN

0m 4m 8m

SCALE 1:200 @ A3

DA APPROVALS 20211117

ROOF PLAN	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-110



GFA FFL1

FFL1	S.MARKET	896.0 m²
FFL1	B.SHOP	143.0 m²
FFL1	CAFE	172.5 m²
FFL1	ALFRESCO	31.9 m²
FFL1	B.SHOP STORE	115.8 m²
FFL1	GOODS IN	52.5 m²
FFL1	OFFICE / STAFF	66.9 m²
FFL1	EGRESS	172.6 m²
FFL1	PREP	97.1 m²
FFL1	LIFT	5.8 m²
FFL1	STAIR	8.7 m²
FFL1	COOL RMS	58.0 m²
FFL1	S.MARKET STORE	209.8 m²
FFL1	COOL RMS	16.4 m²
FFL1	EGRESS	65.5 m²
FFL1	LIFT	14.9 m²
FFL1	STAIR	11.4 m²
FFL1	OFFICE / STAFF	16.9 m²
FFL1	COOL RMS	40.5 m²
		2196.2 m²

1 : 200

UPPER FLOOR AREAS

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

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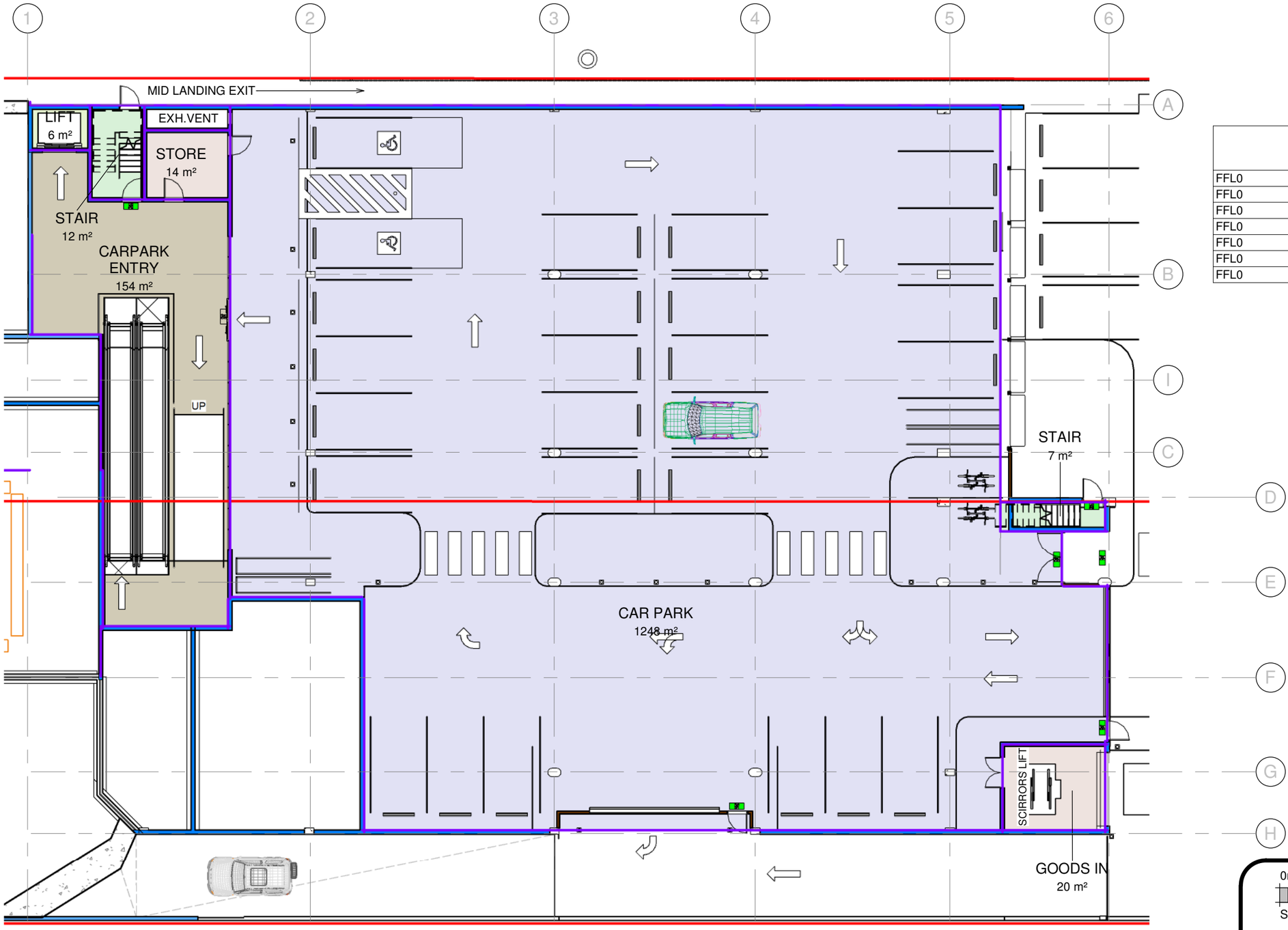
N True

0m 4m 8m

SCALE 1:200 @ A3

DA APPROVALS 20211117

UPPER FLOOR AREAS		
07/20	DWG NO.	1860
Design & Drawn by: S.L.G	SHEET	A-120



GFA FFL0		
FFL0	STORE	13.6 m²
FFL0	CARPARK ENTRY	153.6 m²
FFL0	GOODS IN	20.0 m²
FFL0	STAIR	11.7 m²
FFL0	CAR PARK	1248.2 m²
FFL0	LIFT	6.1 m²
FFL0	STAIR	7.0 m²
		1460.2 m²

1 : 200

LOWER FLOOR AREAS

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BUILDING DESIGNERS
ASSOCIATION OF AUSTRALIA

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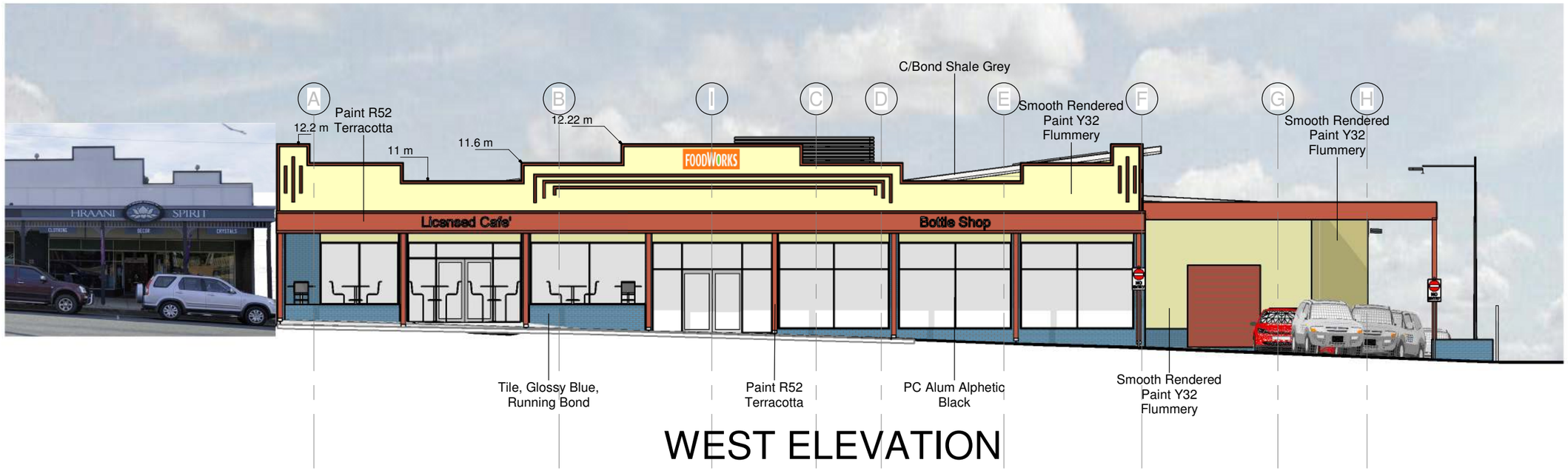
0m 4m 8m

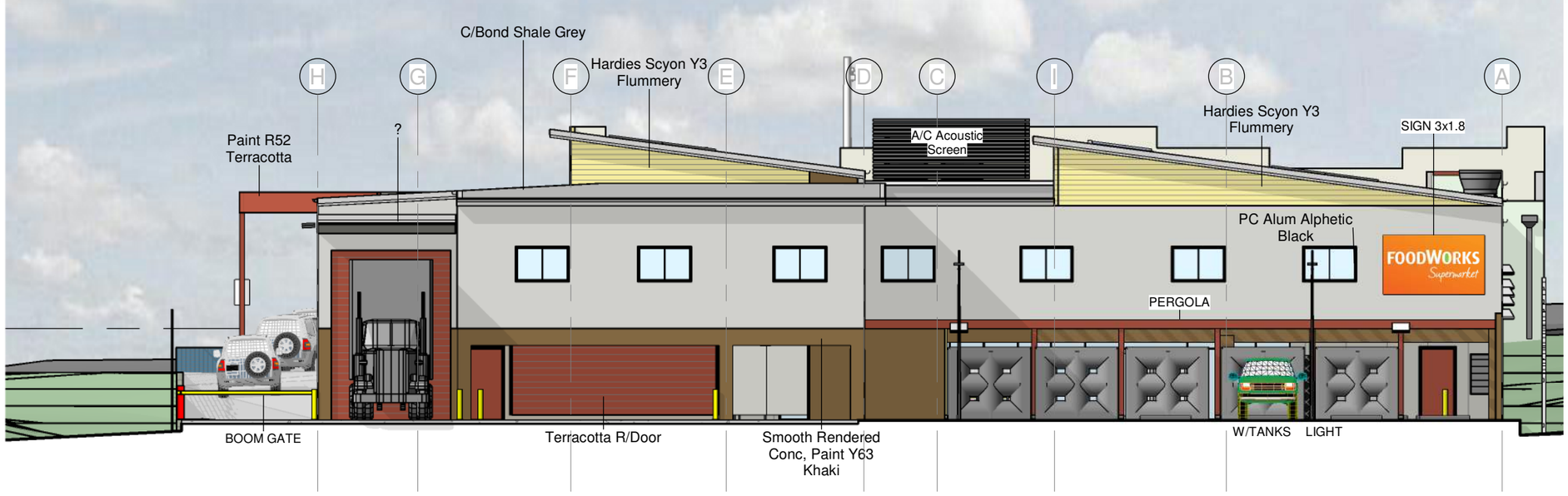
SCALE 1:200 @ A3

DA APPROVALS 20211117

LOWER FLOOR AREAS	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-121



WEST ELEVATION



EAST ELEVATION

GORDON BUILDING DESIGN P/L

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

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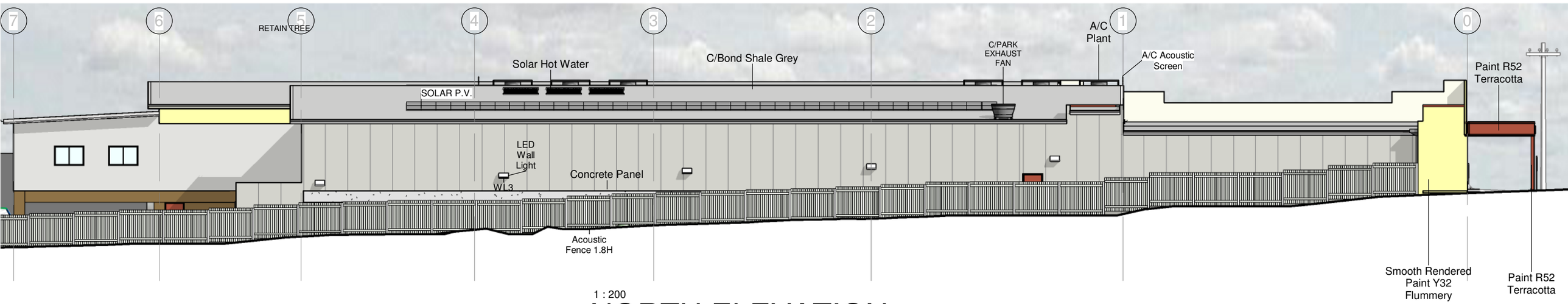
0m 3m 6m

SCALE 1:150 @ A3

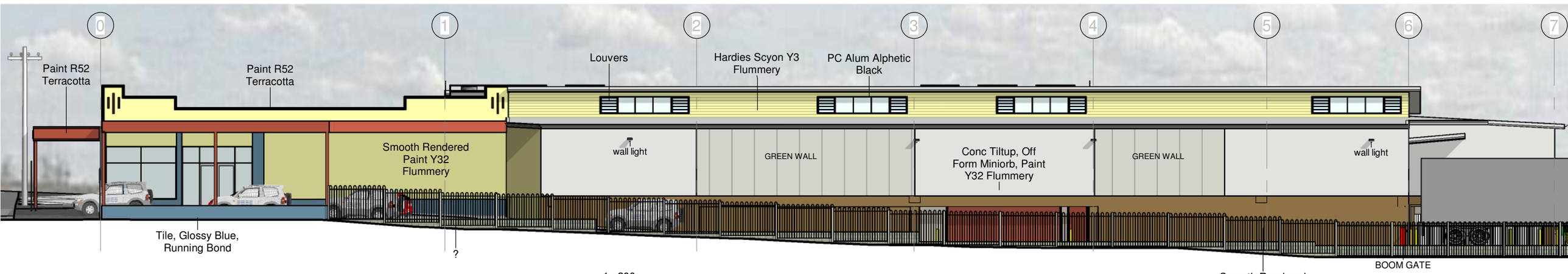
DA APPROVALS 20211117

ELEVATIONS 1	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-201



1 : 200

NORTH ELEVATION



1 : 200

SOUTH ELEVATION

0m 4m 8m

SCALE 1:200 @ A3

DA APPROVALS 20211117

ELEVATIONS 2

07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-202

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EXTERNAL CLADDING
HARDIES SCYON CLADDING
LINEAR – WEATHERBOARD STYLE
FIBRE CEMENT SHEET
TO MANUFACTURERS SPEC.

POWDER COATED, ALUMINIUM FRAMED WINDOWS & SHOPFRONT
REFER TO SECTION 'J' REPORT FOR SPECIAL REQUIREMENTS
HORIZONTAL SLIDING, LOUVRES & AUTO DOORS
FLOORS
CONCRETE SLABS WHERE SHOWN

HANDRAIL TO COMPLY WITH CURRENT BCA REQUIREMENTS
WHERE OVER 1 M ABOVE FINISHED GROUND LEVEL PROVIDE
POWDER COATED METAL

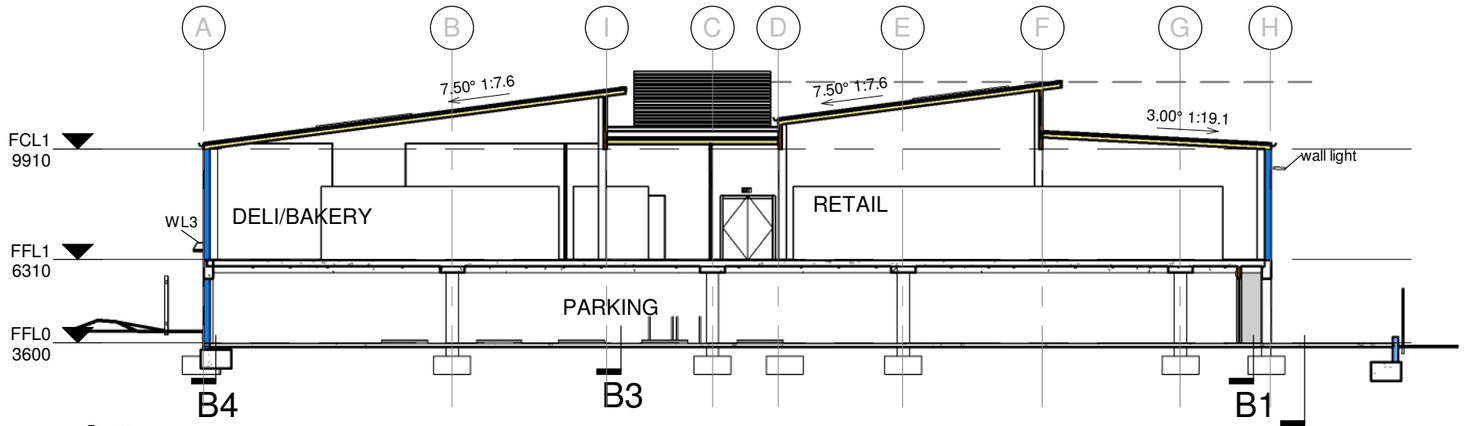
MASONRY WALLS
TILT-UP CONCRETE PANEL (VERT MINI ORB PROFILE)
EXTERNAL TREATMENT TO BE TEXTURE COATED WITH 2 COAT EXTERIOR GRADE PAINTWORK

ALL WORK TO COMPLY WITH MANUFACTURERS SPECIFICATION

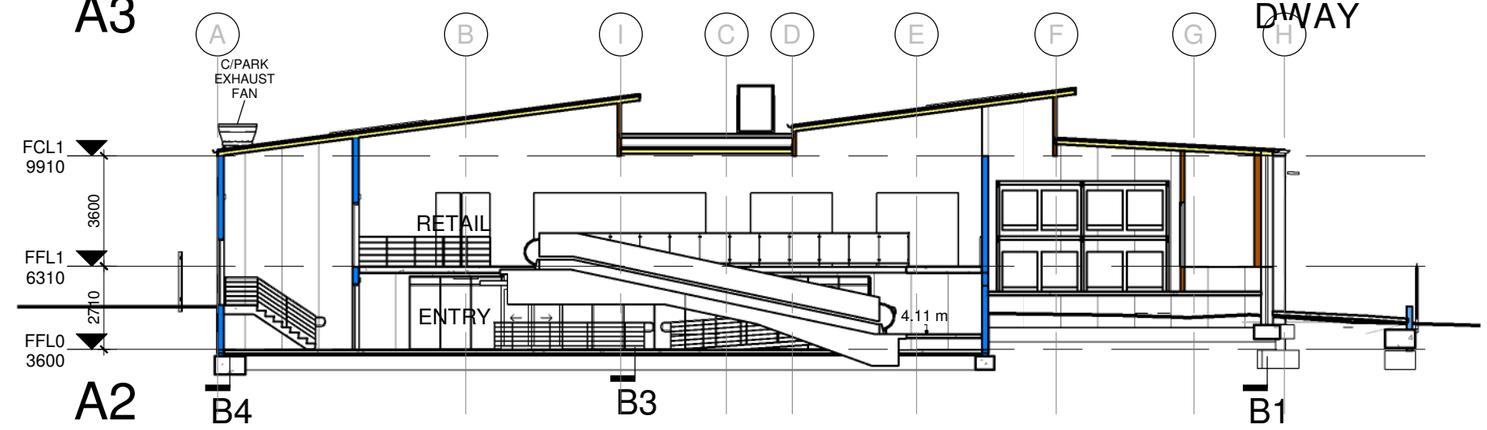
PROVIDE SUB-FLOOR ACCESS DOOR

TERMITE TREATMENT TO BE :
USE OF CONCRETE FLOOR SLAB DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH AS 3660 AND AS 2870 ALL TO STRUCTURAL ENGINEERS DETAIL AND CLEAR 100 EDGE EXPOSURE ALL AROUND AND MECHANICAL SEPARATION FOR SLAB PENETRATIONS AND CONTROL JOINTS CARRIED OUT IN ACCORDANCE WITH AS3660.1 AND THE MANUFACTURER'S SPECIFICATION.
CERTIFICATION REQUIRED ON COMPLETION.

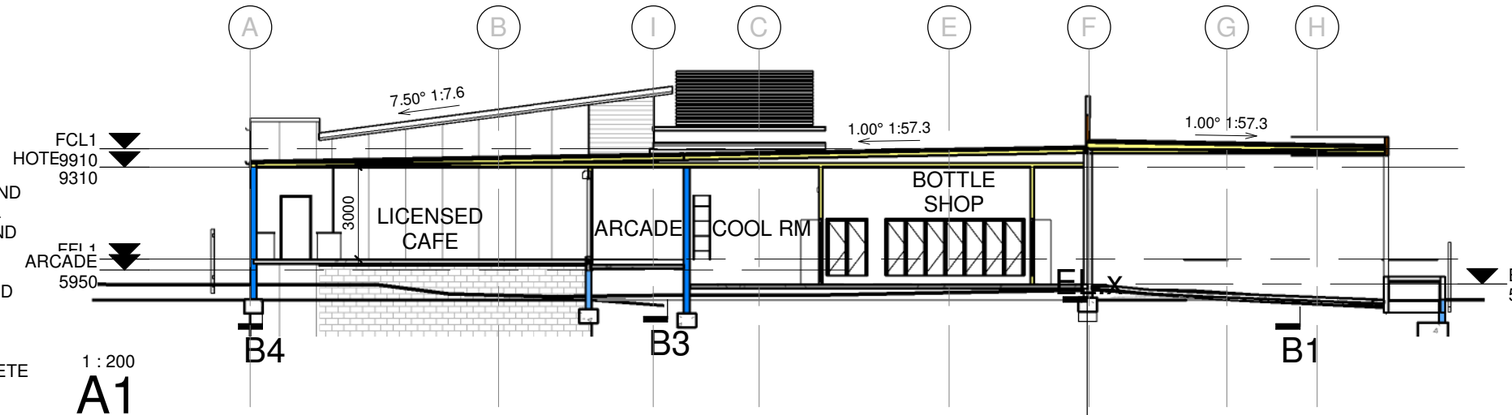
AGRICULTURAL DRAIN TO PERIMETER OF CONCRETE SLAB.



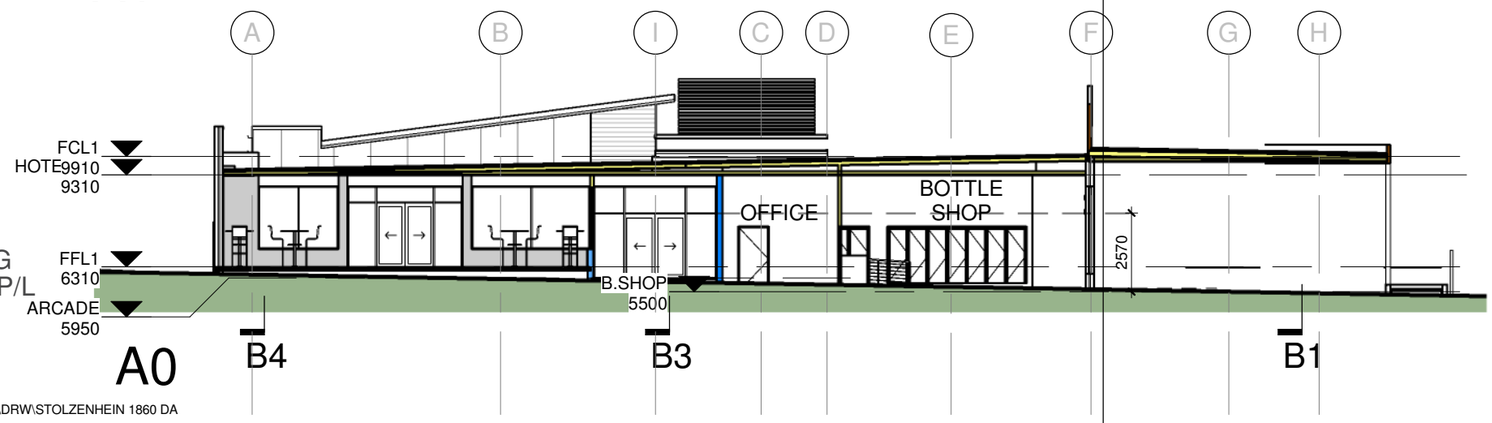
A3



A2



1 : 200
A1



A0

GENERAL NOTES

ALL MATERIALS TO BE DELIVERED STORED AND FIXED IN
ACCORDANCE WITH THE CURRENT MANUFACTURERS
SPECIFICATION AND CERTIFIED WITH THE CURRENT NATIONAL CONSTRUCTION CODE OF AUSTRALIA AND MANUFACTURERS SPECIFICATION

INSTALL A SMOKE DETECTION AND ALARM SYSTEM IN ACCORDANCE WITH CURRENT B.C.A.REQUIRMENTS

NOTE: EXTERNAL WALL DOOR THRESHOLDS SHALL BE SET DOWN TO ALLOW DOOR SILLS TO BE FLUSH WITH FLOOR LEVEL. IN ACCORDANCE WITH CURRENT AS1428

REFER TO ENGINEER'S DETAILS FOR:
REINFORCED CONCRETE SLAB FLOORS, CONCRETE FOOTINGS, RETAINING WALLS,
CONCRETE COLUMNS, STEEL BEAMS & COLUMNS
LINTELS, TIMBER BEAMS, FIXING, FRAMING,
BRACING & HOLDING DOWN

INSULATION
REFER TO SECTION 'J' REPORT BY OTHERS

ALL RMB MATERIAL TO HAVE A MAXIMUM FLAMMABILITY INDEX OF 5
AND A MAXIMUM SMOKE DEVELOPED INDEX OF 5

ROOF CONSTRUCTION COLORBOND METAL
FIXED TO MANUFACTURERS SPECIFICATION
METAL BATTENS @ 900c/c

PRE-FABRICATED STEEL PORTAL FRAMES
TO ENGINEERS DETAIL

PITCH AS SHOWN
T2 HYSPAN TIMBER RAFTERS TO MANUFACTURERS SPECIFICATION

COLORBOND METAL GUTTERS
COLORBOND FASCIA AND DOWNPIPES.
CONNECT TO TANKS OVERFLOW TO COUNCIL S/WATER

INTERNAL LININGS
BATTENED CEILING
PLASTERBOARD INTERNAL LININGS INCLUDING WET AREAS TO MANUFACTURERS SPECIFICATION.

C/BOND MINI-ORB LINING
TO UNDER SIDE OF VERANDA

SCALE 1:200 @ A3

DA APPROVALS 20211117

SECTIONS

07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-301

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

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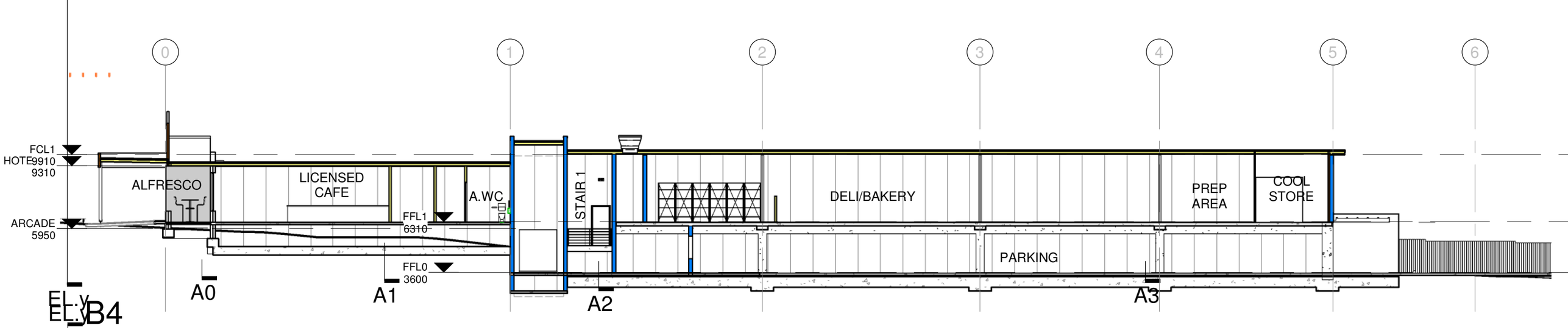

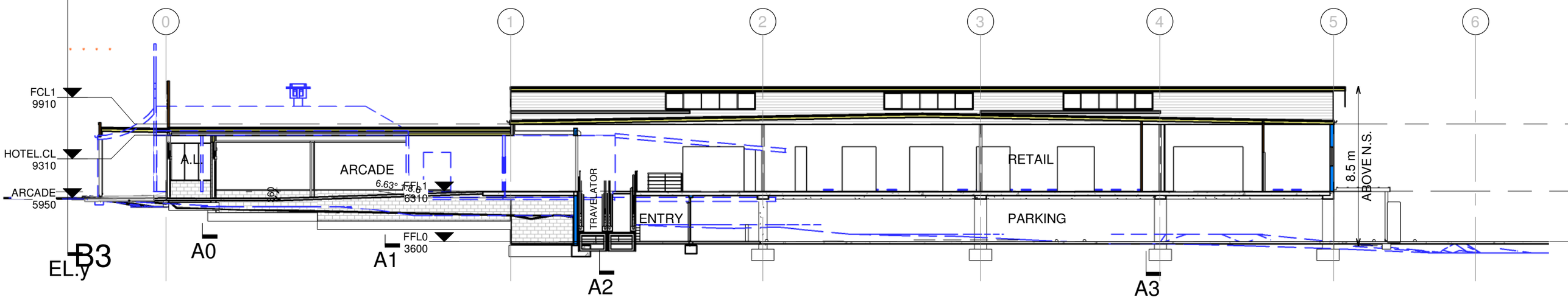

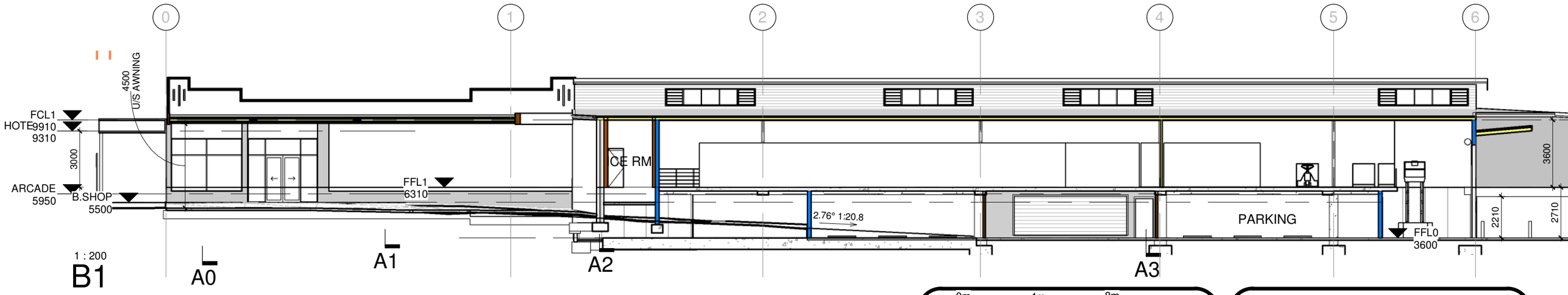

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS
ASSOCIATION OF AUSTRALIA

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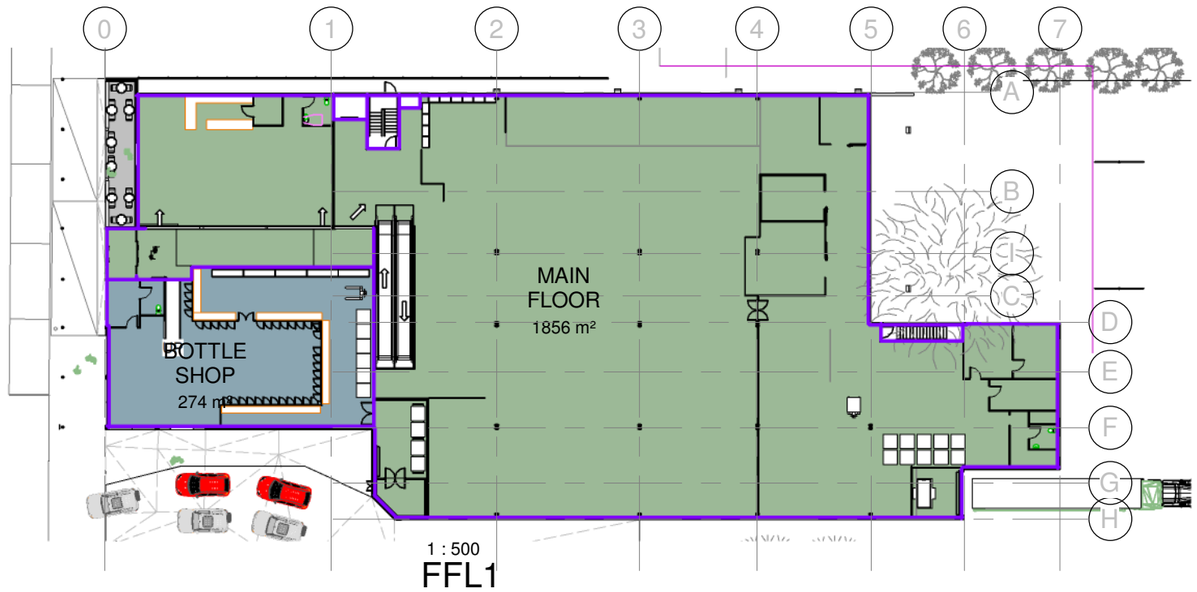
0m 4m 8m

SCALE 1:200 @ A3

DA APPROVALS 20211117

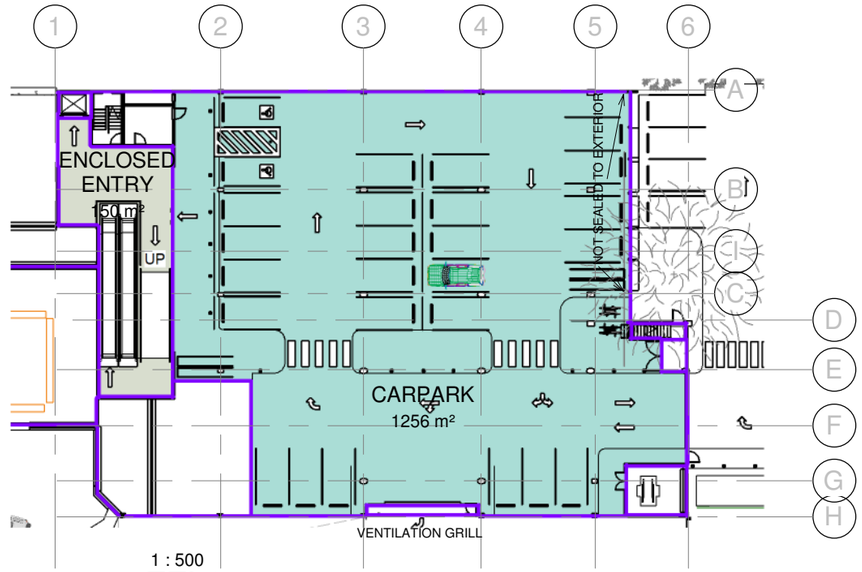
SECTIONS

07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-302



1 : 500

FFL1



1 : 500

FFL0

Area Schedule (FIRE COMPARTMENT)					
1	FFL0	ENCLOSED ENTRY	149.9 m²	6	
1	FFL1	MAIN FLOOR	1855.6 m²	6	
			2005.5 m²		
2	FFL1	BOTTLE SHOP	273.6 m²	6	
			273.6 m²		
3	FFL0	CARPARK	1255.6 m²	7(a)	
			1255.6 m²		
Grand total: 4			3534.7 m²		

Building Properties

Rise In Storeys	2
Building Class	MIXED
Construction Type	C

A6.7 Class 7 buildings
A Class 7 building is a storage-type building that includes one or more of the following sub-classifications:
(1)Class 7a — a *carpark*.

A6.6 Class 6 buildings
A Class 6 building is a shop or other building used for the sale of goods by retail or the supply of services direct to the public, including—
(1)an eating room, café, restaurant, milk or soft-drink bar; or
(2)a dining room, bar area that is not an *assembly building*, shop or kiosk part of a hotel or motel; or
(3)a hairdresser's or barber's shop, public laundry, or undertaker's establishment; or
(4)a market or sale room, showroom, or *service station*.

Table C2.2 Maximum size of fire compartments or atria

Classification	Type A construction	Type B construction	Type C construction
5, 9b or 9c	Max *floor area*—8000 m²	Max *floor area*—5500 m²	Max *floor area*—3000 m²
	Max volume—48000 m³	Max volume—33000 m³	max volume—18000 m³
6, 7, 8 or 9a (except for *patient care areas*)	Max *floor area*—5000 m²	Max *floor area*—3500 m²	Max *floor area*—2000 m²
	Max volume—30000 m³	Max volume—21000 m³	Max volume—12000 m³

N

True

0m 8m 16m

SCALE 1:400 @ A3

DA APPROVALS 20211117

BUILDING CODE INFO

07/20

DWG NO. 1860

Design & Drawn by: S.L.G

SHEET A-601

GORDON BUILDING DESIGN P/L

bdaa BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

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Parking Requirments - DCP

S.MARKET	896.0 m²	25	36
B.SHOP	143.0 m²	25	6
CAFE	172.5 m²	25	7
ALFRESCO	31.9 m²	25	2
B.SHOP STORE	115.8 m²	40	3
GOODS IN	52.5 m²	40	2
STORE	13.6 m²	40	1
CARPARK ENTRY	153.6 m²	25	7
GOODS IN	20.0 m²	40	1
STAIR	11.7 m²	0	
OFFICE / STAFF	66.9 m²	25	3
CAR PARK	1248.2 m²	0	
LIFT	6.1 m²	0	
EGRESS	172.6 m²	40	5
PREP	97.1 m²	40	3
LIFT	5.8 m²	0	
STAIR	8.7 m²	0	
COOL RMS	58.0 m²	40	2
S.MARKET STORE	209.8 m²	40	6
STAIR	7.0 m²	0	
COOL RMS	16.4 m²	40	1
EGRESS	65.5 m²	40	2
LIFT	14.9 m²	0	
STAIR	11.4 m²	0	
OFFICE / STAFF	16.9 m²	25	1
COOL RMS	40.5 m²	40	2
	3656.4 m²		90

Parking Provided

CULVERT
50
FFL0
40

Grand total: 90

Existing Hotel/Motel Onsite Parking Schedule

	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		
	Car Space 2890 - 90	FFL1	DCP10		

Grand total: 29

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BUILDING DESIGNERS
ASSOCIATION OF AUSTRALIA

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PARKING SCHEDULE

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-602

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PHOTO RENDERING VIEW FROM SW

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-901

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NORTHWEST PERSPECTIVE

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-910

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SOUTHWEST PERSPECTIVE

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-911

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NORTHEAST PERSPECTIVE

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-912

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SOUTHEAST PERSPECTIVE

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-913

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RENDERED WEST ELEVATION

07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-921

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DA APPROVALS 20211117

RENDERED EAST ELEVATION

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-922

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DA APPROVALS 20211117

RENDERED NORTH ELEVATION

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-923

GORDON BUILDING DESIGN P/L

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DA APPROVALS 20211117

RENDERED SOUTH ELEVATION

07/20		DWG NO.	1860
Design & Drawn by:	S.L.G	SHEET	A-924

SAFETY NOTES.

THESE NOTES MUST BE READ AND UNDERSTOOD BY ALL INVOLVED IN THE PROJECT. THIS INCLUDES (but is not excluded to): OWNER, BUILDER, SUB-CONTRACTORS, CONSULTANTS, RENOVATORS, OPERATORS, MAINTAINERS, DEMOLISHERS.

1. FALLS, SLIPS, TRIPS

a) WORKING AT HEIGHTS DURING CONSTRUCTION

Wherever possible, components for this building should be prefabricated off-site or at ground level to minimise the risk of workers falling more than two metres. However, construction of this building will require workers to be working at heights where a fall in excess of two metres is possible and injury is likely to result from such a fall. The builder should provide a suitable barrier wherever a person is required to work in a situation where falling more than two metres is a possibility.

DURING OPERATION OR MAINTENANCE

For houses or other low-rise buildings where scaffolding is appropriate: Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of two metres is possible. Where this type of activity is required, scaffolding, ladders or trestles should be used in accordance with relevant codes of practice, regulations or legislation. For buildings where scaffold, ladders, trestles are not appropriate: Cleaning and maintenance of windows, walls, roof or other components of this building will require persons to be situated where a fall from a height in excess of two metres is possible. Where this type of activity is required, scaffolding, fall barriers or Personal Protective Equipment (PPE) should be used in accordance with relevant codes of practice, regulations or legislation.

ANCHORAGE POINTS

Anchorage points for portable scaffold or fall arrest devices may have been included in the design for use by maintenance workers. Any persons engaged to work on the building after completion of construction work should be informed about the anchorage points.

b) SLIPPERY OR UNEVEN SURFACES FLOOR FINISHES

Specified If finishes have been specified by designer, these have been selected to minimise the risk of floors and paved areas becoming slippery when wet or when walked on with wet shoes/feet. Any changes to the specified finish should be made in consultation with the designer or, if this is not practical, surfaces with an equivalent or better slip resistance should be chosen.

FLOOR FINISHES

By Owner If designer has not been involved in the selection of surface finishes, the owner is responsible for the selection of surface finishes in the pedestrian trafficable areas of this building. Surfaces should be selected in accordance with AS HB 197:1999 and AS/NZ 4586:2004.

STEPS, LOOSE OBJECTS AND UNEVEN SURFACES

Due to design restrictions for this building, steps and/or ramps are included in the building which may be a hazard to workers carrying objects or otherwise occupied. Steps should be clearly marked with both visual and tactile warning during construction, maintenance, demolition and at all times when the building operates as a workplace. Building owners and occupiers should monitor the pedestrian access ways and in particular access to areas where maintenance is routinely carried out to ensure that surfaces have not moved or cracked so that they become uneven and present a trip hazard. Spills, loose material, stray objects or any other matter that may cause a slip or trip hazard should be cleaned or removed from access ways. Contractors should be required to maintain a tidy work site during construction, maintenance or demolition to reduce the risk of trips and falls in the workplace. Materials for construction or maintenance should be stored in designated areas away from access ways and work areas.

2. FALLING OBJECTS

LOOSE MATERIALS OR SMALL OBJECTS

Construction, maintenance or demolition work on or around this building is likely to involve persons working above ground level or above floor levels. Where this occurs one or more of the following measures should be taken to avoid objects falling from the area where the work is being carried out onto persons below.

1. Prevent or restrict access to areas below where the work is being carried out.
2. Provide toeboards to scaffolding or work platforms.
3. Provide protective structure below the work area.
4. Ensure that all persons below the work area have Personal Protective Equipment (PPE).

BUILDING COMPONENTS

During construction, renovation or demolition of this building, parts of the structure including fabricated steelwork, heavy panels and many other components will remain standing prior to or after supporting parts are in place. Contractors should ensure that temporary bracing or other required support is in place at all times when collapse which may injure persons in the area is a possibility. Mechanical lifting of materials and components during construction, maintenance or demolition presents a risk of falling objects. Contractors should ensure that appropriate lifting devices are used, that loads are properly secured and that access to areas below the load is prevented or restricted.

3. TRAFFIC MANAGEMENT

For building on a major road, narrow road or steeply sloping road: Parking of vehicles or loading/unloading of vehicles on this roadway may cause a traffic hazard. During construction, maintenance or demolition of this building designated parking for workers and loading areas should be provided. Trained traffic management personnel should be responsible for the supervision of these areas. For building where on-site loading/unloading is restricted: Construction of this building will require loading and unloading of materials on the roadway. Deliveries should be well planned to avoid congestion of loading areas and trained traffic management personnel should be used to supervise loading/unloading areas. For all buildings: Busy construction and demolition sites present a risk of collision where deliveries and other traffic are moving within the site. A traffic management plan supervised by trained traffic management personnel should be adopted for the work site.

4. SERVICES GENERAL

Rupture of services during excavation or other activity creates a variety of risks including release of hazardous material. Existing services are located on or around this site. Where known, these are identified on the plans but the exact location and extent of services may vary from that indicated. Services should be located using an appropriate service (such as Dial Before You Dig), appropriate excavation practice should be used and, where necessary, specialist contractors should be used. Locations with underground power: Underground power lines MAY be located in or around this site. All underground power lines must be disconnected or carefully located and adequate warning signs used prior to any construction, maintenance or demolition commencing. Locations with overhead power lines: Overhead power lines MAY be near or on this site. These pose a risk of electrocution if struck or approached by lifting devices or other plant and persons working above ground level. Where there is a danger of this occurring, power lines should be, where practical, disconnected or relocated. Where this is not practical adequate warning in the form of bright coloured tape or signage should be used or a protective barrier provided.

5. MANUAL TASKS

Components within this design with a mass in excess of 25kg should be lifted by two or more workers or by mechanical lifting device. Where this is not practical, suppliers or fabricators should be required to limit the component mass. All material packaging, building and maintenance components should clearly show the total mass of packages and where practical all items should be stored on site in a way which minimises bending before lifting. Advice should be provided on safe lifting methods in all areas where lifting may occur. Construction, maintenance and demolition of this building will require the use of portable tools and equipment. These should be fully maintained in accordance with manufacturer's specifications and not used where faulty or (in the case of electrical equipment) not carrying a current electrical safety tag. All safety guards or devices should be regularly checked and Personal Protective Equipment should be used in accordance with manufacturer's specification.

6. HAZARDOUS SUBSTANCES

ASBESTOS

For alterations to a building constructed prior to 1990: If this existing building was constructed prior to: 1990 - it therefore may contain or prior to: 1986 - it therefore is likely to contain asbestos either in cladding material or in fire retardant insulation material. In either case, the builder should check and, if necessary, take asbestos appropriate action before demolishing, cutting, sanding, drilling or otherwise disturbing the existing structure.

POWDERED MATERIALS

Many materials used in the construction of this building can cause harm if inhaled in powdered form. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear Personal Protective Equipment including protection against inhalation while using powdered material or when sanding, drilling, cutting or otherwise disturbing or creating powdered material.

TREATED TIMBER

The design of this building may include provision for the inclusion of treated timber within the structure. Dust or fumes from this material can be harmful. Persons working on or in the building during construction, operational maintenance or demolition should ensure good ventilation and wear Personal Protective Equipment including protection against inhalation of harmful material when sanding, drilling, cutting or using treated timber in any way that may cause harmful material to be released. Do not burn treated timber.

VOLATILE ORGANIC COMPOUNDS

Many types of glue, solvents, spray packs, paints, varnishes and some cleaning materials and disinfectants have dangerous emissions. Areas where these are used should be kept well ventilated while the material is being used and for a period after installation. Personal Protective Equipment may also be required. The manufacturer's recommendations for use must be carefully considered at all times.

SYNTHETIC MINERAL FIBRE

Fibreglass, rockwool, ceramic and other material used for thermal or sound insulation may contain synthetic mineral fibre which may be harmful if inhaled or if it comes in contact with the skin, eyes or other sensitive parts or the body. Personal Protective Equipment including protection against inhalation of harmful material should be used when installing, removing or working near bulk insulation material.

TIMBER FLOORS

This building may contain timber floors which have an applied finish. Areas where finishes are applied should be kept well ventilated during sanding and application and for a period after installation. Personal Protective Equipment may also be required. The manufacturer's recommendations for use must be carefully considered at all times.

7. CONFINED SPACES

EXCAVATION

Construction of this building and some maintenance on the building will require excavation and installation of items within excavations. Where practical, installation should be carried out using methods which do not require workers to enter the excavation. Where this is not practical, adequate support for the excavated area should be provided to prevent collapse. Warning signs and barriers to prevent accidental or unauthorised access to all excavations should be provided.

ENCLOSED SPACES

For buildings with enclosed spaces where maintenance or other access may be required: Enclosed spaces within this building may present a risk to persons entering for construction, maintenance or any other purpose. The design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where workers are required to enter enclosed spaces, air testing equipment and Personal Protective Equipment should be provided.

SMALL SPACES

For buildings with small spaces where maintenance or other access may be required: Some small spaces within this building will require access by construction or maintenance workers. The design documentation calls for warning signs and barriers to unauthorised access. These should be maintained throughout the life of the building. Where workers are required to enter small spaces they should be scheduled so that access is for short periods. Manual lifting and other manual activity should be restricted in small spaces.

8. PUBLIC ACCESS

Public access to construction and demolition sites and to areas under maintenance causes risk to workers and public. Warning signs and secure barriers to unauthorised access should be provided. Where electrical installations, excavations, plant or loose materials are present they should be secured when not fully supervised.

9. OPERATIONAL USE OF BUILDING RESIDENTIAL BUILDINGS

If this building has been designed as a residential building and if at a later date, it is used or intended to be used as a workplace, the provisions of the Work Health and Safety Act 2011 or subsequent replacement Act should be applied to the new use.

OR

NON-RESIDENTIAL BUILDINGS

For non-residential buildings where the end-use has not been identified: This building has been designed to requirements of the classification identified on the drawings. The specific use of the building is not known at the time of the design and a further assessment of the workplace health and safety issues should be undertaken at the time of fit-out for the end-user. For non-residential buildings where the end-use is known: This building has been designed for the specific use as identified on the drawings. Where a change of use occurs at a later date a further assessment of the workplace health and safety issues should be undertaken.

10.OTHER HIGH RISK ACTIVITY

All electrical work should be carried out in accordance with of Practice: Managing Electrical Risks at the Workplace, AS/NZ 3012 and all licensing requirements Code. All work using Plant should be carried out in accordance with Code of Practice: Managing Risks of Plant at the Workplace. All work should be carried out in accordance with Practice: Managing Noise and Preventing Hearing Loss at Work Code. Due to the history of serious incidents it is recommended that particular care be exercised when undertaking work involving steel construction and concrete placement. All the above applies.

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A3

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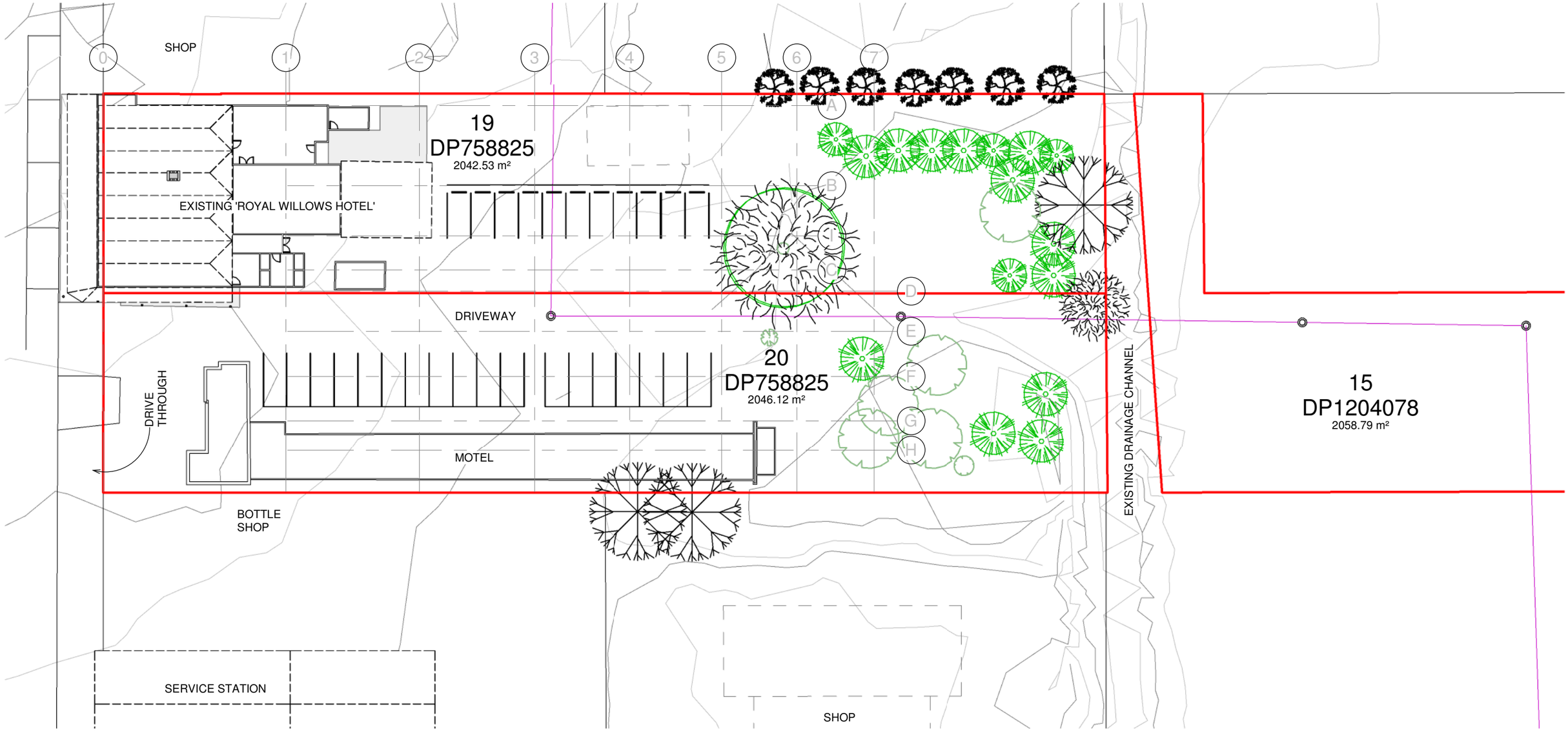
SAFETY NOTES

07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET A-990

QUONDOLA ST



1 : 400

SITE PLAN

LOT AREAS NOTE: AREAS ARE APPROX ONLY.	
19 DP758825	2042.5 m²
20 DP758825	2046.1 m²
15 DP1204078	2058.8 m²

0m 8m 16m

SCALE 1:400 @ A3

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N

True

SITE EXISTING		
07/20	DWG NO.	1860
Design & Drawn by: S.L.G	SHEET	RA101

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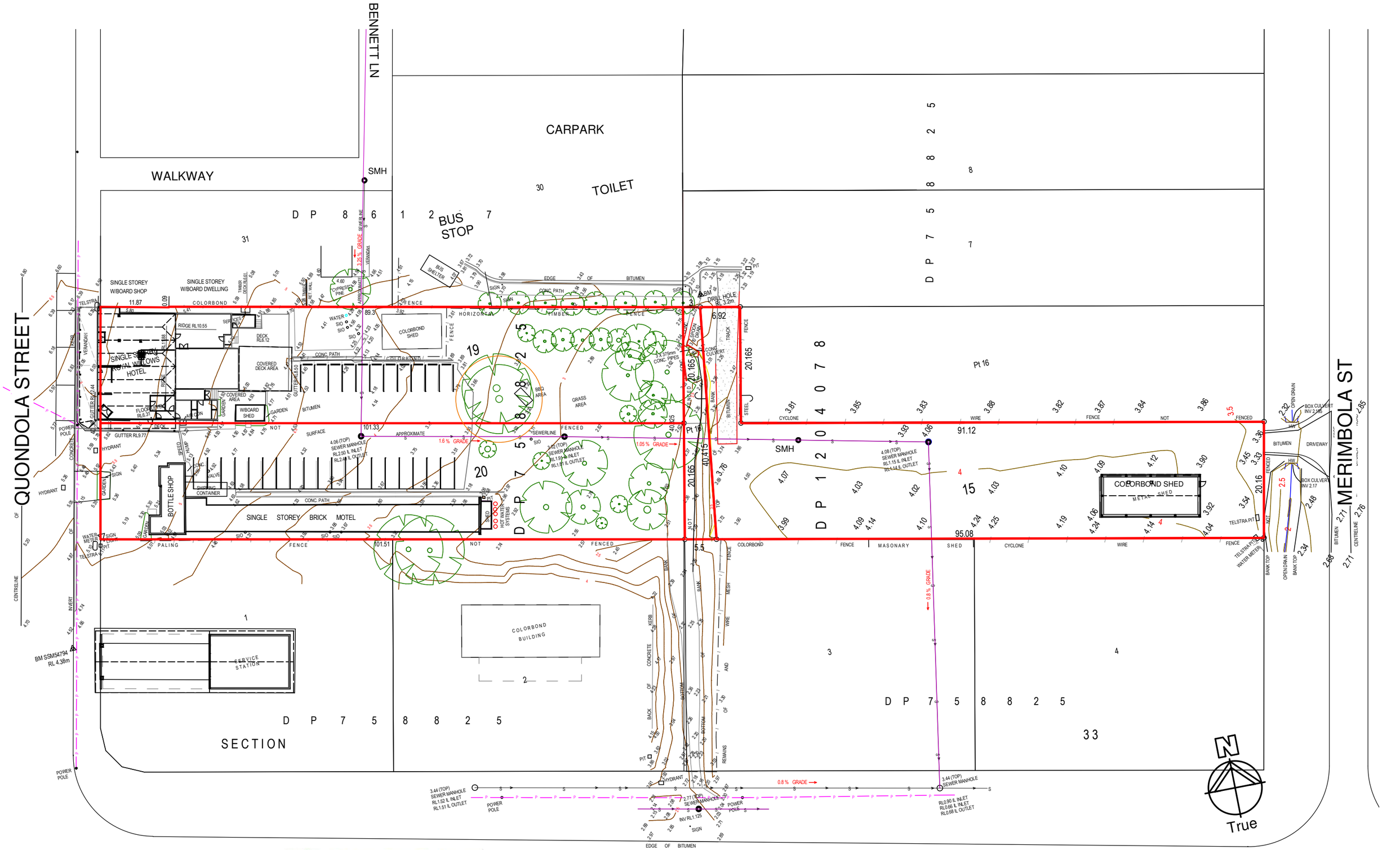

Caddey Searl & Jarman SURVEYORS

GORDON BUILDING DESIGN P/L

BUILDING DESIGNERS ASSOCIATION OF AUSTRALIA

1 : 600

EXISTING SITE PLAN

0m 12m 24m

SCALE 1:600 @ A3

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SITE SURVEY	
07/20	DWG NO. 1860
Design & Drawn by: S.L.G	SHEET V-101

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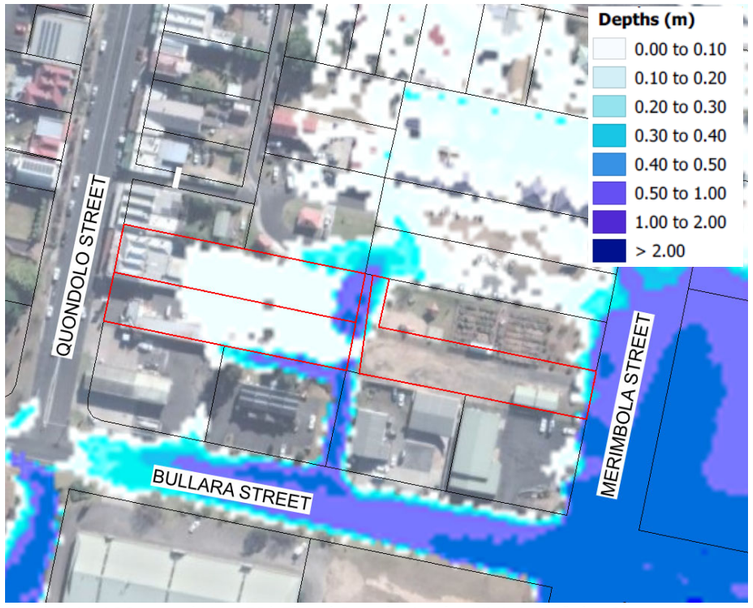
APPENDIX D
FLOOD EMERGENCY RESPONSE PLAN

Flood Risk Management Plan – 35-37 Quondola St & 36 Merimbola St, Pambula

Is this area at risk of flooding?

During heavy rainfall, upstream runoff from the local catchment can cause minor flooding in the drainage channel that runs through the site.

However, the most significant flooding across the site is produced by prolonged rainfall in the Pambula River catchment causing floodwater to spill from the river and inundate sections of the site. As shown in the 1% Average Exceedance Probability (1%AEP) (1 in 100 year) floodwater depth map below, this floodwater is likely to be shallow, and form across the carparking areas beneath the supermarket and adjacent to the drainage channel. Merimbola St is also expected to be inundated with more significant depths of flood water.



Peak 1 in 100 year (1% AEP) Flood Depths in the Vicinity of the Site

The flood characteristics across the site during the 1%AEP (1 in 100 year) event are generally characterised by shallow depths (<0.1 metre) and low velocities (<0.1m/s). However, areas of higher depths and velocities can occur within and around the site, such as:

- Depths of over 1 m and velocities of 0.6m/s within the drainage channel through the centre of the site
- Depths of up to 0.9 m and velocities of 0.6m/s on Merimbola Street where the carpark meets the roadway

The supermarket, café and bottle shop are all located above the 1%AEP (1 in 100 year ARI) flood level of 3.66mAHD, and the carparking areas are not subject to hazardous flood behaviour. However, Merimbola Street does experience more significant flooding and is hazardous to people and vehicles.

Flood Emergency Response Plan

In most flood events (up to 1%AEP [1 in 100 year ARI]), the site can safely be occupied with minimal risk to staff and customers, and evacuation is not considered necessary. However, Merimbola Street and many other local roads may be cut by floodwaters and be unsafe to travel on. Avoid entering the floodwaters by remaining within the site or exiting by foot or vehicle to Quondola Street only.
If depths within the carpark exceed 0.1 metres, evacuation of the site to higher ground should be undertaken via Quondola Street.

Before a Flood Occurs

It is important to have an understanding of the flood risk within the Pambula area and be familiar with the contents of this plan to aid in taking appropriate action when a flood does occur.

When Heavy Rainfall or Storms Occur

- Occupants should remain within the building to avoid any risk posed by heavy rainfall and storms such as flash flooding or lightning strikes.
- Shop managers should use the public announce (PA) system to advise all staff and customers that exiting from the carpark should be via the bottle shop to Quondola Street only and not Merimbola Street due to potential flooding.
- Boom gate across bottle shop driveway to be retained in the open position to allow emergency egress from the site from carparks
- Boom gate across the Merimbola Street opening to be closed
- Shop managers should monitor local television and radio channels for flood forecasts, road closures, safety advice and evacuation orders issued by the SES.
- The Bureau of Meteorology also provides flood predictions and river height information on the following website: http://www.bom.gov.au/
- Locate and check your Emergency Kit is ready for use

When a Flood Warning is Issued for Pambula

A Flood Warning is issued by the BOM when flooding is predicted to happen in the near future.
If the flood warning indicates that the Pambula CBD will be impacted:

- Notify staff and customers of the Flood Warning
- Carry out actions in the FloodSafe Plan
- Double check your Emergency Kit
- Keep listening to local media for information, updates and advice
- Move chemicals, waste containers and electrical devices to approximately 1 metre above the supermarket floor (above Probable Maximum Flood level of ~7mAHD)
- Secure objects likely to float

Evacuation

If the flood warning or SES indicates that evacuation from the site is necessary:

- Pedestrian evacuation can be undertaken by moving north to higher ground via Quondola St
- Vehicular evacuation should be undertaken from the carparking areas via the bottle shop driveway to Quondola St (left turn out, then U-turn to move north up Quondola St)
- Evacuation via Merimboola Street should not occur due to potentially hazardous flooding conditions, and the Merimboola Street boom gate should remain closed.

After a flood

- Never walk or drive through floodwater.
- Keep active with local media/SES for information, updates, and advice to ensure the flood is over
- Ensure critical services within the building are operational (e.g., water, toilets)
- Open the Merimboola Street boom gate once Merimboola Street has been reopened and deemed safe by local authorities
- Have any areas of inundation and utilities professionally cleaned/checked
- Review and update your FloodSafe Plan – could it be improved?

Your FloodSafe Plan:

A specific Business FloodSafe (continuity) Plan can be prepared online at:
http://www.sesemergencyplan.com.au/business/

However, a "hard copy" should also be maintained and include information on where to find the latest weather forecasts, Flood Watches, Flood Warnings and SES Flood Bulletins.

Site Key Personnel Emergency Contact

Name	Position	Phone Number

For Emergency Help in Floods and Storms Call the SES on
132 500
For life-threatening emergencies call:
000

Bega Valley Shire Council	**(02) 6499 2222**
SES Website	http://www.ses.nsw.gov.au/
BOM Website	http://www.bom.gov.au/
RMS Website	http://www.rms.nsw.gov.au/

This Flood Emergency Response Plan was prepared by:

Catchment Simulation Solutions
Sydney Office
Suite 10.01
70 Phillip St
SYDNEY NSW 2000
(02) 8355 5500
(02) 8355 5500
info@csse.com.au

Revision 1: June 2022