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FLOOD IMPACT ASSESSMENT

10A PARK STREET, EAST MAITLAND

Prepared for: HOUSING PLUS

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Revisions

Revision	Description	Date	Prepared by	Approved by
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02	DA Issue	18/06/2024	KP	GL

Review Panel

Division/ office	Name
Civil/Sydney	Gregory Lyell

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1 Introduction

ACOR Consultants Pty Ltd (ACOR) has been engaged by Housing Plus Property to prepare a Flood Impact Assessment of the designated design storm flows, being a 1% AEP event, in accordance with the requirements of the Maitland City Council (the Council) and NSW Floodplain Development Manual to support a Development Application (DA) for the development of group home located at 10A Park Street (the **Site**) in the suburban area of East Maitland, NSW. The site is also identified as Lot 2 DP 1285515. The site is located at a walking distance of 1 km from the town centre of East Maitland, 1.5 km from East Maitland Train Station and a driving distance of approximately 27 km from the City of Newcastle.

The site location is shown below in Figure 1.

Figure 1 - Site location of proposed development (source: Esri, Geoscience Australia)

2 The Site Description

1.1 Existing scenario

The site has frontage to Park Street along the west as indicated in Figure 2 below. The site is currently vacant with a small metal shed located near the eastern boundary. The site is located in the vicinity of the urbanised residential area.

The Site measures approximately 1775 m2 in area and slopes from the eastern boundary to the northwestern corner boundary ranging from RL 23.0 to RL 17.5 with approximately 9.3% slopes. An underground drainage trunk main of 0.9 m diameter (owned by the Council) and a sewer main of 0.15 m diameter (owned by Hunter Water) traverse through the property. A 3.0 m wide easement has been burdened on the lot for drainage usage tentatively along the trunk main.

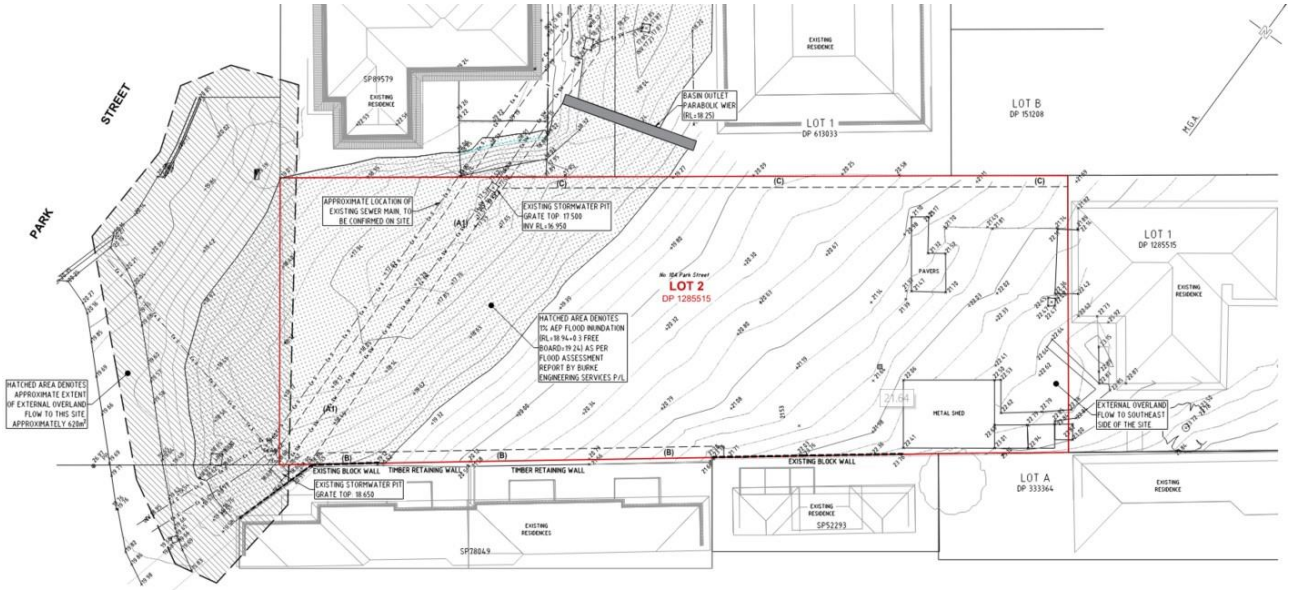


Figure 2 - Existing site condition

The site survey is included in Appendix A of this report.

A local depression is present near the northeastern boundary of the site. During flood events, the depression also acts as a small detention with the presence of a weir at the downstream end as indicated on the existing site plan.

1.2 Proposed development

The proposed works involve the construction of a group home comprising of individual units and a community facility provided for domestic and family violence program. A double storey structure has been proposed as part of the development with an open carpark at the front of the building. The access to the carpark has been proposed with a suspended bridge structure supported on piers. The bridge will facilitate a drive-through connection to Park Street for both vehicles and people accessing the site.

The area of the existing depression near the northeastern boundary of the site is proposed to be retained as the existing condition. The pier supports for the bridge are proposed outside the existing drainage easement mentioned above in the report.

Screenshot of the proposed development is shown below in Figure 3.

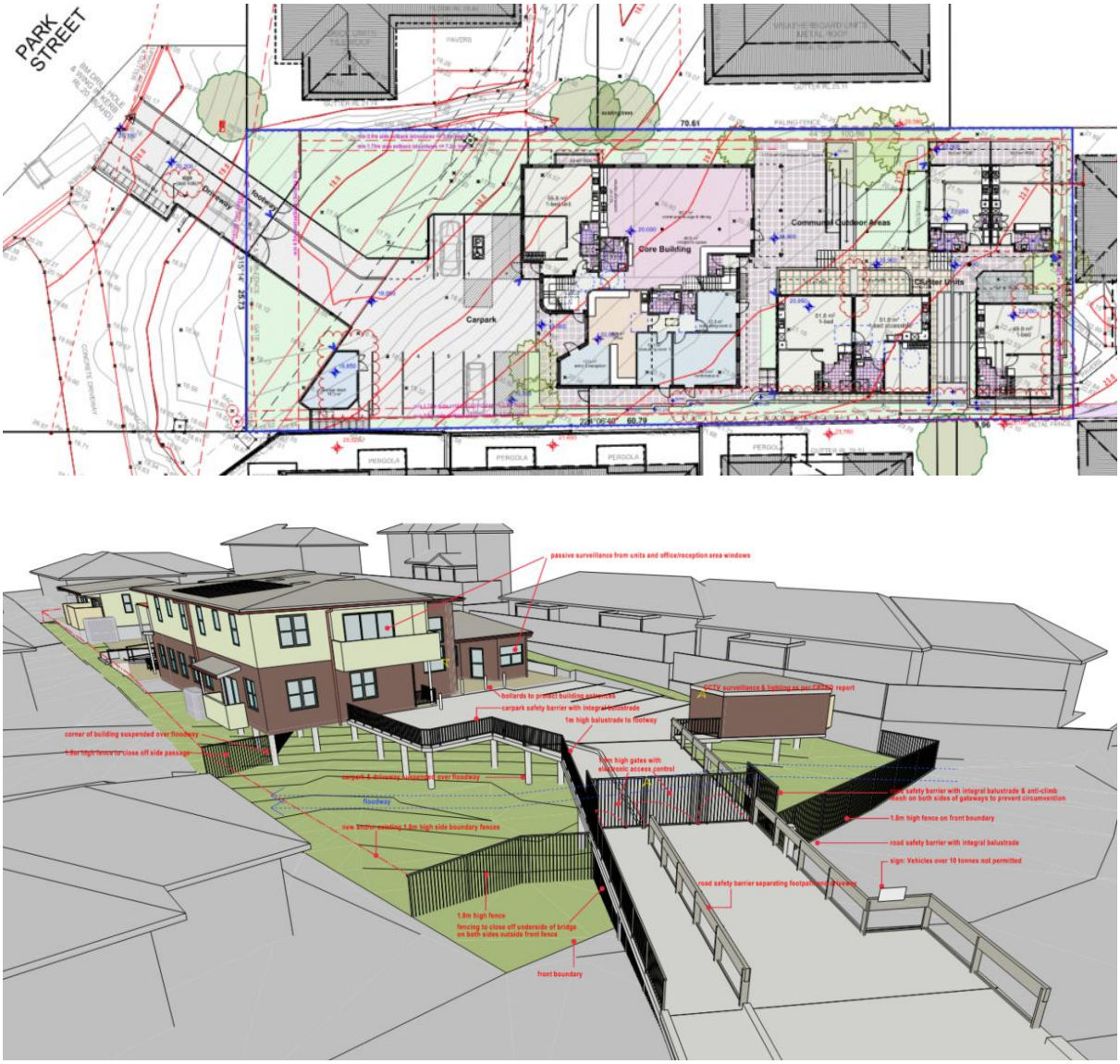


Figure 3 - Proposed Works

The proposed architectural plans are included in Appendix A of this report.

3 Available Data

This flood impact assessment uses topographic, flooding and rainfall data obtained from several sources. The data that were available and utilised in this study are presented below.

- Survey Plan prepared by Rennie Golledge Pty Ltd Surveyors & Panners dated on 12/05/2019 (included in Appendix A)
- Architectural Plans prepared by Architect James Burns, Revision C dated 03/06/2024 (included in Appendix B)
- Civil Design Documentation prepared by Barnson Pty Ltd, Revision F dated 12/06/2024 (included in Appendix B)

- Structural Drawings prepared by Barnson Pty Ltd, Revision B dated 14/06/2024 (included in Appendix B)
- Lots and cadastre information obtained from DC Spatial Services, NSW Department of Customer Services
- Satellite imagery obtained from Nearmap
- LIDAR data (1 m resolution dated 16/02/2012) obtained from NSW Spatial Services, Department of Finance, Services and Innovation
- Rainfall data obtained from ARR Datahub, copyrights to Commonwealth of Australia (Geoscience Australia)

4 Hydrological and Hydraulic Modelling

4.1 Hydrologic Modelling

The hydrological modelling for the catchment is described in the following sections.

4.1.1 Catchment Identification

The site is located within the broader Hunter River Catchment. However, the site is not affected by the riverine flooding from Hunter River during the 1% AEP event. Therefore, this study will be limited to the analyses of overland flooding emanating from the local upstream catchment. Analyses of the Hunter River floodplain are beyond the scope of this study.

The upstream catchment area for the site was identified from the aerial imagery and the land topography information from LIDAR data. Accordingly, the total upstream catchment area was estimated to be approximately 30.0 hectares as shown in the Figure 4 below.

Figure 4 – Upstream Catchment area (image source: Nearmap)

The upstream catchment area stretches tentatively up to Brisbane Street to the west, Victoria Street to the south, Edgeworth Street to the north and bounded by Newcastle Street to the east. The catchment elevation ranges from approximately RL 47.0 near Brisbane Street to RL 14.0 near Newcastle Street over a flying distance of approximately 800 m with an average slope of 4.1%.

4.1.2 Modelling Approach

Hydrologic modelling was undertaken within TUFLOW using the Direct Rainfall ('rainfall on the grid') methodology. In the hydrological model, rainfall is applied directly to the 2D terrain, and the model automatically routes the flow as determined by the elevation and roughness grids.

During this method, the runoff is generated over the entire catchment, rather than the more traditional approach of calculating an inflow hydrograph and lumping this in at an assumed location(s). This 'direct rainfall' approach means the whole catchment will be 'wet' and the hydraulic modelling results need to be filtered to show only those cells that genuinely represent areas of catchment flooding. This was achieved by only mapping inundation at cells with a flood depth greater than 0.1 m.

Direct rainfall was applied to the entire upstream catchment area indicated in Figure 4 for the hydrological model. The design storm events applied to the catchment are the design storm events described in Section 4.1.1 above.

For the hydrological model, a grid cell size of 5 m was utilised as a balance between model efficiency and quality. ARR 2019 procedure was adopted in analysing the various storm events and their respective temporal patterns. The resulting hydrographs were then analysed where the median storm event was identified and adopted as the critical design storm for further hydraulic analyses.

4.1.3 Design rainfall intensities and temporal patterns

This study uses design rainfall intensity-frequency-duration (IFD) data, derived for the latitude and longitude of the study area. This IFD data was issued by the Hydrometeorological Advisory Service of the Australian Bureau of Meteorology in 2016.

The IFD data provides average rainfall intensities of design storm events for recurrence intervals for 1% AEP event. Uniform areal distribution of design storms has been assumed for the catchment due to its small area. Rainfall depths and ensemble temporal patterns were developed for the design storm events for 1% AEP using techniques described in Australian Rainfall and Runoff (Ball et al. 2019).

Aerial reduction factors were not applied to the point burst rainfall totals provided by the Bureau of Meteorology due to the small size of the catchment.

Estimated average design storm rainfall intensities for 1% AEP storm event considered is presented in Table 1.

Table 1 - Average design rainfall intensities for 1% AEP

Duration	Intensity (mm/hr)	Duration	Intensity (mm/hr)
5 min	22.8	45 min	73
10 min	36.9	1 hr	80.5
15 min	46.3	1.5 hr	92
20 min	53.2	2 hr	101
25 min	58.6	3 hr	117
30 min (Critical Storm)	63	4.5 hr	137

4.1.4 Design Rainfall Losses

Design rainfall losses for the 1% AEP were modelled using initial loss/Continuing Loss (IL/CL) infiltration model, and were defined based on loss rates adopted in Ball et al. (2019), the ARR Data Hub and advise provided in NSW OEH (2019).

4.1.5 Critical duration

In accordance with the procedure described in Australia Rainfall and Runoff, an ensemble of 10 temporal patterns was run through the hydrologic model for a storm duration of 20 minutes to 120 minutes for the 1% AEP storm events. Because of the small upstream catchment area with a highly impervious nature, the longer duration events were found to be non-critical beyond 120 minutes during the initial model run. Therefore, the rainfall events with longer duration were not utilised to find the critical design event as the result could introduce biases in calculation of the median event.

A peak flow hydrograph (Flow Vs Time) was determined for each storm simulation from the hydrologic model and plotted together as shown in Figure 5 below. The median peak flow was determined accordingly from these hydrographs. The storm duration of 25 minutes with Temporal Pattern TP04 was identified as the median storm for this study as indicated in the Figure 5 below. The median storm will be adopted as the critical event for further hydraulic analyses in TUFLOW.

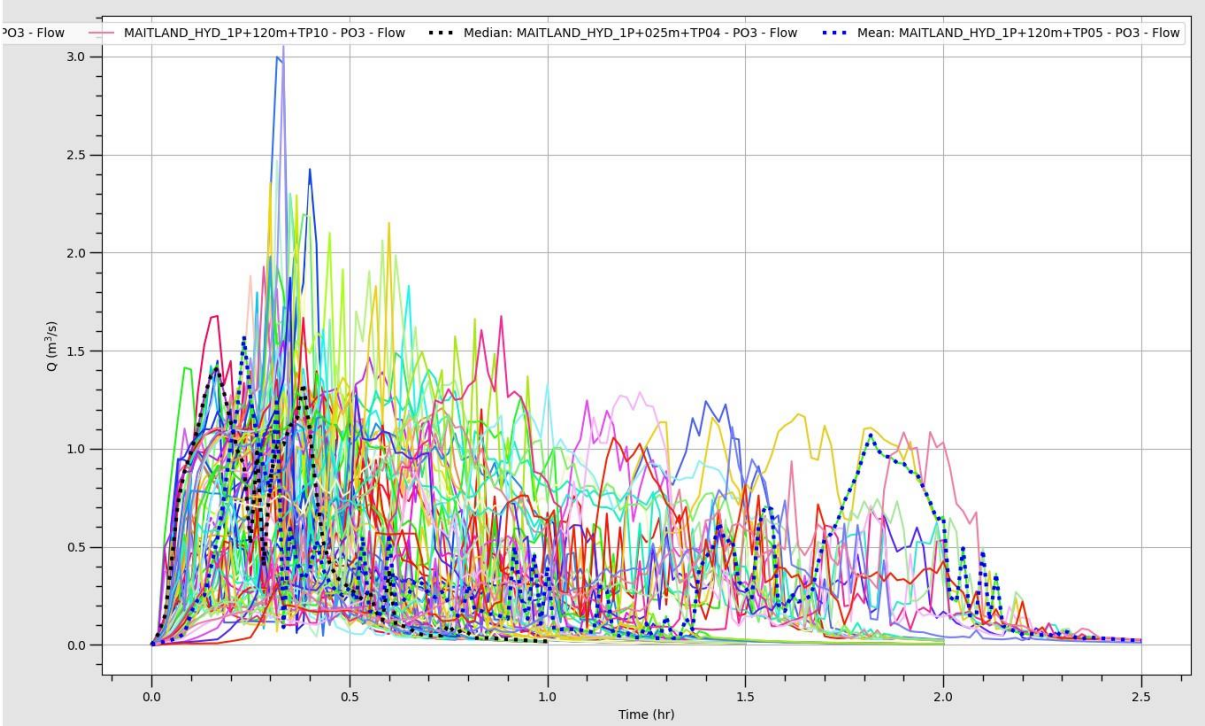


Figure 5 - Critical Storm

4.1.6 Model Output

The hydrological assessment was carried out for upstream catchment for the site following the ARR 2019 procedure. Accordingly, the median storm duration of 25 minutes with temporal pattern TP04 was identified as the critical storm event producing a peak overland flow of 3.78 m3/s approximately 20 minutes after the onset of the rainfall.

The design hydrograph is shown below in Figure 6 as an outcome of the hydrological model.

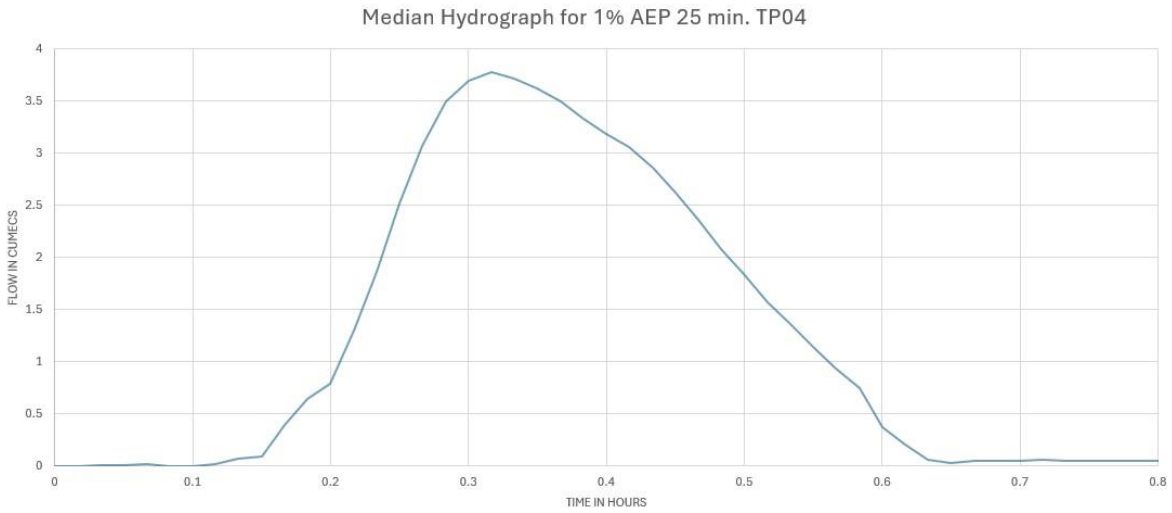


Figure 6 – Hydrograph for the design event

4.2 Hydraulic Modelling

A TUFLOW 1D/2D model was used to hydraulically route flows through the catchment and to derive flow depths, velocities and hazard for the pre-development and post-development scenarios. This section describes the hydraulic modelling approach and various key model conditions or assumptions adopted during the modelling task.

4.2.1 Topography

The Topography was represented with the LIDAR data and the site specific survey data. A grid size of 2 m, matching the resolution of the available LIDAR data, was selected to achieve the model quality and efficiency as a standard practice.

4.2.2 Roughness

The hydraulic roughness of a material is an estimate of the resistance to flow and energy loss due to friction between a surface and the flowing water.

A higher hydraulic roughness indicates more flow resistance; for example, a concrete path has a lower hydraulic roughness than a rough vegetated channel as water flows more freely over concrete than through a vegetated channel. Roughness in TUFLOW is modelled using the Manning's 'n' roughness co-efficient.

Table 2 - lists the adopted Manning's roughness parameters for each land use.

Description	Manning n
Builtup areas (outside building footprint in Urban environment)	0.045
Roads and hard paved areas	0.018
Buildings	0.9
Thick vegetation	0.07
Light vegetation	0.05
Grass turfing	0.035

4.2.1 Model Boundaries

This model was set up with the rain-on-grid model boundary. External inflow boundaries were not applied to the model.

A stage-discharge (water level versus flowrate) curve was adopted as the downstream boundary condition. The downstream boundary was located approximately 100 m downstream of the Site, far enough to have any backwater effect from the external catchment.

This stage-discharge relationship was generated by TUFLOW by specifying a downstream water level slope.

4.2.2 Model setup

A hydraulic TUFLOW model was created with similar model domain (i.e. same as the hydrological model) with some refinement in model features and with a higher resolution. The model has been set up for Pre-developed conditions in the first place and then updated with the proposed development scheme as a post-developed model. Various modelling parameters are discussed below for Pre-developed and Post-developed hydraulic models.

4.2.2.1 Pre-Development TUFLOW model

- Digital elevation model terrain using LIDAR data and survey Digital Elevation Model
- Grid cell size: 2-metre
- Model Timestep: 1 second (2D) & 0.25 second (1D)
- The existing site is modelled with a manning's roughness coefficient of 0.035 representing low-level grass cover throughout the site

- Other areas outside the flow path were modelled as built-up areas in an urban setting with Manning's roughness factor of 0.045
- The existing road surface, concrete driveway and paths are modelled with a surface roughness of 0.02.
- Existing fences have not been modelled with the assumption that fences do collapse when there is certain water pressure from the upstream side during the flooding event. This is in line with the standard modeling practice in Australia.
- The existing buildings' footprints are modelled as obstructions in the vicinity of the flow paths. The building footprints were digitised and removed from the active domain to prevent floodwaters from entering inside and to represent the flow characteristics of building blockage. The building outlines were determined from aerial photographs and a site survey plan.
- The underground drainage network including the pits and pipes is digitised based on the Council's drainage diagram shown in Figure 7 below. The drainage network is then modelled as a 1D element within the TUFLOW model. Generally pipes smaller than 600 mm in diameter get blocked during flood events. Therefore, pipe sizes smaller than 600 mm were completely blocked in the model. All the pit and pipe information such as sizes and inverts were adopted as per the Council's data.

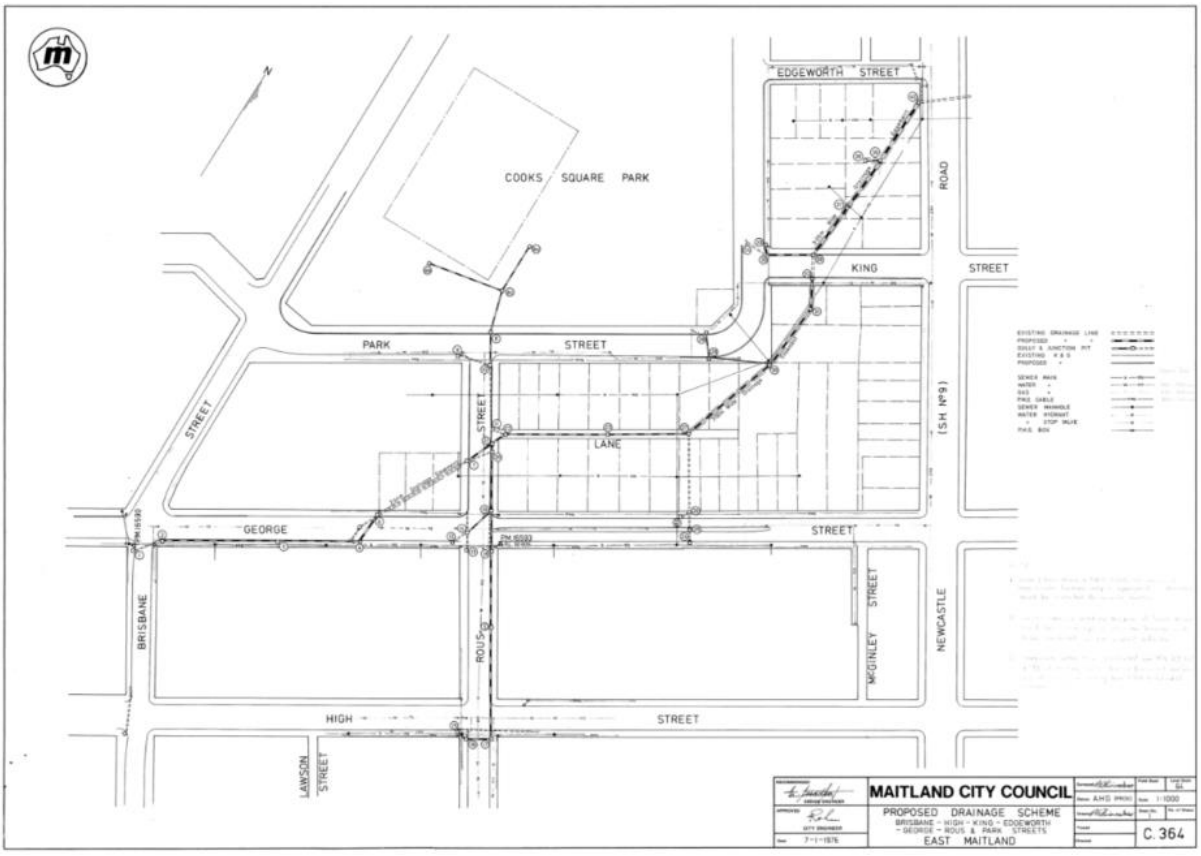


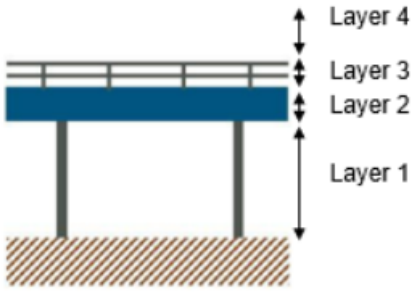
Figure 7 – Council's Drainage network in the catchment

Using the above parameter, the 1% AEP flood events were simulated in the TUFLOW model to create a base case existing scenario flood condition.

4.2.2.2 Post-Development TUFLOW model

The pre-development model was adopted and modified to represent the post-developed condition model. The amended model parameters are presented below. Other model features were kept unchanged (as compared to the existing condition TUFLOW model).

- The proposed development footprint depicted in the architectural plan is modelled by raising the ground level to the proposed finished floor level of the building (Ground Floor FFL).
- Incorporation of the roughness changes due to the proposed development.
- The proposed suspended driveway slab and carpark area at the front of the site are modelled as a Layer Flow Constriction Method (i.e. lfcsh layer in TUFLOW). This is the same method utilised to model bridges. It involves representing the suspended slab (fully blocked depth in Layer 2), Supporting piers (blocked flow path in Layer 1) and handrails/safety barriers (Partial blockage in Layer 3) as depicted in the figure below. The existing ground level below the suspended slab is proposed to be retained as existing and therefore no changes were applied to the ground below.



- Layer 1: Beneath the bridge deck.
- Layer 2: The bridge deck.
- Layer 3: The bridge rails.
- Layer 4: Flow above the rails (assumed to be unimpeded).

Figure 8 – Suspended driveway slab modelled with Layered Flow Constriction technique

- Picket fences were proposed during the post developed scenario as it is required from a crime prevention perspective as well. Similar to bridge modelling, the fences were modelled as a layered flow constriction method as well (refer to Figure 9 below which shows the location of the proposed picket fence). To minimise the blockage to the overland flow, a minimum clear gap of 200 mm was adopted at the base and a minimum gap of 100 mm was adopted between the vertical slats as indicated below in Figure 10.

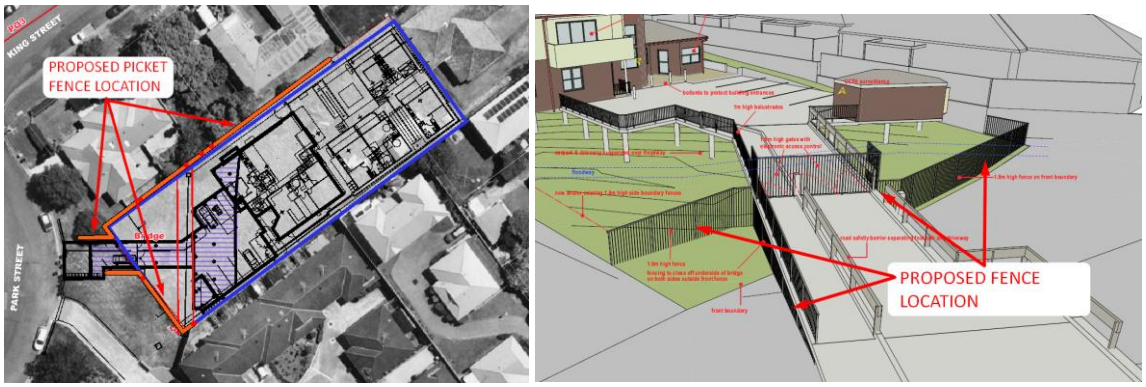


Figure 9 – Proposed picket fence incorporated into model (left) and proposed in architectural plan (right)

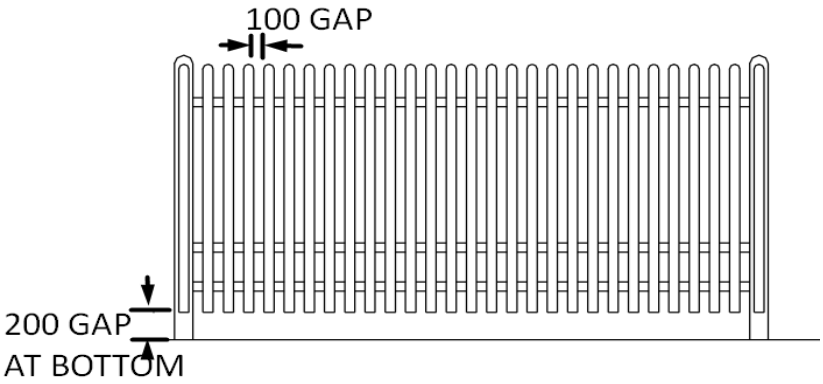


Figure 10 – Typical Picket Fence proposed

- To achieve an additional safety under the fence, a flushed kerb/wall will be casted as an insitu concrete as depicted in the Figure 11 below.

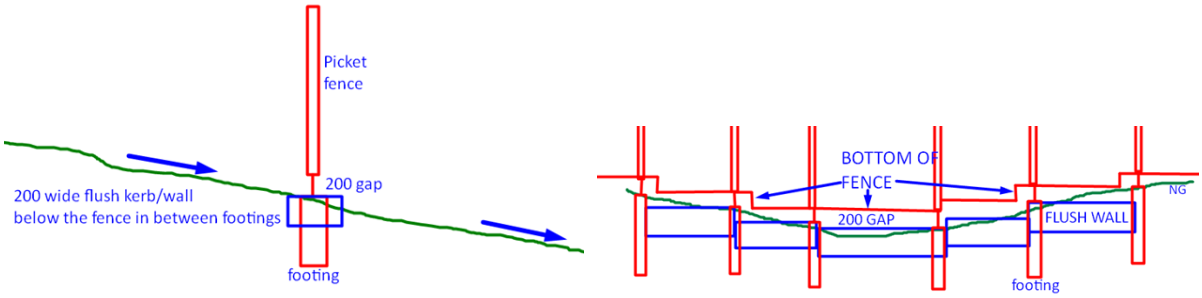


Figure 11 – Typical section of 200 wide flush kerb/wall below flow through fencing (left) and fence elevation (right)

5 Results

This section summarises the results of the hydrologic and hydraulic modelling of overland flows within the catchment. The 1% AEP overland flood event critical duration and peak flowrate through the catchment are presented. The behaviour of the 1% AEP overland floodwaters within the vicinity of the subject site is described in general terms, and the impact of overland flooding on the subject site is discussed.

5.1 Map Outputs

The flood depth, flood velocity, velocity-depth product and flood hazard vulnerability of the 1% AEP flood event were mapped for the existing and post-developed conditions. The following flood maps are enclosed under Appendix C:

- Figure A0. Model Domain
- Figure A.01 1% AEP Peak flood depths – Pre-developed scenario
- Figure A.02 1% AEP Peak flood velocity – Pre-developed scenario
- Figure A.03 1% AEP Peak flood velocity x depths – Pre-developed scenario
- Figure A.04 1% AEP flood hazard vulnerability – Pre-developed scenario
- Figure A.11 1% AEP Peak flood depths – Post-developed scenario
- Figure A.12 1% AEP Peak flood velocity – Post-developed scenario
- Figure A.13 1% AEP Peak flood velocity x depths – post-developed scenario
- Figure A.14 1% AEP flood hazard vulnerability – Post-developed scenario
- Figure A.21 1% AEP Afflux - Differential depths - Post-developed scenario
- Figure A.22 1% AEP Afflux - Differential velocity - Post-developed scenario

5.2 Pre-development 1% AEP Flood Result

The flow generated from the catchment upstream gets partially captured within the underground drainage system that passes through the site and the remaining excess flow converts into an overland flood which routes through the roads & properties upstream before ending up at the depression located within the site. The site receives a total combined peak discharge of 5.11 cumecs considering both piped and overland flooding components as seen on Figure 12 below.

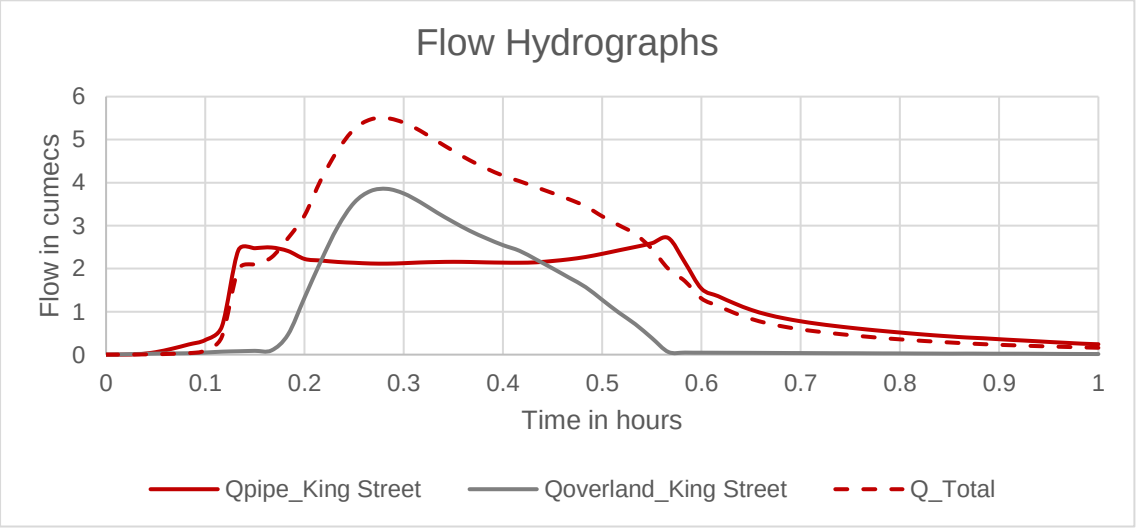


Figure 12 – Estimated flow across King Street downstream of the site

The drainage trunk main of 0.9 m diameter traversing through the site could capture the maximum flow of 2.49 cumecs. The maximum overland floodwater received by the site was estimated to be 3.85 cumecs approximately 17 minutes after the onset of the rainfall. Thus the site experiences flash flooding during the 1% AEP critical storm event.

The overland floodwater enters the site from the north-eastern corner of the property boundary from the adjacent property No. 12 Park Street, and makes its way into the local depression located at the front of the site. A peak flood level was estimated to be at RL 19.2 as it enters the site which dropped to RL 19.0 when it leaves the site along the northern boundary. The flood extent was found to be confined within the area of depression leaving the remainder of the site as flood immune during the 1% AEP flood event. A peak flood depth of up to 1.35 m was estimated within the depressed area of the site.

The maximum flood velocity within the site was found to be less than 1.5 m/s. Most of the flood velocity is found to be less than 0.5 m/s within the site. This is due to the damming effect of the area of local depression present within the site which slowed down the flood velocity by dissipating the energy with an increased depth of water. An increment in the flood velocity was estimated as the floodwater leaves the site towards King Street with a peak velocity of up to 1.55 m/s.

The entire can be classified to be within the low hazard areas with the velocity times depth product less than 0.40 m/s/m2 within the flood footprint. The maximum velocity x depth product was estimated to be approximately 0.58 m/s/m within the site which can be translated as an area of high flood risk. However, that high-risk area is highly confined within the deepest portion of the localised depressed area.

Based on the flood hazard classification defined in the Australia Disaster Resilience Guideline 7-3: 'Flood Hazard' (AIDR 2017), a majority of the area exposed to flooding shows minimum H3 hazard vulnerability, rendered unsafe for vehicles, children and the elderly. Refer to Figure 13 below for the hazard vulnerability curve.

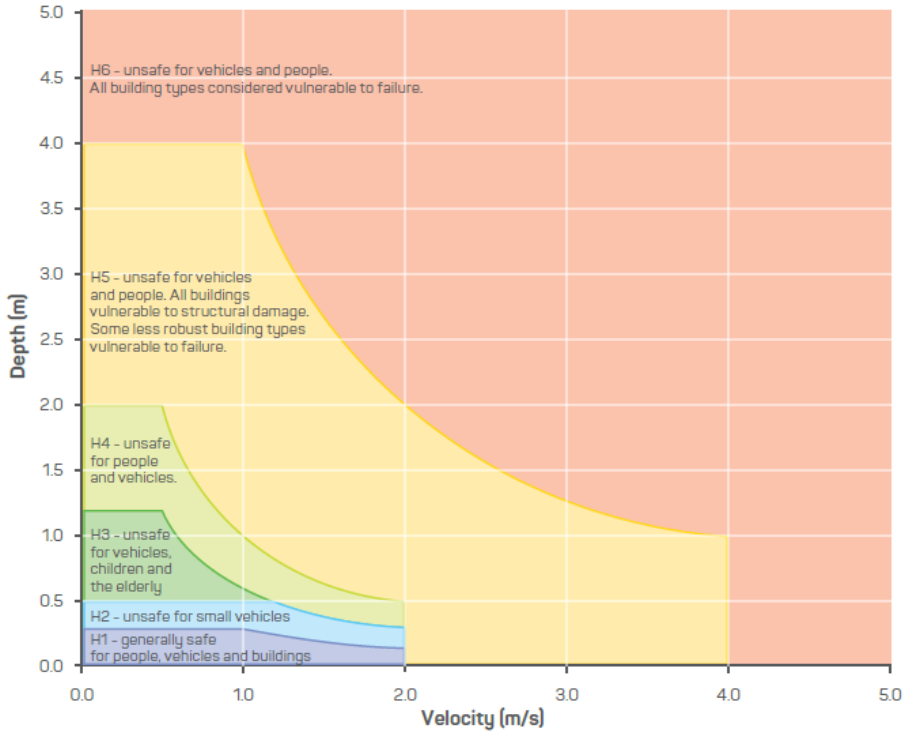


Figure 13 – Hazard Vulnerability Curves by AIDR

5.3 Post-development 1% AEP Flood Result

The flood behaviour during the post-developed scenario will remain generally consistent with the pre-developed condition. Similar to the predeveloped condition, the flood water level of approximately of RL 19.2m AHD was noted at the upstream end of the site and RL 19.0 at the downstream end along the northern boundary. The footprint of the floodwater was consistent with the pre-developed condition. The peak flood depth of 1.37 m was estimated within the depressed area of the site.

The proposed suspended driveway has a minimum RL of 19.65 m at the eastern end which is 0.45 m above the 1% AEP flood level. Therefore, the suspended driveway will provide flood-free access to the site during flood events up to the 1% AEP. Furthermore, the suspended driveway and its piers have shown insignificant affectation on the current flood behaviour. The footprint of the proposed building is predominantly outside the flood extent and hence, immune from the 1% AEP flood event.

The proposed suspended driveway has little to no effect on the pre-development flood regime. The post-development velocity was found to be similar to the pre-developed condition with a very minor change in flood velocity localised right near the upstream side of the suspended driveway. This is due to the partial blockage caused by the proposed piers.

Similar to the pre-developed condition, the majority of the flood affected areas will experience flood velocities less than 0.50 m/s. The peak flood velocity of 0.91 m/s was estimated within the site along the upstream end.

Similar to the pre-developed condition, the post-development velocity x depth product was found to be generally less than 0.40 m/s/m except for a highly localised area within the existing land depression within the site (which is being retained during the post-developed scenario) demonstrating the product to be 0.58 m/s/m. From the flood hazard vulnerability perspective, the flood-affected portion of the site will be mainly exposed to the category of H3 similar to the pre developed condition rendering it unsafe for children and elderly. There is no worsening of the hazard vulnerability due to the proposed obstruction offered by the proposed suspended driveway.

5.4 Impact of the Proposed Development

The impact of the proposed development on floodwaters has a neutral outcome. As discussed in the sections above, the same area of the site was seen to be inundated during the 1% AEP storm event.

There were no significant impacts to the flood level outside the site boundaries. An increase in flood levels was confined within the site boundaries and was estimated to be within 10 mm of the existing flood depths.

Beside the unchanged flood levels within the adjoining properties, the impact of the proposed development on flood velocity and the hazard were also analysed. The changes in the velocity profile were insignificant. Currently during the pre-developed condition, the peak flood velocity within the neighbouring properties are calculated as H1 and H2 category. During the post development scenario, the category H1 and H2 were found unchanged.

Therefore, based on the above analysis, it shows the development will not have any impacts to the neighbouring properties and to the broader catchment. Figure A.20 and A.21 in Appendix C show the flood afflux map for water depths and velocity respectively.

6 Flood Risk Management

In accordance with the Maitland Development Control Plan (the DCP) 2011 Part B Environmental Guidelines, a site-specific flood study has been conducted to assess the impact of the proposed development.

The results of the site-specific flood study are presented below: having due regard for the requirements of the DCP.

6.1 Flood hazard classification

Australia Disaster Resilience Guideline 7-3: 'Flood Hazard' (AIDR 2017) requires flood hazards to be classified into high and/or low. The flood model shows the flood water is confined within the low depressed area at the front of the site. The proposed suspended driveway surface levels, proposed open carpark level and the proposed buildings are well above the 1% AEP flood level by a minimum of 0.45 m as discussed previously. Therefore, flood immunity will be reached during such a flood event.

The floodwater is exposed to the hazard vulnerability of up to H3 which is unsafe for people and elderly within the flood flowpath. However, this situation only applies to someone accessing the depressed portion of the site. The remainder of the site is flood free and is considered to be safe for people/occupants.

6.2 Floor Levels (Flood Planning Level)

The 1% AEP peak overland flood level estimated at frontage of the site was at RL 19.20 m AHD. In that regard, Therefore, the minimum habitable floor level or the Flood Planning Level (FPL) to be adopted for the development is RL 19.70 m AHD including 0.50 m freeboard above the 1% AEP flood level. The proposed dwelling is at minimum RL of 19.80 which is 0.60 mm higher than the 1% AEP flood level. As the development proposal is for the group home, the freeboard of 0.60 m will satisfy the flood planning requirements of a minimum 0.50 m above the 1% AEP at the site.

6.3 Building Components and Construction Method

It is recommended the proposed development such as the stairs, suspended driveway structure and footings are to be constructed of flood compatible building materials up to the FPL mentioned above.

Particular methods of construction and certain types of materials are better suited to withstand inundation. Ancillary structures such as steps and decks below the FPL shall be constructed of water tolerant materials such as masonry, sealed hardwood, and corrosion resistant metals. All materials which are not held together/can wash away are to be avoided.

Connection to mains power supply, including metering equipment should be located above the FPL level or to be encased within a fully sealed water-tight compartment. All electrical wiring, switches and outlets should, where possible be located above the FPL level. Earth core leakage systems or safety switches are to be installed. All wiring connections and conduit below the FPL level should be made suitable for submergence in water. Conduits shall be installed so they will be self-draining in the event of flooding.

7 Conclusion

The Flood Impact Assessment for the proposed site at 10A Park Street, East Maitland has been undertaken to determine the impacts of the proposed development on the flood characteristics on the site and on surrounding properties.

The result demonstrates that the proposed development will have insignificant impacts to the pre-developed flooding behaviour during the 1% AEP flood events. The proposed suspended driveway slab and its supporting piers will provide a minimal resistance to the floodwater.

The 1% AEP flood impact was not found outside the site boundary. The increase in flood levels were confined within the site and ware mainly found to occur within the existing are of local depression as explained above. Similarly, the existing flood behaviour including the velocity profile and the hazard classification outside the site boundary was found to be consistent with the pre-developed condition.

From the flood hazard perspective, the entire site area is within H3 hazard vulnerability category which is deemed unsafe for people and vehicles. However, the high hazard rating will be confined under the suspended driveway and the open carpark, both of which provide immunity during the flood events up to the 1% AEP. The suspended driveway structure will provide flood free access to the property for both pedestrians and vehicles during the 1% AEP events.

Based on the outcomes presented in the preceding sections of this report, we are of the view that the proposed development will not have any impacts outside the site boundaries and meets all the flood control requirements stipulated under the DCP guidelines.

Yours faithfully,
ACOR CONSULTANTS PTY LTD

Kundan Pokharel

Senior Civil Engineer (BE(Civil) MIE Aust CPEng NER)

8 References

Australian Institute for Disaster Resilience (AIDR). (2017). *Australian Disaster Resilience Guideline 7-3: Flood Hazard*. East Melbourne, VIC: Author.

Babister M. and Barton C. (Eds). (2012). *Australian Rainfall and Runoff Revision Project 15: Two Dimensional Modelling in Urban and Rural Floodplains Stage 1 and 2 Draft Report* (P15/S1/009). Barton, ACT: Engineers Australia.

Ball J., Babister M., Nathan R., Weeks W., Weinmann E., Retallick M. and Testoni I. (Eds.) (2019). *Australian Rainfall and Runoff: A Guide to Flood Estimation*. Geoscience Australia.

Bureau of Meteorology (BoM). (2020). *Service Level Specification for Flood Forecasting and Warning Services for New South Wales and the Australian Capital Territory – Version 3.13*. Melbourne, VIC: Author.

Commonwealth Bureau of Meteorology (BoM). (2003). *The Estimation of Probable Maximum Precipitation in Australia: Generalised Short-duration Method*.

Pilgrim D H (Ed.). (1998). *Australian Rainfall and Runoff*. Barton, ACT: Institution of Engineers Australia.

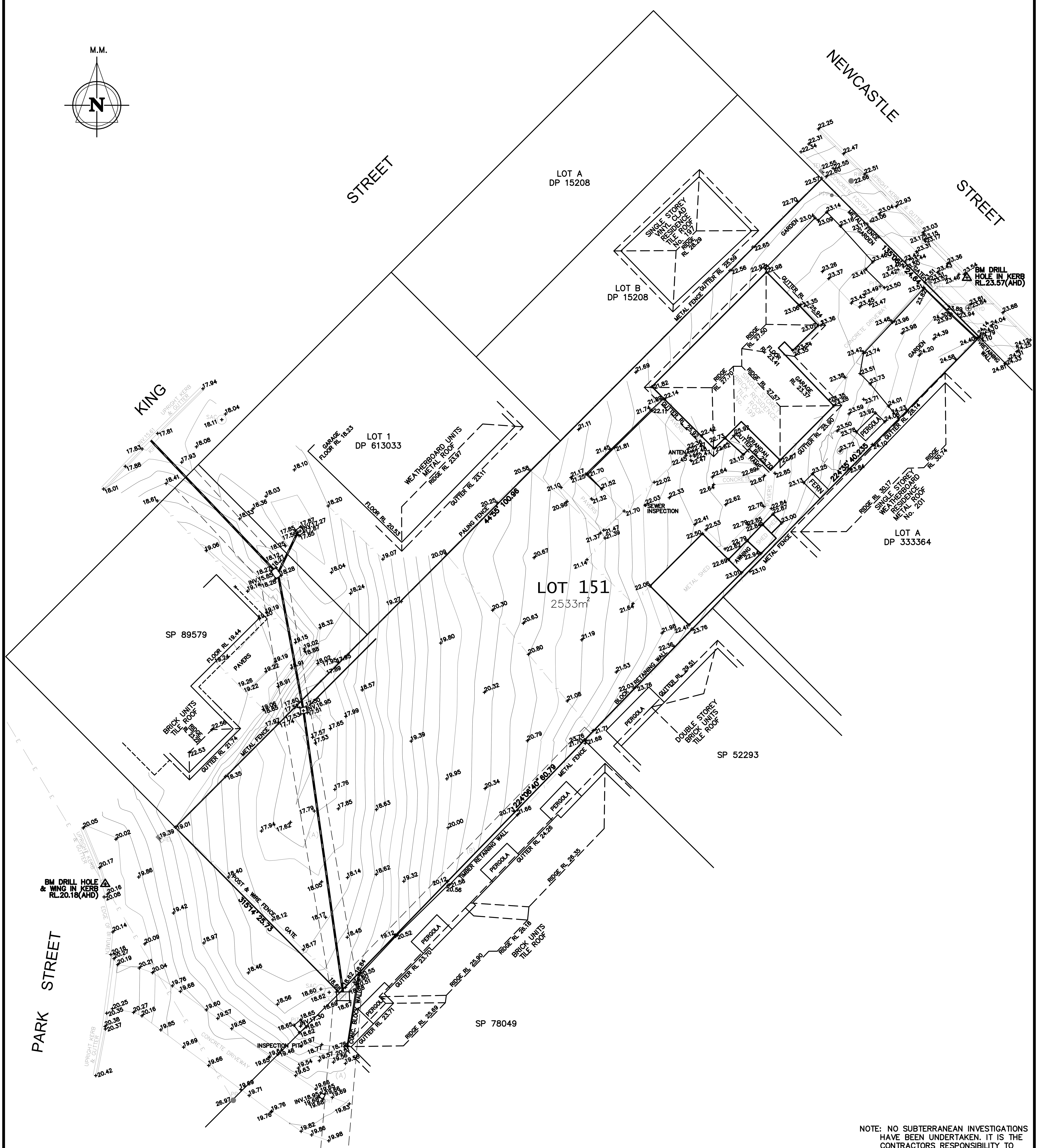
Hawkesbury-Nepean Floodplain Management Steering Committee (HNFMSC). (2006). *Reducing Vulnerability of Buildings to Flood Damage: Guidance on Building in Flood Prone Areas*. Available from http://www.ses.nsw.gov.au/content/documents/pdf/resources/Building_Guidelines.pdf

New South Wales Department of Infrastructure, Planning and Natural Resources (NSW DIPNR). (2005). *Floodplain Development Manual: the management of flood liable land*. Sydney, NSW: Author.

Maitland Development Control Plan 2011.

Appendix A Survey Plan

Z:\Jobs\2018\538-18\IMG_0269.jpg	Z:\Jobs\2018\538-18\IMG_0270.jpg	Z:\Jobs\2018\538-18\IMG_0271.jpg	Z:\Jobs\2018\538-18\IMG_0272.jpg	Z:\Jobs\2018\538-18\IMG_0274.jpg	Z:\Jobs\2018\538-18\IMG_0275.jpg



M.M.
N
KING STREET
NEWCASTLE STREET
PARK STREET
LOT A DP 15208
LOT B DP 15208
SINGLE STOREY VINYL CLAD RESIDENCE TILE ROOF No. 197
LOT 1 DP 613033
WEATHERBOARD UNITS METAL ROOF
SP 89579
BRICK UNITS TILE ROOF
LOT 151
2533m²
SINGLE STOREY BRICK RESIDENCE TILE ROOF No. 199
SINGLE STOREY WEATHERBOARD RESIDENCE METAL ROOF No. 201
LOT A DP 333364
DOUBLE STOREY BRICK UNITS TILE ROOF
SP 52293
SP 78049
BM DRILL HOLE IN KERB RL.23.57(AHD)
BM DRILL HOLE & WING IN KERB RL.20.18(AHD)
44°55' 100.96
224°06'40" 60.79
224°35' 40.235
315°14' 25.73
135°06' 24.64
METAL SHED
SEWER INSPECTION
INSPECTION PIT
TIMBER RETAINING WALL
BLOCK RETAINING WALL
CONCRETE DRIVEWAY

NOTE: NO SUBTERRANEAN INVESTIGATIONS HAVE BEEN UNDERTAKEN. IT IS THE CONTRACTORS RESPONSIBILITY TO CONTACT DIAL BEFORE YOU DIG ON PHONE No. 1100 PRIOR TO ANY EXCAVATION OR EARTHWORKS.

DATE	REVISION	BY
25/3/19	DRAINAGE & FLOOR LEVELS	SH
12/5/19	REVISED CONTOURS	SH

0 2 4 6 8 10 12 14 16 18 20
SCALE 1:200 @ A1

DRAWN | SHEET 1 OF 1 SHEETS

LEGEND
- FENCE
- E OVERHEAD POWER LINES
- (PP) POWER POLE
- (PPP) PRIVATE POWER POLE
- (TEL) TELSTRA PIT
- (HYD) HYDRANT
- (WM) WATER METER
- (SAC) SEWER ACCESS CHAMBER
- (PIT) DRAINAGE PIT
- (RW) ROOF WATER DRAIN

(A) EASEMENT TO DRAIN WATER, 3 WIDE.
(B) EASEMENT TO DRAIN WATER, 1 WIDE.

NOTES:
1. SURVEY IS FOR CONTOUR PURPOSES ONLY
2. BM IS AHD AS SHOWN, DATUM PM 53950 (RL 12.348)
3. CONTOUR INTERVAL IS 0.2m
4. SERVICES LOCATED BY FIELD SURVEY ONLY
5. TREE SPREADS ARE DIAGRAMMATIC ONLY AND MAY NOT BE SYMMETRICAL

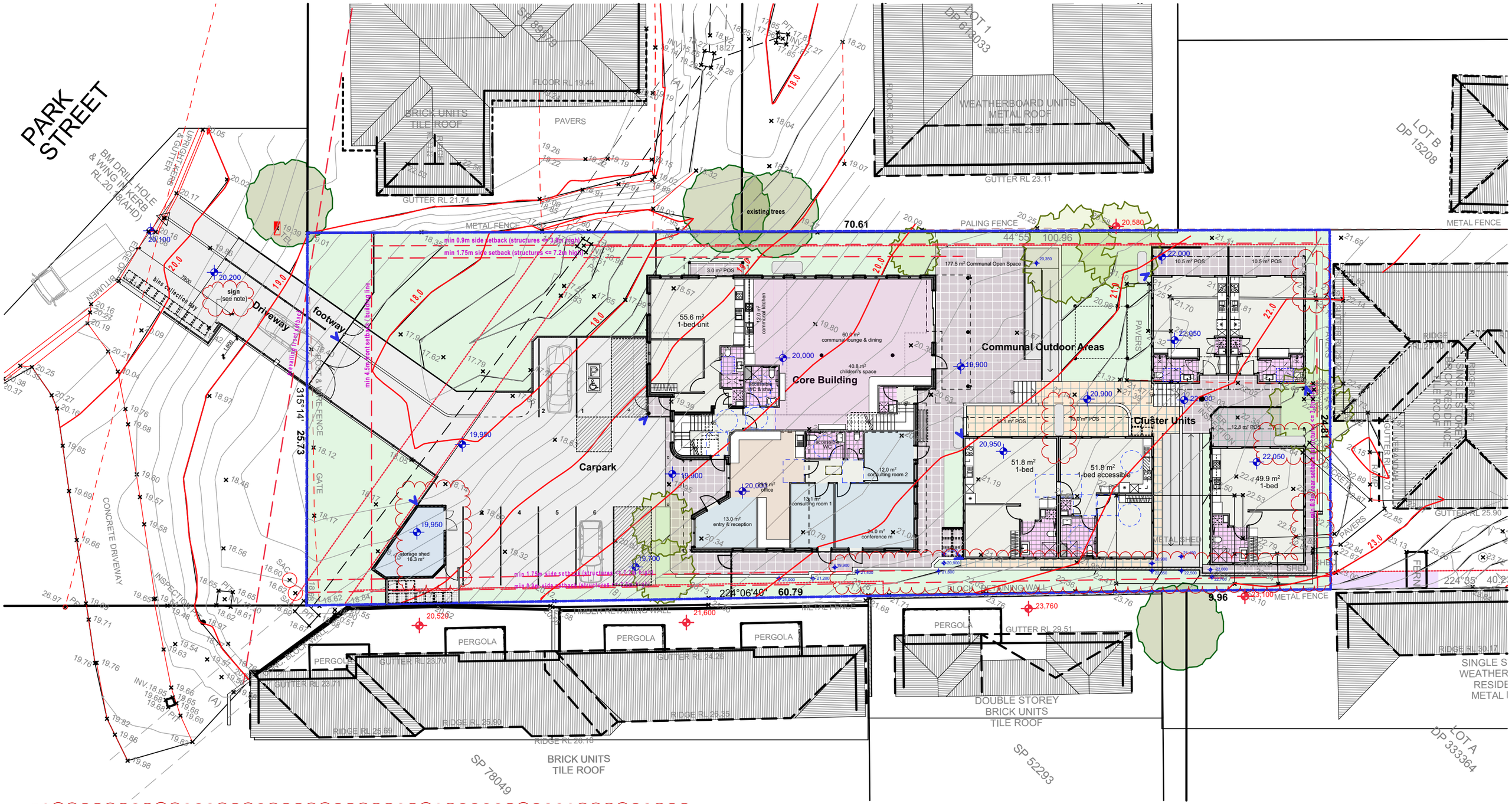
RENNIE GOLLEDGE PTY. LTD.
SURVEYORS & PLANNERS
P.O. BOX 132 PH (02) 49334977
36 St ANDREWS ST FAX (02) 49338579
MAITLAND NSW 2320
ABN: 55 002 622 317 mail@renniegolledge.com.au

CLIENT
GDR INVESTMENTS
THIS PLAN WAS PRODUCED SOLELY FOR THIS CLIENT.

CONTOUR AND DETAIL PLAN
LOT 151 D.P. 592218 No. 199 NEWCASTLE ROAD
EAST MAITLAND

FILE NO. 538.18 | RATIO 1:200 | DATE 14/12/18 | SURVEYED SH | DATUM AHD

Appendix B Architectural and Civil Plans



NOTE: Maximum vehicle load sign

A sign will be installed at the driveway entrance notifying that vehicles over 10,000kg are not permitted to use the driveway.

AMENDMENTS (CLOUDED) FOR REVIEW - 5/06/2024

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e: design@housingplus.com.au
w: www.housingplus.com.au
ABN: 83 147 459 461

Project: **Proposed Group Home & Community Facility at 10A Park St East Maitland 2323**

client details:

Site Plan

drawing title

issue	date	amendment description	##	by
C	3/06/24	recent amendments clouded		
B	14/02/24	updated DA set, recent amendments clouded		
A	8/05/23	DA issue		

plan issue type

drawn: J.Burns

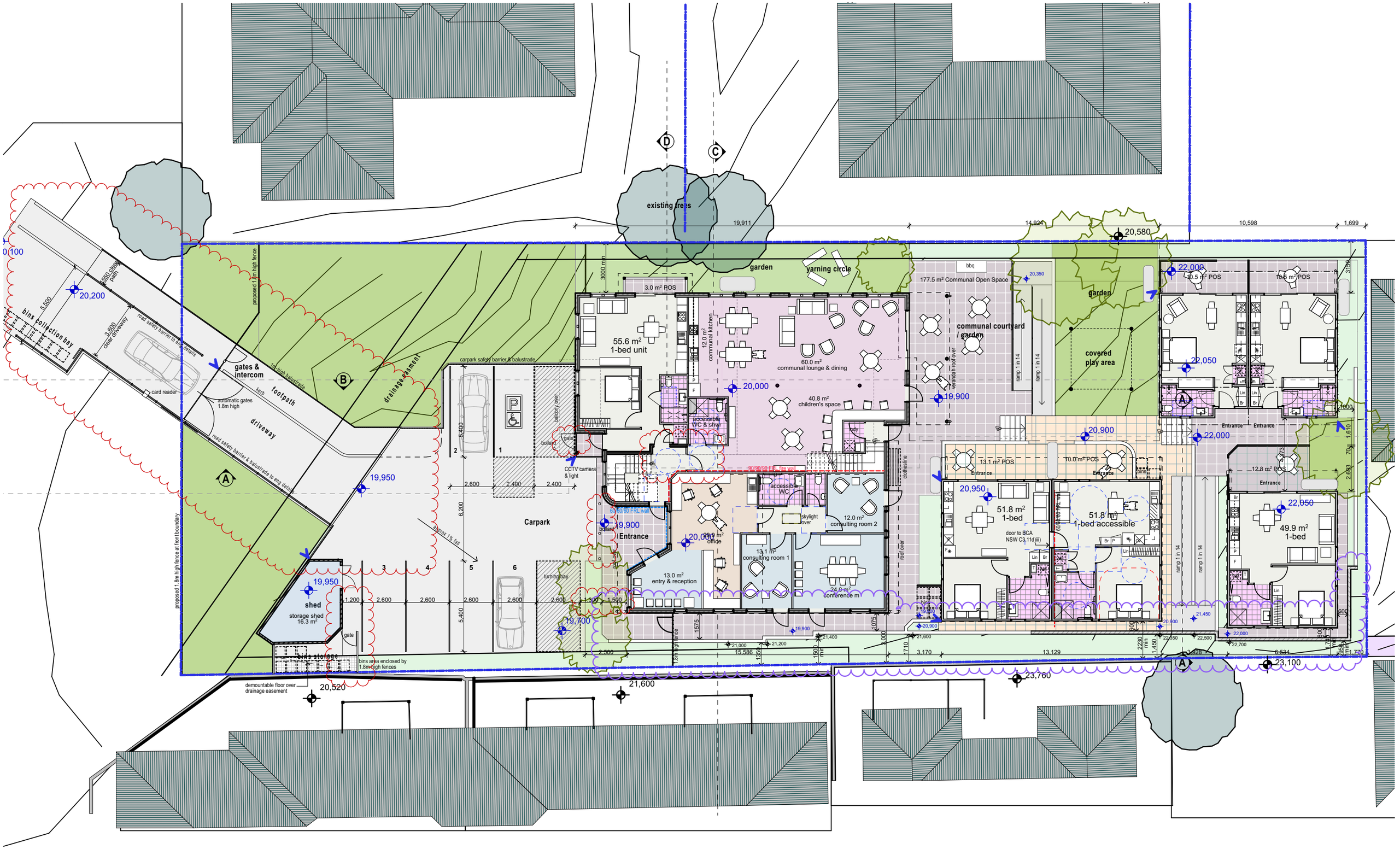
contract number

revision no.

1:250 dwg scale @ A3

printed date: 5/06/2024

drawing No. **4**



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client details:

Proposed Ground Floor Layout

drawing title

issue	date	amendment description	##	by
C	3/06/24	recent amendments clouded		
B	14/02/24	updated DA set, recent amendments clouded		
A	8/05/23	DA issue		

plan issue type

drawn: J.Burns

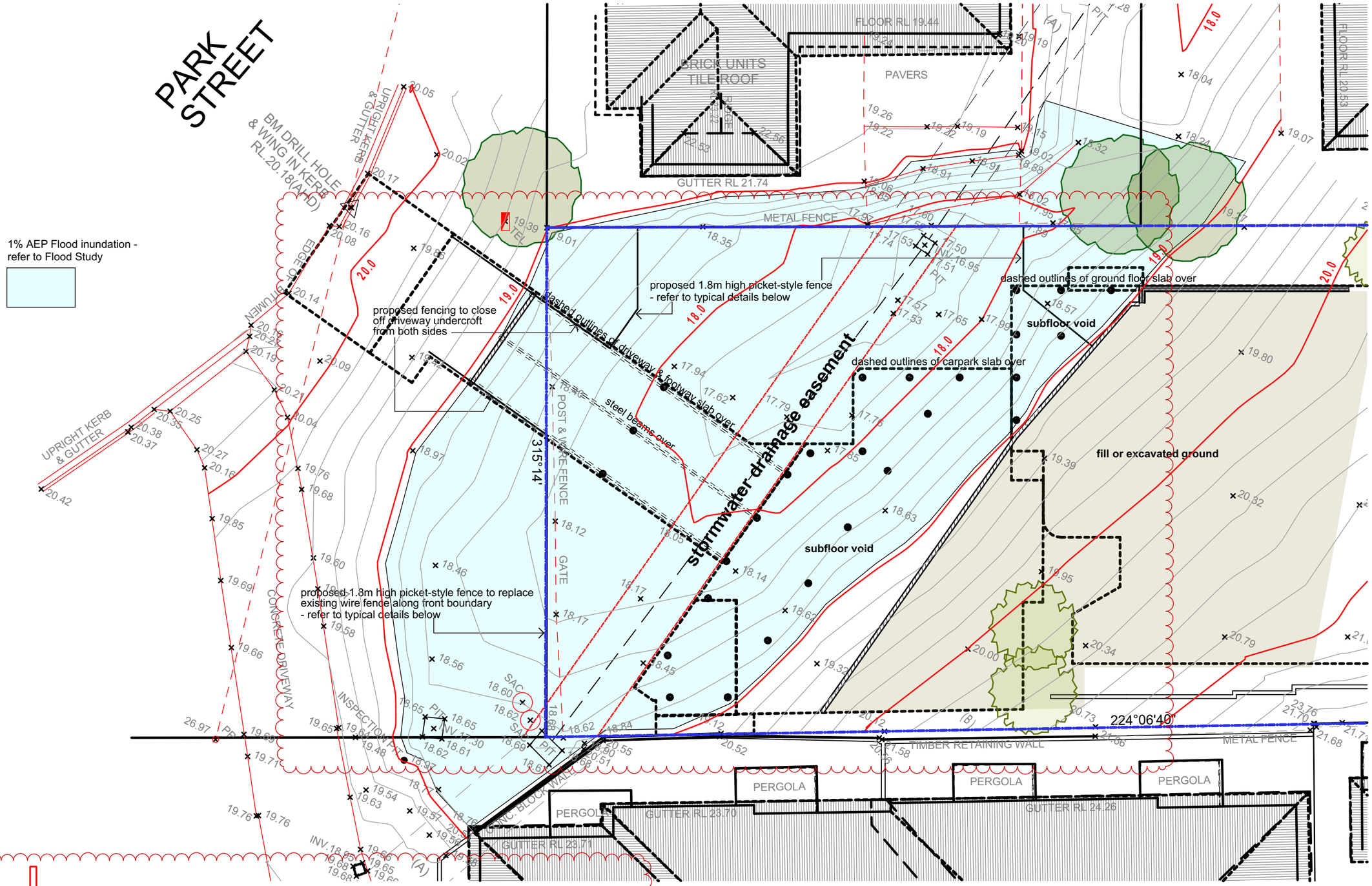
contract number

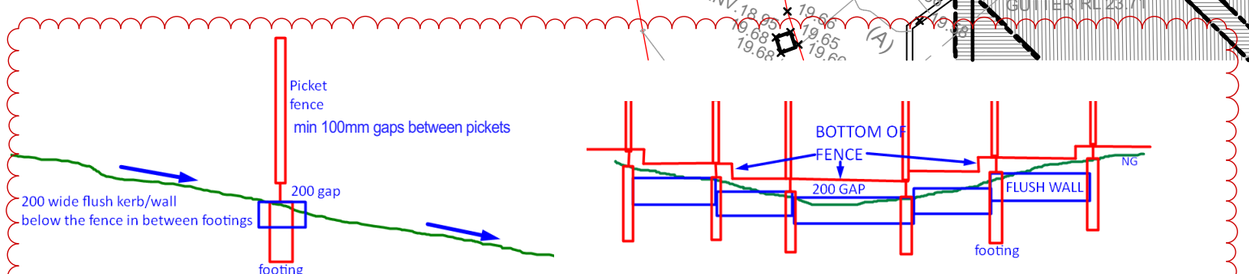
revision no.

printed date: 5/06/2024

1:200
dwg scale @ A3

6
drawing No.





typical picket fence details (as per flood study)

NTS

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structures over flood zone

drawing title

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B	14/02/24	updated DA set, recent amendments clouded		
~~A~~	~~8/05/23~~	~~DA issue~~		

plan issue type

drawn: J.Burns

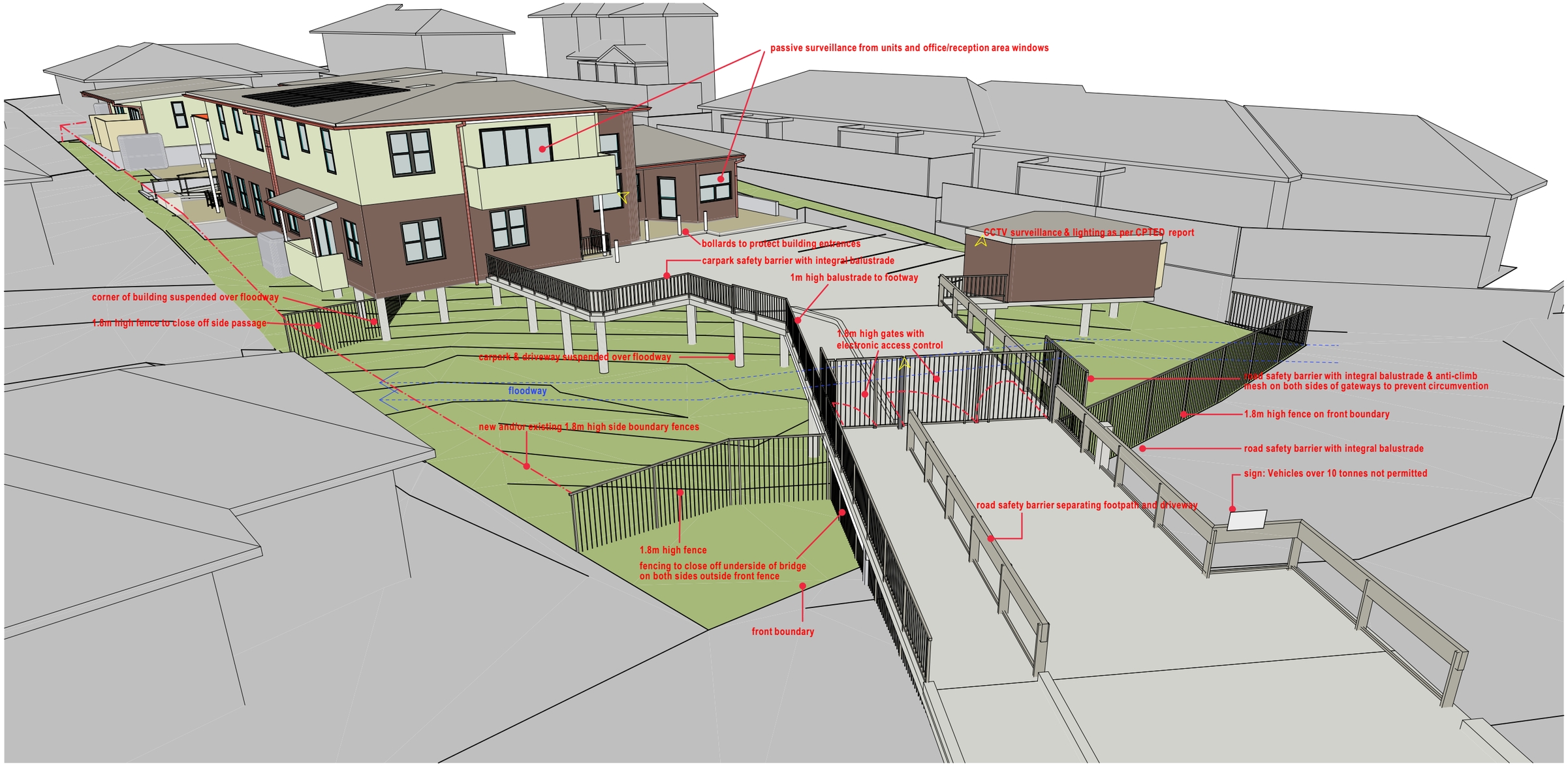
contract number

revision no.

1:200 dwg scale @ A3

5/06/2024 printed date:

22 drawing No.



front setback area and site entrance

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Project: **Proposed Group Home & Community Facility at 10A Park St East Maitland 2323**

client details:

site entrance and CPTED

drawing title

issue	date	amendment description	##	by
C	3/06/24	recent amendments clouded		
~~B~~	~~14/02/24~~	~~updated DA set, recent amendments clouded~~		
~~A~~	~~8/05/23~~	~~DA issue~~		

plan issue type

drawn: J.Burns

contract number

revision no.

5/06/2024
printed date:

dwg scale @ A3

23
drawing No.

Civil Design Documentation

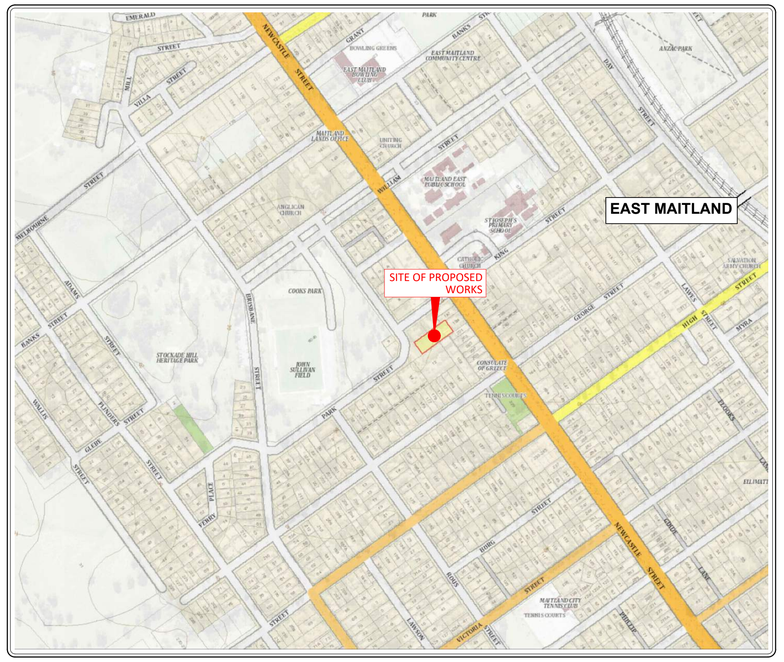
Proposed Core Cluster Refuge

10A Park Street

EAST MAITLAND NSW 2323

SCHEDULE OF DRAWINGS

SHEET No.	DESCRIPTION
40560-C00	COVER SHEET AND DRAWING SCHEDULE
40560-C01	EXISTING SITE PLAN
40560-C02	PROPOSED SITE PLAN
40560-C10	PROPOSED STORMWATER MANAGEMENT PLAN
40560-C11	STORMWATER NOTES & DETAILS
40560-C12	STORMWATER ANALYSIS
40560-C20	PAVEMENT DESIGN PLAN
40560-C21	PAVEMENT NOTES & DETAILS
40560-C30	PROPOSED CUT & FILL PLAN
40560-C31	BULK EARTHWORKS SPECIFICATIONS
40560-C40	TURNING PATH ANALYSIS PLAN
40560-C50	PROPOSED EROSION AND SEDIMENT CONTROL PLAN
40560-C51	EROSION AND SEDIMENT CONTROL DETAILS



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B	17-04-2023	ISSUED FOR DA
C	04-10-2023	UPDATED TO SUIT WITH COUNCIL'S REQUEST
D	13-02-2024	DESIGN AMENDED TO SUIT WITH FLOOD ZONE
E	14-05-2024	ABOVE GROUND RAINWATER TANKS PROPOSED
F	12-06-2024	REISSUED FOR DA

Project
PROPOSED CORE & CLUSTER REFUGE

Site Address
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EAST MAITLAND NSW 2323

Client
HOUSING PLUS ORANGE

Drawing Title
COVER SHEET

Design LB
Drawn JS
Check DOS

Original Sheet Size A1
Revision F

Certification

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Drawing No C00

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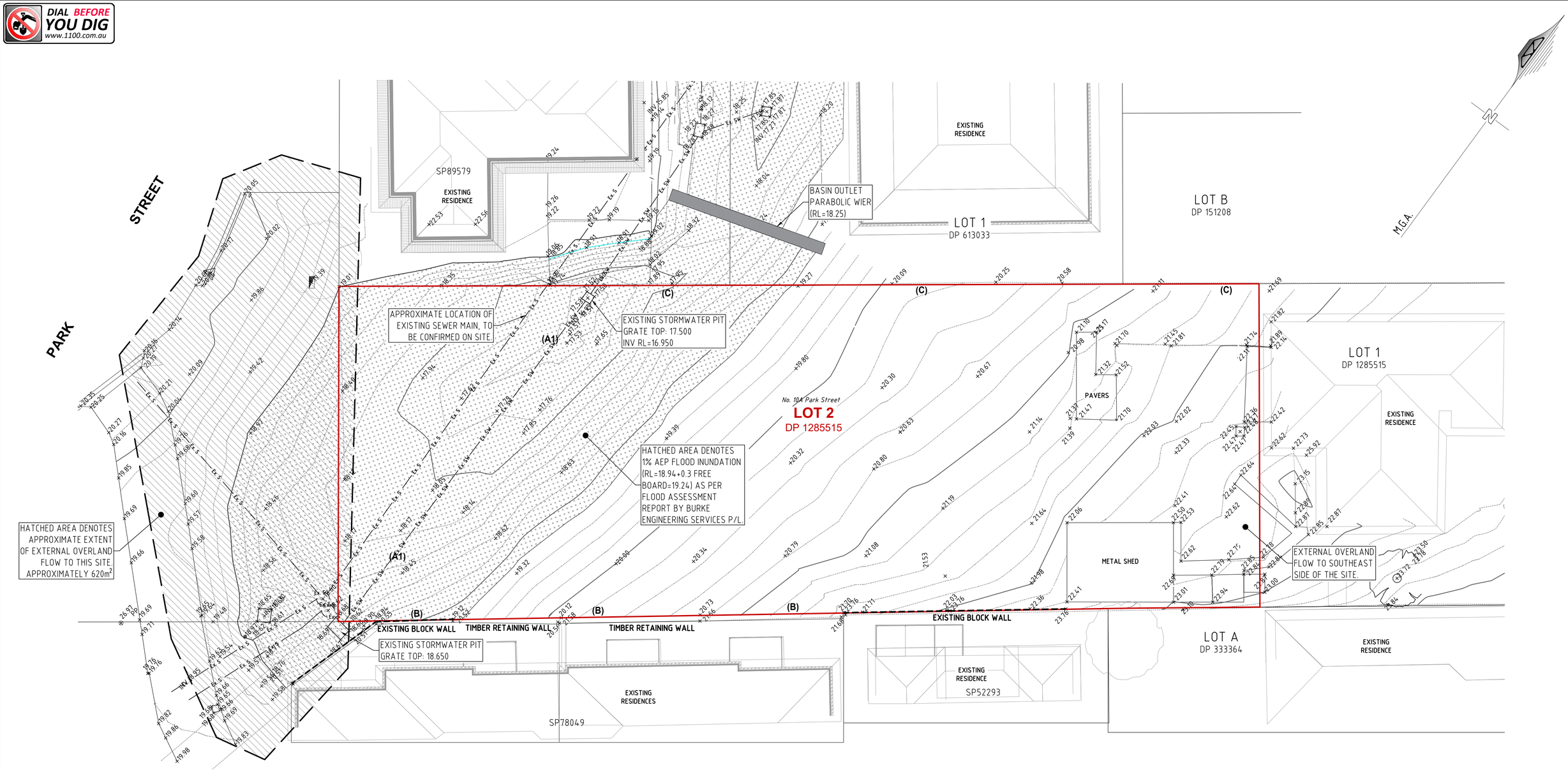

(A1) PROPOSED EASEMENT TO DRAIN WATER 3 WIDE (VIDE DP 592218)
(B) EASEMENT TO DRAIN WATER 1 WIDE (VIDE 0199403)
(C) EASEMENT TO DRAIN WATER 1 WIDE (VIDE DP 1285515)

EXISTING SITE PLAN

REDUCTION RATIO 1:150 @ A1
1:300 @ A3

LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- Ex. SW Ex. SW EXISTING STORMWATER PIPE

NOTE: REFER SURVEY DRAWING BY RENNIE GOLLEDGE PTY LTD, REF: 538.18 AND DATED 12th MAY 2019 FOR MORE DETAILS ON EXISTING SITE.

SCALE 1:150(A1)
0 1 2 4 6 8 10
0 1 2 4 6 8 10
SCALE 1:300(A3)

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Drawing Title
EXISTING SITE PLAN

Design	LB	Original Sheet Size	A1
Drawn	LB		
Check	DOS	Revision	D

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Drawing No C01

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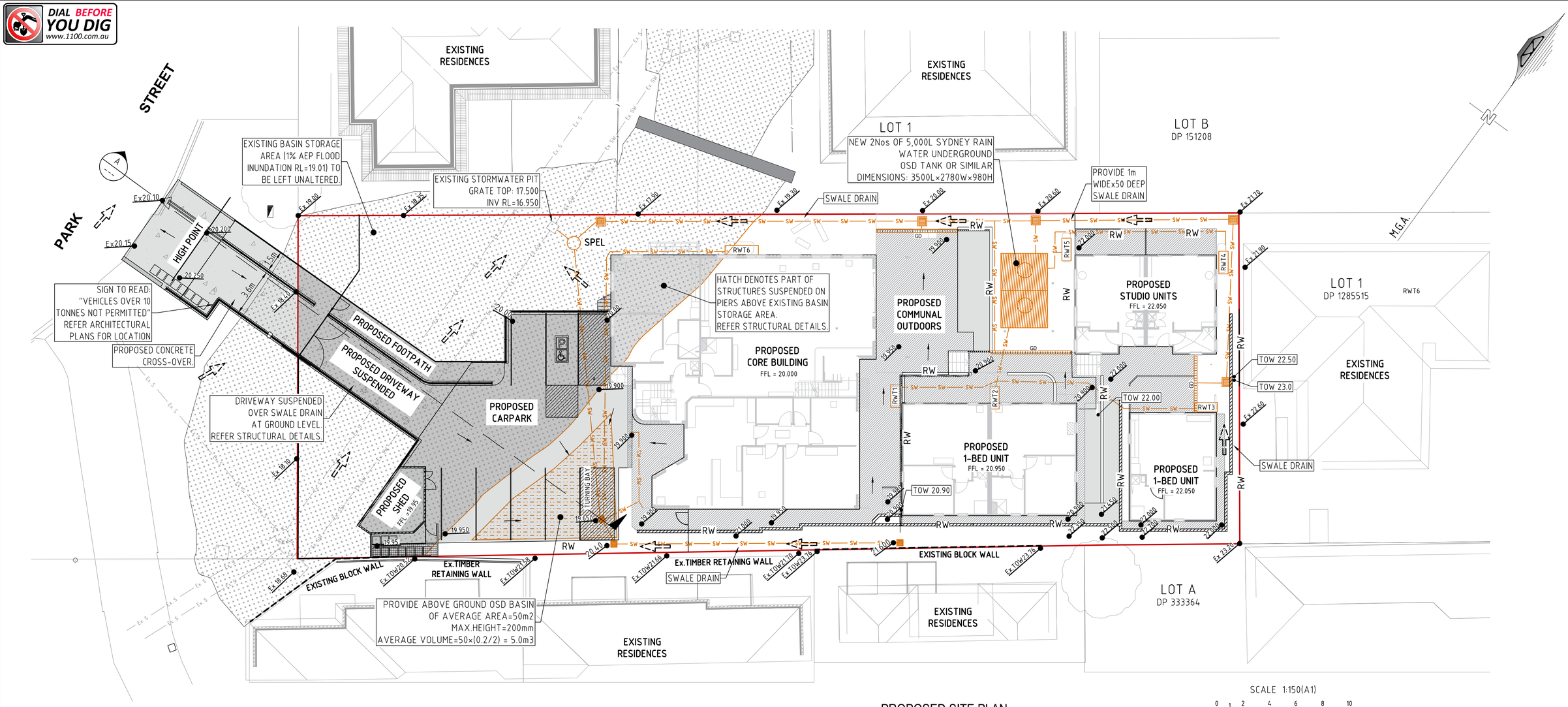

LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- Ex. SW — EXISTING STORMWATER PIPE
- Ex. S — EXISTING SEWER PIPE

LEGEND (proposed)

- PROPOSED CONCRETE PAVEMENT AREA
- PROPOSED SUSPENDED SLAB AREA
- PROPOSED LANDSCAPE AREA
- PROPOSED PAVING AREA
- EXISTING FLOOD STORAGE AREA
- SW — PROPOSED STORMWATER PIPE (ø AS SHOWN)
- P1 — PROPOSED STORMWATER PIT
- PROPOSED SURFACE FALL DIRECTION
- 19.950 — FINISHED SURFACE RL's
- MAJOR OVERLAND FLOW PATH DIRECTION

PROPOSED SITE PLAN

REDUCTION RATIO 1:150 @ A1
1:300 @ A3

SCALE 1:150(A1)
0 1 2 4 6 8 10
0 1 2 4 6 8 10
SCALE 1:300(A3)

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E	14-05-2024	ABOVE GROUND RAINWATER TANKS PROPOSED
F	12-06-2024	REISSUED FOR DA

Project
PROPOSED CORE & CLUSTER REFUGE

Site Address
10A PARK STREET
EAST MAITLAND NSW 2323

Client
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Drawing Title
PROPOSED SITE PLAN

Design LB
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Original Sheet Size A1
Revision F

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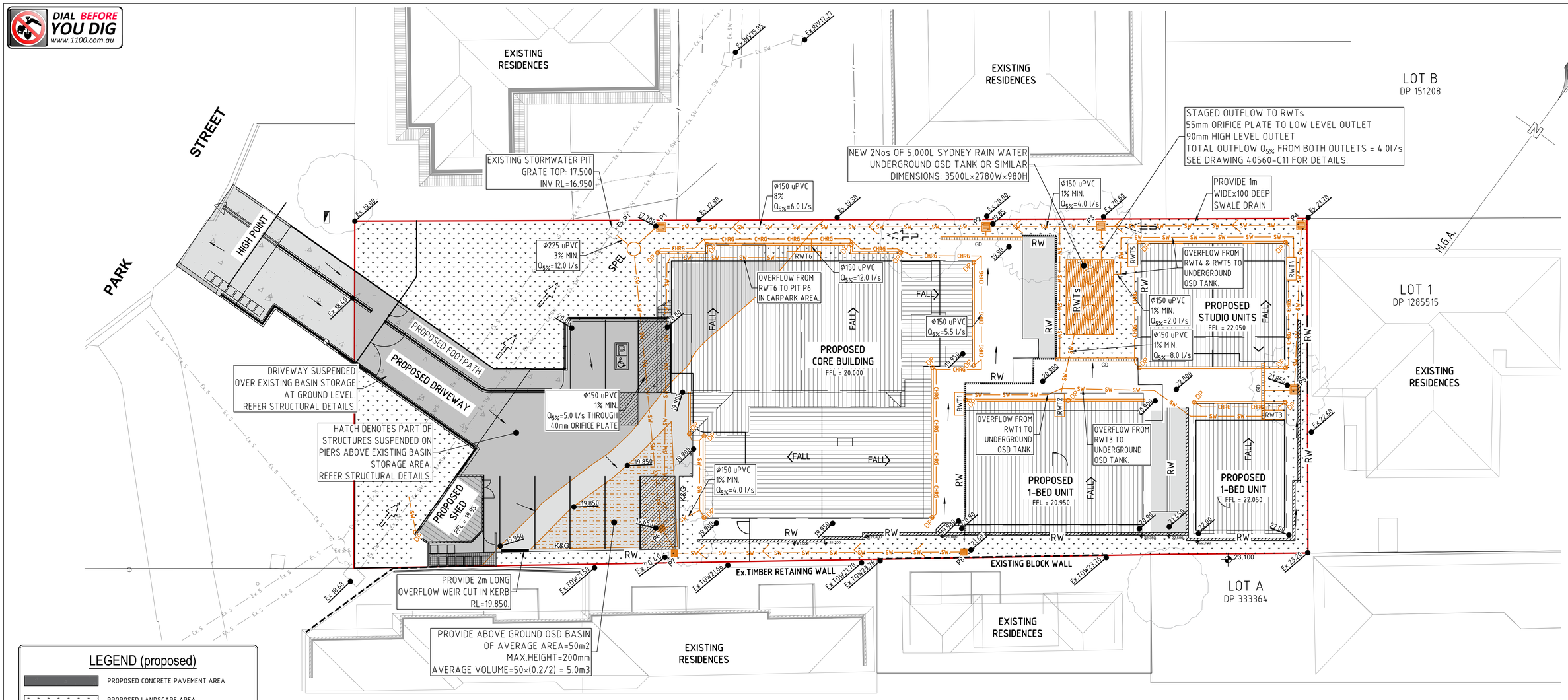

LEGEND (proposed)

- PROPOSED CONCRETE PAVEMENT AREA
- PROPOSED LANDSCAPE AREA
- PROPOSED PAVING AREA
- SW — SW — PROPOSED STORMWATER PIPE (Ø AS SHOWN)
- CHRG — CHRG — PROPOSED STORMWATER PIPE (Ø AS SHOWN)
- KO — PROPOSED CONCRETE KERB ONLY (150 HIGH)
- K&G — PROPOSED CONCRETE KERB & GUTTER (200 HIGH)
- P1 — PROPOSED STORMWATER PIT (PIT P1 & P6 TO HAVE 'SPEL STORMSACK' POLLUTION CONTROL SYSTEM OR SIMILAR).
- RWT3 — PROPOSED RWTs FOR RE-USE AS PER BASIX REQUIREMENTS, 2000L SIZE FOR RWT1,2,3,4 & 5 3000L SIZE FOR RWT 6.
- PROPOSED SURFACE FALL DIRECTION
- 19.950 — FINISHED SURFACE RL's
- MAJOR OVERLAND FLOW PATH DIRECTION

LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- Ex. SW — Ex. SW — EXISTING STORMWATER PIPE
- Ex. S — Ex. S — EXISTING SEWER PIPE

SCALE 1:150(A1)

0 1 2 4 6 8 10

0 1 2 4 6 8 10

SCALE 1:300(A3)

PROPOSED STORMWATER MANAGEMENT PLAN

REDUCTION RATIO 1:150 @ A1
1:300 @ A3

STORMWATER PIT SCHEDULE

MARK	TOP R.L.	DEPTH (mm)	IL INLET	IL OUTLET	LxB	LID TYPE
P5	21.850	500	-	21.350	600x600	MD GRATED (GALV)
P4	21.600	500	21.120	21.100	600x600	MD GRATED (GALV)
P3	20.600	1220	19.620	19.380	900x900	MD GRATED (GALV)
P2	19.900	700	19.300	19.200	600x600	MD GRATED (GALV)
P1	17.700	600	17.200	17.100	600x600	MD GRATED (GALV)
Ex.P1	17.500	550	17.000	16.950	TBC	Ex. STORMWATER PIT

STORMWATER PIT SCHEDULE

MARK	TOP R.L.	DEPTH (mm)	IL INLET	IL OUTLET	LxB	LID TYPE
P8	21.900	600	-	21.300	600x600	MD GRATED (GALV)
P7	20.400	700	19.720	19.700	600x600	MD GRATED (GALV)
P6	19.650	2350	19.020	17.300	600x600	MD GRATED (GALV)
Ex.P1	17.500	550	16.970	16.950	TBC	Ex. STORMWATER PIT

NOTE: RAINWATER TANKS

1. ON-SITE DETENTION HAS BEEN DESIGNED FOR THE RANGE OF RAINFALL EVENTS UP TO AND INCLUDING THE 1% AEP. RESULTS FROM THE DRAINS MODEL ARE SHOWN ON DRAWIN 40560-C11
2. ABOVE-GROUND RAINWATER TANKS RWT1 - RWT6 TO BE USED FOR RAINWATER HARVESTING. APPROVED USES FOR RAINWATER: OUTDOOR LANDSCAPING, FLUSHING TOILETS.

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Client
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Drawing Title
PROPOSED STORMWATER MANAGEMENT PLAN

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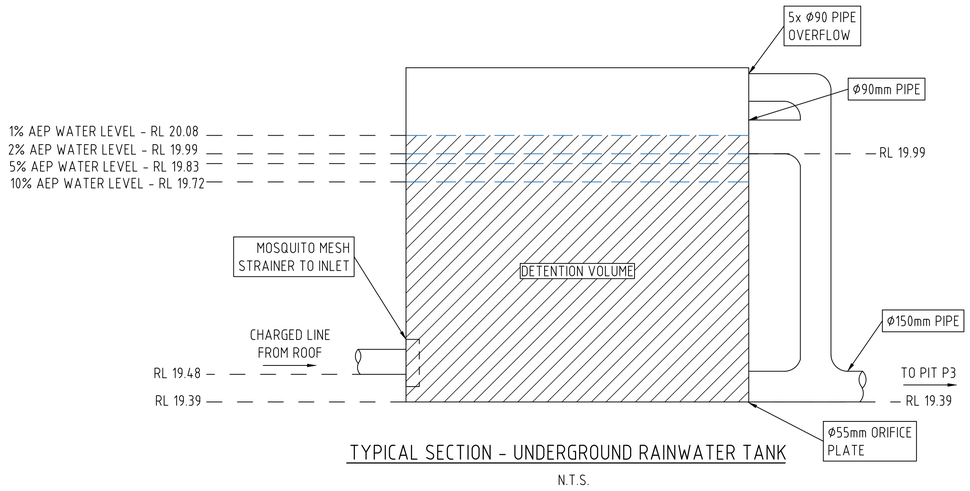
Check DOS

Original Sheet Size A1
Revision G

Certification

Project No 40560
Drawing No C10



TYPICAL SECTION - UNDERGROUND RAINWATER TANK

N.T.S.

DRAINS MODEL RESULTS

STORM	FLOW (CU.M/S) PRE-DEVELOPMENT	FLOW (CU.M/S) POST-DEVELOPMENT	WATER LEVEL IN OSD TANK (m) (TANK ROOF @ 20.37)
10% AEP	0.020	0.020	19.72
5% AEP	0.030	0.026	19.83
2% AEP	0.042	0.034	19.99
1% AEP	0.052	0.048	20.08

DRAINS MODEL AVAILABLE ON REQUEST

MUSIC MODEL RESULTS

Parrameter	Sources	Residual Load	% Reduction	MCC Reduction target %
Flow (ML/yr)	1.16	1.1	5.17	-
Total Suspended Solids (kg/yr)	160	14.6	90.9	80
Total Phosphorus (kg/yr)	0.334	3.33E-02	90	45
Total Nitrogen (kg/yr)	2.57	0.922	64.1	45
Gross Pollutants (kg/yr)	28.2	0	100	70

MUSIC MODEL AVAILABLE ON REQUEST

SPEL HYDROSYSTEM

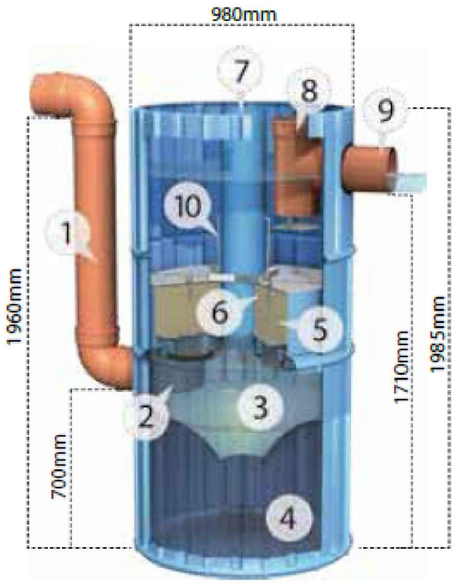
Cartridge Filter For Tertiary Stormwater Treatment

Example:

The SPEL Hydrosystem 1000 traffic installed in a concrete shaft DN1000.

Product structure:

1. Stormwater inlet (DN 200)
2. Deflector plate
3. Hydrodynamic separator
4. Sediment chamber
5. Filter element
6. Lifting point for filter element
7. Bypass pipe
8. Oil baffle
9. Outlet pipe
10. Filter locks



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D	14-05-2024	RAINWATER TANK SECTION LEVELS UPDATED
E	20-05-2024	MUSIC MODEL RESULTS ADDED
F	12-06-2024	REISSUED FOR DA

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10A PARK STREET
EAST MAITLAND NSW 2323

Client
HOUSING PLUS ORANGE

Drawing Title
STORMWATER ANALYSIS

Design LB
Drawn JS
Check DOS

Original Sheet Size A1
Revision F

Certification

Project No 40560
Drawing No C11

STORMWATER NOTES

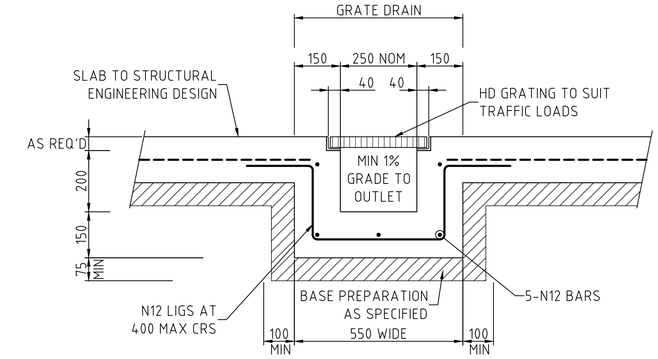
1. ALL DOWNPIPE LINES SHALL BE SEWER GRADE uPVC WITH SOLVENT WELD JOINTS (U.N.O)
2. EQUIVALENT STRENGTH VCP OR FCP PIPES MAY BE USED.
3. MINIMUM GRADE TO STORMWATER LINES TO BE 0.5% MINIMUM (U.N.O)
4. CONTRACTORS TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
5. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
6. APPROVED PRECAST PITS MAY BE USED.
7. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED (75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75mm THICK SAND BED. IN ALL CASES, BACKFILL THE TRENCH WITH THE SAND TO 200mm ABOVE THE PIPE .WHERE THE PIPE IS UNDER PAVEMENTS, BACKFILL REMAINDER OF TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL COMPACTED IN 150mm LAYERS TO 98% MAX. DRY DENSITY.
8. WHERE STORMWATER LINES PASS UNDER FLOOR SLABS, SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.
9. ALL PIPES IN THE ROADWAY AND FOOTPATH AREAS, WHERE THE DEPTH OF PIPE IS LESS THAN 500mm FROM THE FINISHED SURFACE LEVEL ARE TO BE CONCRETE ENCASED.

PIPE TRENCH - FILL NOTES:

1. BEDDING SAND
   BEDDING SAND SHALL BE GRANULAR MATERIAL HAVING A LOW PERMEABILITY AND HIGH STABILITY WHEN SATURATED, CONFORMING TO THE GRADING LIMITS FOR BEDDING SAND AS INDICATED IN THE CONTRACT DOCUMENTS. BEDDING SAND SHALL BE COMPACTED TO A DENSITY INDEX OF 95% AS DETERMINED IN ACCORDANCE WITH AS1289.

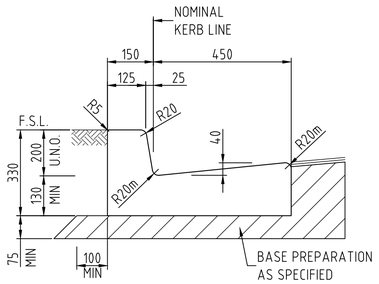
2. APPROVED IMPORTED GRANULAR FILL
   ONLY IMPORTED GRANULAR FILL MATERIAL APPROVED BY THE SUPERINTENDENT SHALL BE USED. THIS FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300mm THICK TO A DRY DENSITY OF 100% OF THE STANDARD MAXIMUM DRY DENSITY OF THE MATERIAL AND WITH A MOISTURE CONTENT NO MORE THAN 1% ABOVE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH AS1289.

3. ORDINARY EXCAVATED FILL MATERIAL
   ORDINARY EXCAVATED FILL MATERIAL IS EXCAVATED TRENCH MATERIAL THAT IS FREE OF VEGETABLE MATTER, HUMUS, LARGE CLAY LUMPS AND ROCK BOULDERS. THIS FILL MATERIAL SHALL BE COMPACTED IN LAYERS NOT EXCEEDING 300mm THICK, TO A DENSITY OF 95% OF THE STANDARD MAXIMUM DRY DENSITY OF THE MATERIAL WITH A MOISTURE CONTENT OF NOT MORE THAN 1% ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH AS1289.

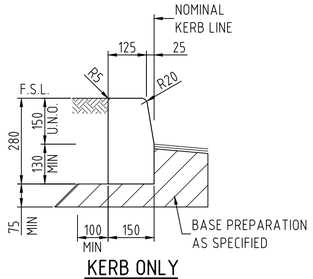


NOTE: EQUIVALENT PRECAST GRATE CAN BE USED. DESIGN BY OTHERS

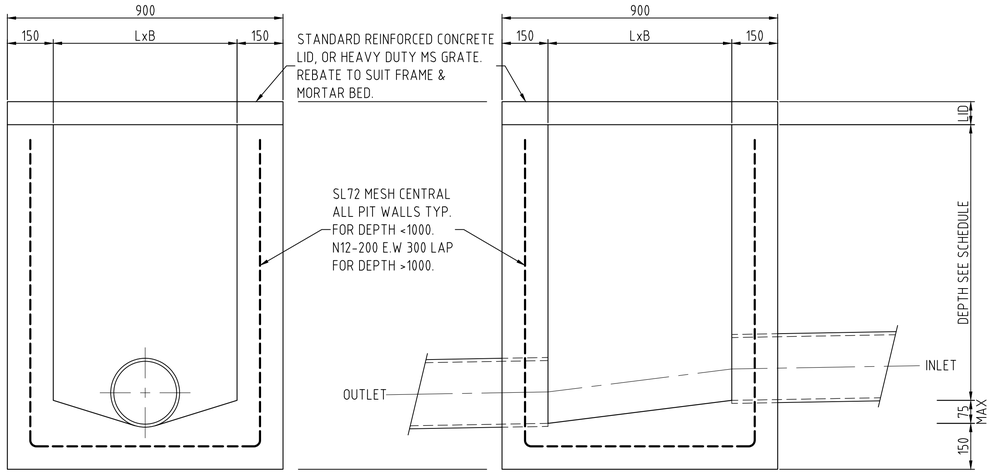
GRATED BOX DRAIN DETAIL
SCALE = 1:10



KERB & GUTTER DETAIL
SCALE = 1:10



KERB ONLY
SCALE = 1:10



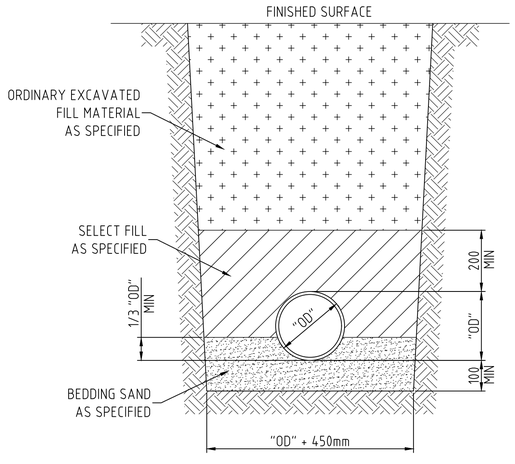
STORMWATER PIT
SCALE = 1:10

PRECAST EQUIVALENT MAY BE USED

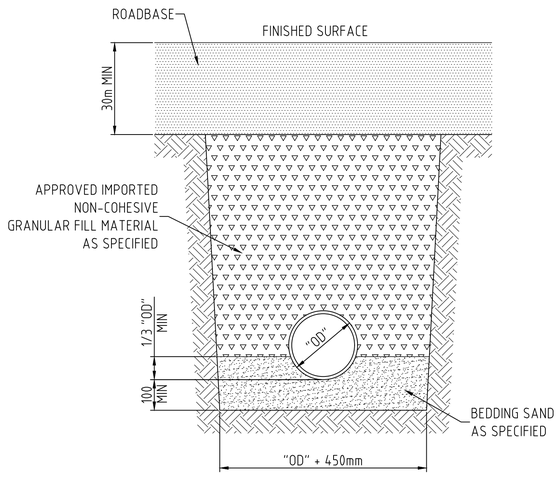
PIT DIMENSIONS		
DEPTH	L	B
<= 900	600	600
>1000	900	900

SEE SCHEDULE L DIMENSION IN DIRECTION OF DOWNSTREAM PIPE.

PROVIDE STEP IRONS IF DEPTH GREATER THEN 1500.



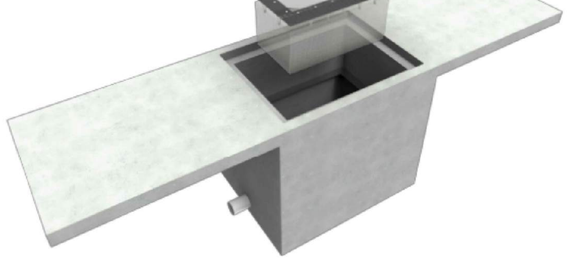
PIPE TRENCH - EARTH FOUNDATION
SCALE = 1:10



PIPE TRENCH - ROADWAY
SCALE = 1:10
NOTE: PIPE COLLAR IS NOT TO REST ON ORIGINAL MATERIAL

SPEL Stormsack®

At Source Gross Pollutant Trap (GPT)



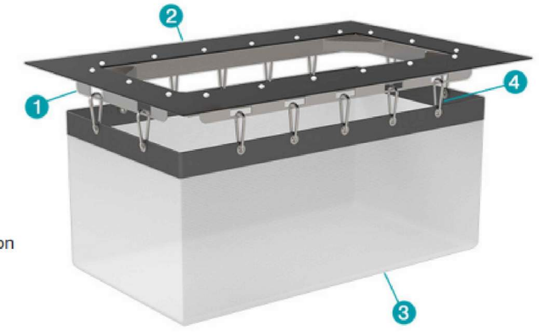
Sizes

Dimensions (mm)*
450x450
600x600
600x900
900x900

Custom sizes (i.e. 1200x900mm) can be manufactured on short lead times.

Features

1. Ultra-Durable Aluminium Frame
   - Custom pit arrangements upon request
2. Black Poly Surround riveted to Frame
   - Can be cut to suit on site
3. Reinforced Stormsack Bag
   - Bag has sewed eyelets
   - Square bottom design for even distribution
4. Karabiners attach Bag to Frame for easy service & replacement



SUBMISSION FOR DA

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DESIGN . PLAN . MANAGE

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web barnson.com.au

Rev	Date	Description
A	31-03-2023	ISSUED FOR REVIEW
B	04-10-2023	ISSED FOR DA
C	13-02-2024	DESIGN AMENDED TO SUIT WITH FLOOD ZONE
D	12-06-2024	REISSUED FOR DA

Project
PROPOSED CORE & CLUSTER REFUGE

Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

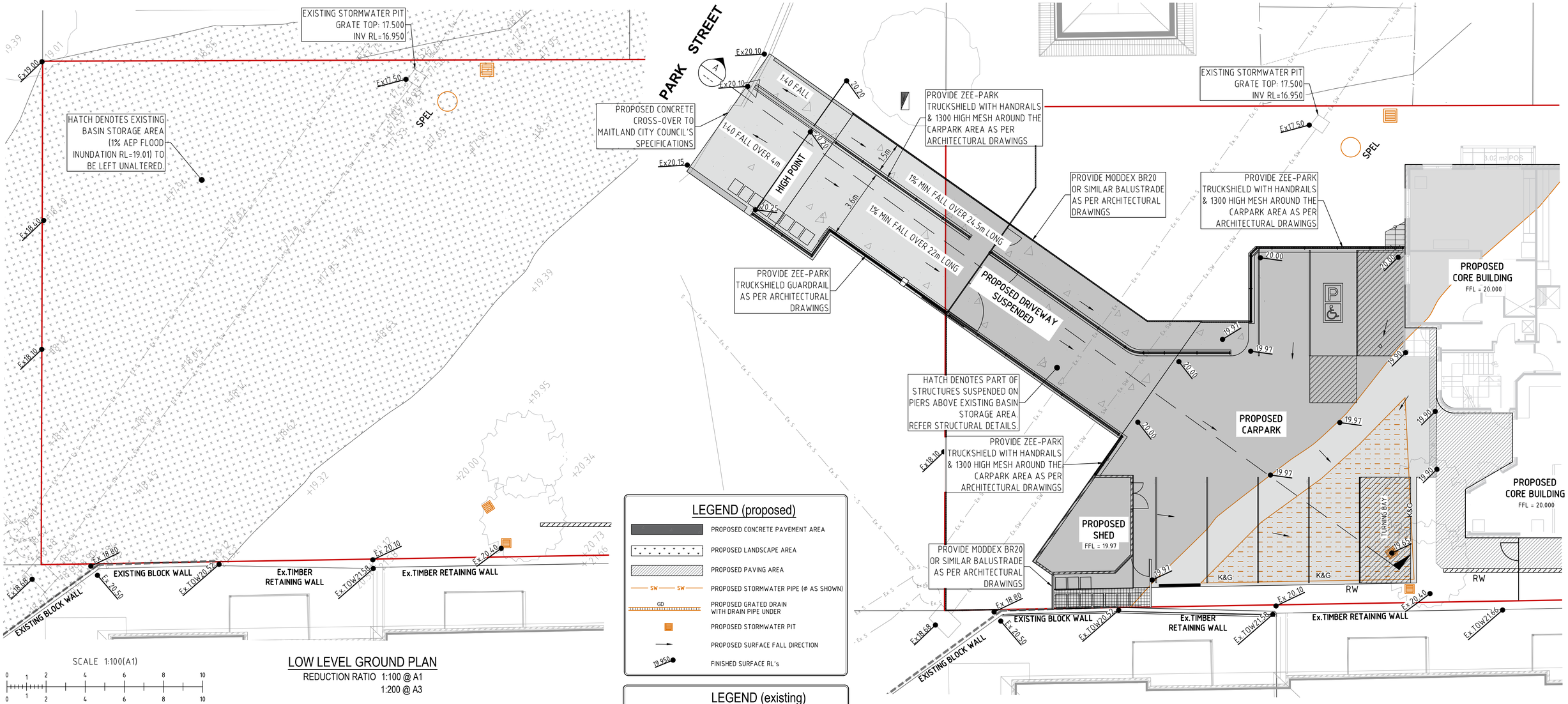
Drawing Title
STORMWATER NOTES & DETAILS

Design LB
Drawn JS
Check DOS

Original Sheet Size A1
Revision D

Certification

Project No 40560
Drawing No C12



SCALE 1:100(A1)
SCALE 1:200(A3)

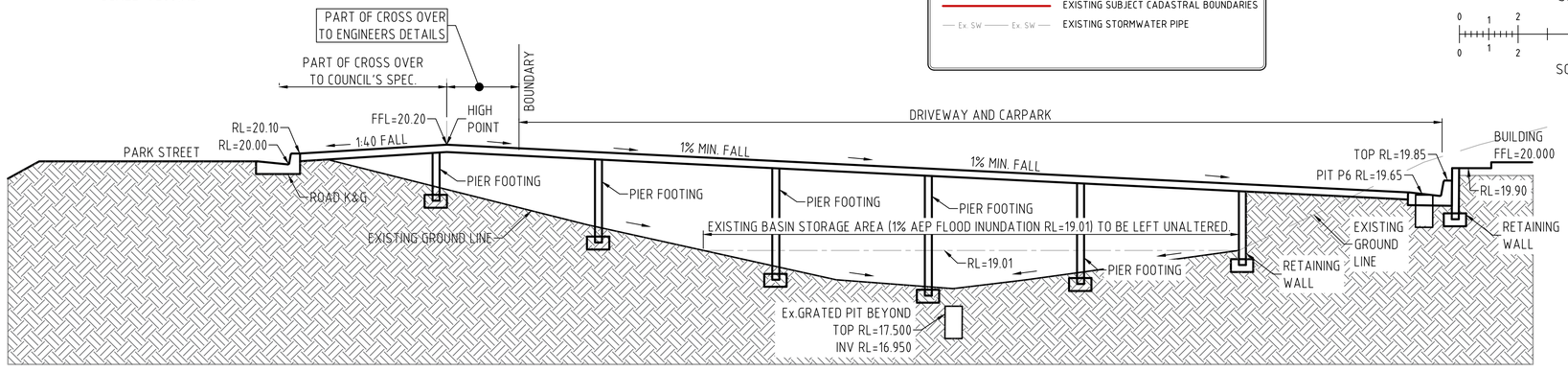
LOW LEVEL GROUND PLAN

REDUCTION RATIO 1:100 @ A1
1:200 @ A3

SCALE 1:100(A1)
SCALE 1:200(A3)

DRIVEWAY & CARPARK PAVEMENT DESIGN PLAN

REDUCTION RATIO 1:100 @ A1
1:200 @ A3



SECTION THROUGH DRIVEWAY & CARPARK, OSD AND EXISTING SWALE DRAIN

M.G.A.

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Rev	Date	Description
A	31-03-2023	ISSUED FOR REVIEW
B	17-04-2023	ISSED FOR DA
C	04-10-2023	UPDATED TO SUIT WITH COUNCIL'S REQUEST
D	13-02-2024	DESIGN AMENDED TO SUIT WITH FLOOD ZONE
E	14-05-2024	ABOVE GROUND RAINWATER TANKS PROPOSED
F	12-06-2024	REISSUED FOR DA

Project
CIVIL CONSTRUCTION DOCUMENTATION
PROPOSED CORE & CLUSTER REFUGE
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
PAVEMENT DESIGN PLAN

Design	LB	Original Sheet Size	A1
Drawn	JS		
Check	DOS	Revision	F

Certification

Project No 40560
Drawing No C20

SITEWORKS NOTES

1. ORIGIN OF LEVELS :- AHD
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
3. ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE SUPERINTENDENT.
4. EXISTING SERVICES HAVE BEEN OBTAINED FROM SURFACE INSPECTION ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND THE LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
5. WHERE NEW WORKS ABUT EXISTING THE CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
6. THE CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A QUALIFIED SURVEYOR.
7. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
8. ON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
9. MAKE SMOOTH TRANSITION TO EXISTING AREAS.
10. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS. ALL WORK TO BE UNDERTAKEN WITH ADHERENCE TO THE REQUIREMENTS OF THE SOIL AND WATER MANAGEMENT PLAN.
11. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

BASECOURSE DESIGN NOTES

A) ALL BASE COURSE AND SUB-BASECOURSE MATERIALS SHALL CONFORM WITH AUSPEC SPECIFICATION FOR THE CONSTRUCTION OF NATURAL GRAVEL OR CRUSHED ROCK ROAD PAVEMENT AND AUSPSEC SPECIFICATION FOR THE SUPPLY AND DELIVERY OF BASE AND SUB-BASE MATERIALS FOR SURFACED ROAD PAVEMENTS.

B) ALL BASECOURSE AND SUB-BASE MATERIALS SHALL BE COMPACTED TO ACHIEVE A MINIMUM OF 100% STANDARD MAXIMUM DRY DENSITY AT OPTIMUM MOISTURE CONTENT OF +OR- 2% IN ACCORDANCE WITH AS1289 E1.1

CONCRETE NOTES

1. CONCRETE FOR KERBS, DRIVEWAYS, RAMPS AND FOOTPATH SHALL HAVE A CONCRETE STRENGTH OF 25MPa AT 28 DAYS, MINIMUM SLUMP OF 60mm AND MAXIMUM AGGREGATE SIZE OF 20mm.

TRAFFIC CONTROL NOTES:

1. ADEQUATE SIGNPOSTING AND PROTECTION IS TO BE GIVEN TO THE MOTORING PUBLIC AND WORKERS ENGAGED ON SITE. ATTENTION IS DRAWN TO THE FOLLOWING SPECIFICATIONS AND GUIDELINES:
   - 1.1. AUSTRALIAN STANDARD AS1742.2-2009 TRAFFIC CONTROL DEVICES FOR GENERAL USE;
   - 1.2. AUSTRALIAN STANDARD AS1742.3-2009 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES;
   - 1.3. RTA GUIDELINES "TRAFFIC CONTROL AT WORK SITES"; AND
   - 1.4. WORKCOVER AUTHORITY CODE OF PRACTICE "WORKING NEAR MOBILE PLANT FOR TRAFFIC".
2. APPROPRIATE TRAFFIC CONTROL BASED UPON A LOWER SPEED ENVIRONMENT WHILE WORKS ARE IN PROGRESS SHOULD BE THE BASIS FOR ANY PROTECTION WORKS.

CROSS-OVER NOTES

1. CONSTRUCTION OF DRIVEWAY SLABS IS TO BE CARRIED OUT STRICTLY IN ACCORDANCE WITH MAITLAND CITY COUNCIL'S ROAD STANDARD DRAWINGS, RELEVANT AUS-SPEC DOCUMENTATION. THESE DOCUMENTS ARE AVAILABLE FROM COUNCILS CUSTOMERS SERVICE AREA.
2. CONTRACTORS/ OWNERS/DEVELOPERS ARE RESPONSIBLE FOR THE LOCATING OF ALL UNDERGROUND SERVICES AND THE ARRANGING AND COMPLETION OF REPAIRS WITH THE APPROPRIATE AUTHORITY SHOULD THEY BE BROKEN OR DAMAGED DURING CONSTRUCTION.
3. THE DRIVEWAY SLAB IS TO BE CONSTRUCTED TO THE DIMENSIONS AND SPECIFICATIONS SHOWN ON THIS PLAN. THE THICKNESS SHALL BE AS FOLLOWS:
   - A) FOR A COMMERCIAL SITUATION, THE CONCRETE SHALL BE 150mm THICK WITH TWO LAYERS OF SL82 MESH WITH 40mm TOP AND BOTTOM COVER AND A BROOM FINISH.

   THE COMPRESSIVE STRENGTH OF THE CONCRETE IS TO BE 25MPA AT 28 DAYS. ALL EXPOSED EDGES ARE TO 10MM RADIUS. ADDITIONALLY ALL POOR SUBGRADE MATERIAL SHALL BE REMOVED AND REPLACED WITH SUITABLE FILL MATERIAL. ALL SUBGRADES ARE TO BE WELL COMPACTED BEFORE THE PLACEMENT OF THE BASE MATERIAL. FORMWORK MUST EXTEND FROM FINISHED CONCRETE HEIGHT TO THE BASE MATERIAL FOR THE TOTAL AREA OF THE DRIVEWAY SLAB.
4. THE FOLLOWING INSPECTIONS ARE TO BE CARRIED OUT PRIOR TO AND DURING CONSTRUCTION. IN THIS REGARD, 24 HOURS NOTICE IS TO BE GIVEN BY PHONING 6801 400. THE INSPECTION REQUIRED ARE AS FOLLOWS:
   - A) SITE INSPECTION PRIOR TO THE COMMENCEMENT OF WORK.
   - B) WHEN THE FORMWORK AND COMPACTED BASE ARE IN PLACE AND PRIOR TO THE MESH BEING PLACED.
   - C) WHEN THE MESH HAS BEEN PLACED.
   - D) PRIOR TO THE BITUMEN SEALING OR ASPHALT WORKS.
   - E) AT THE COMPLETION OF ALL THE WORKS INCLUDING RESTORATION OF THE SITE.

   FAILURE TO HAVE THE ABOVE INSPECTION CARRIED OUT MAY RESULT IN THE REJECTION OF THE CROSSING.
5. THE FINISHED SURFACE IS TO BE KEPT FROM DRYING OUT TOO RAPIDLY BY COVERING WITH SAND OR PLASTIC SHEETING.
6. AN APPROVED TRAFFIC AND PEDESTRIAN CONTROL PLAN COMPLETED BY AN APPROPRIATELY QUALIFIED PERSON IN ACCORDANCE WITH AS 1742.3-2009 IS TO BE IN PLACE PRIOR TO ANY CONSTRUCTION WORKS COMMENCING AND DURING ANY CONSTRUCTION WORKS.
7. PRIOR TO CONSTRUCTION OF DRIVEWAY SLAB, SECTION 138 ROAD ACT - APPROVAL FOR WORKS IN THE PUBLIC ROAD TO BE LODGED AND APPROVED BY COUNCIL.
8. THE POTENTIAL FOR EROSION AND THE TRANSPORTATION OF SEDIMENT IS TO BE ADDRESSED. APPROPRIATE MEASURES ARE TO BE IN PLACE TO PREVENT THIS FROM HAPPENING.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ALL FORMWORK AND RUBBISH ASSOCIATED WITH THE CONSTRUCTION FROM THE SITE AND THE REINSTATEMENT OF THE SURFACE ADJACENT TO THE WORKS UPON COMPLETION.
10. IF THE LENGTH OR WIDTH OF DRIVEWAY SLAB EXCEEDS 6M AN EXPANSION JOINT IS TO BE PROVIDED AT THE MID-POINT (SEE EXPANSION JOINT DETAIL).

INSPECTION HOLD POINTS
1. INSTALLATION OF SEDIMENT & EROSION CONTROL MEASURES.
2. WATER & SEWER LINE INSTALLATION PRIOR TO BACKFILL.
3. ESTABLISHMENT OF LINE & LEVEL FOR KERB & GUTTER PLACEMENT.
4. ROAD PAVEMENT CONSTRUCTION.
5. ROAD PAVEMENT SURFACING.
6. PRACTICAL COMPLETION.

SERVICES INSTALLATION
1. INSTALLATION OF ALL UUNDERGROUND PIPES BE INSTALLED PRIOR TO INSTALLATION OF ROAD PAVEMENT.

SUBGRADE COMPACTION NOTES

1. STRIP TOPSOIL TO EXPOSE NATURALLY OCCURRING MATERIAL.
2. WHERE FILLING IS REQUIRED TO ACTIVATE DESIGN SUBGRADE PROOF ROLL EXPOSED NATURAL SURFACE WITH A MINIMUM OF 10 PASSES OF A VIBRATING ROLLER (MINIMUM STATIC WEIGHT OF 10 TONNES) IN THE PRESENCE OF THE SUPERINTENDENT.
3. ALL SOFT, WET OR UNSUITABLE MATERIAL TO BE REMOVED AS DIRECTED BY THE SUPERINTENDENT AND REPLACED WITH APPROVED MATERIAL SATISFYING THE REQUIREMENTS LISTED BELOW.
4. ALL FILL MATERIAL SHALL BE FROM A SOURCE APPROVED BY THE SUPERINTENDENT AND SHALL COMPLY WITH THE FOLLOWING:
   - A) FREE FROM ORGANIC AND PERISHABLE MATTER
   - B) MAXIMUM PARTICLE SIZE 75mm
   - C) PLASTICITY INDEX BETWEEN 2% AND 15%.
5. ALL FILL MATERIAL SHALL BE PLACED IN MAXIMUM 200mm THICK LAYERS AND COMPACTED AT OPTIMUM MOISTURE CONTENT (+ OR - 2%) TO ACHIEVE A DRY DENSITY DETERMINED IN ACCORDANCE WITH AS1289 E3.1 OF NOT LESS THAN THE FOLLOWING STANDARD MINIMUM DRY DENSITIES IN ACCORDANCE WITH AS1289 E1.1:

LOCATION	STANDARD DRY DENSITY
ALL EXTERNAL PAVE AREAS	98%
LANDSCAPED AREAS	90%

6. THE CONTRACTOR SHALL PROGRAM THE EARTHWORKS OPERATION SO THAT THE WORKING AREAS ARE ADEQUATELY DRAINED DURING THE PERIOD OF CONSTRUCTION. THE SURFACE SHALL BE GRADED AND SEALED OFF TO REMOVE DEPRESSIONS, ROLLER MARKS AND SIMILAR WHICH WOULD ALLOW WATER TO POND AND PENETRATE THE UNDERLYING MATERIAL. ANY DAMAGE RESULTING FROM THE CONTRACTOR NOT OBSERVING THESE REQUIREMENTS SHALL BE RECTIFIED BY THE CONTRACTOR AT THEIR COST.
7. TESTING OF THE SUBGRADE SHALL BE CARRIED OUT BY AN APPROVED NATA REGISTERED LABORATORY AT THE CONTRACTORS EXPENSE.

SUBMISSION FOR DA

barnson. DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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web barnson.com.au

Rev	Date	Description
A	31-03-2023	ISSUED FOR REVIEW
B	04-10-2023	ISSED FOR DA
C	12-06-2024	REISSUED FOR DA

Project
CIVIL CONSTRUCTION DOCUMENTATION
PROPOSED CORE & CLUSTER REFUGE
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
PAVEMENT NOTES & DETAILS

Design LB
Drawn JS
Check DOS

Original Sheet Size A1
Revision C

Certification

Project No 40560
Drawing No C21

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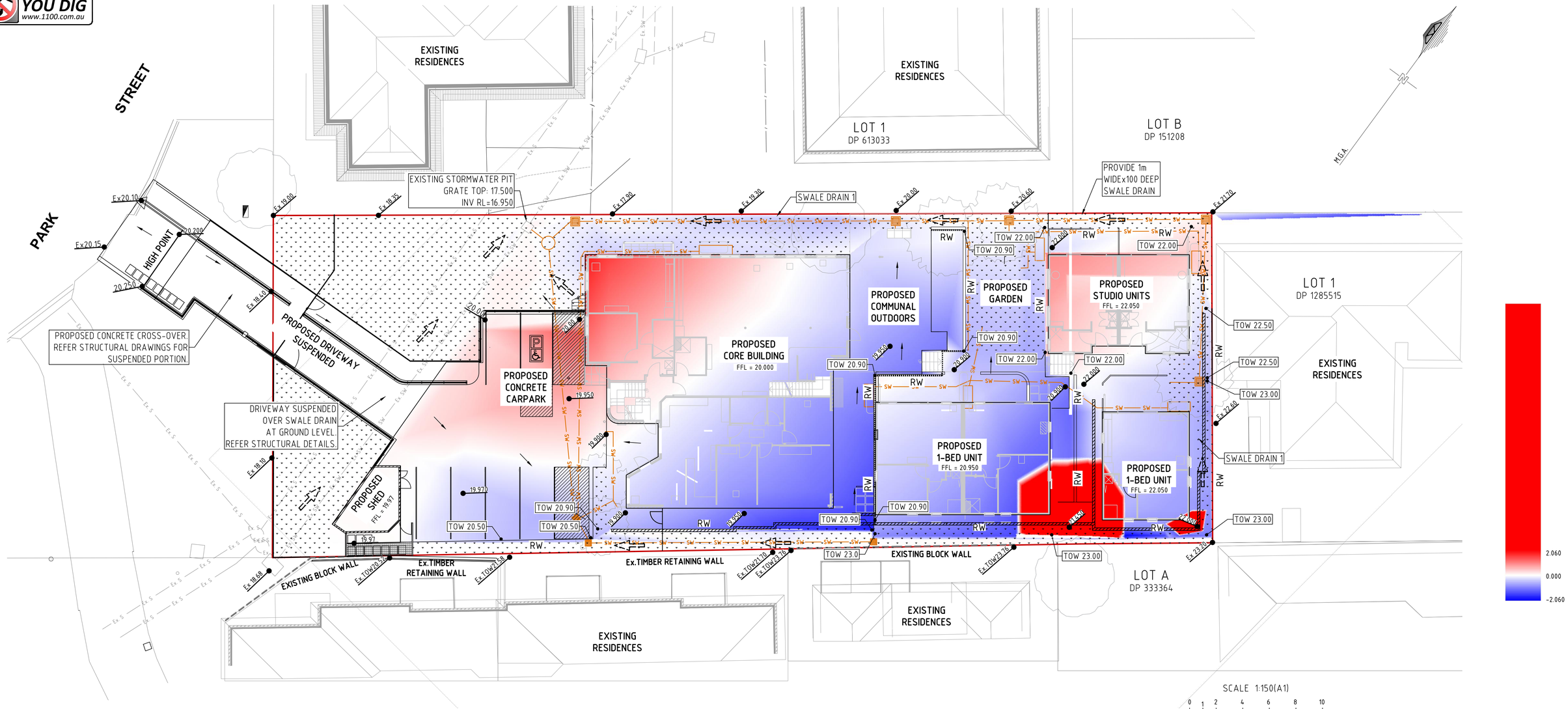

SCALE 1:150(A1)

SCALE 1:300(A3)

LEGEND (existing)

- EXISTING SUBJECT CADASTRAL BOUNDARIES
- Ex. SW — Ex. SW — EXISTING STORMWATER PIPE
- Ex. S — Ex. S — EXISTING SEWER PIPE

LEGEND (proposed)

- PROPOSED CONCRETE PAVEMENT AREA
- PROPOSED LANDSCAPE AREA
- PROPOSED PAVING AREA
- SW — SW — PROPOSED STORMWATER PIPE (ø AS SHOWN)
- P1 PROPOSED STORMWATER PIT
- PROPOSED SURFACE FALL DIRECTION
- 19.950 FINISHED SURFACE RL's
- MAJOR OVERLAND FLOW PATH DIRECTION

PROPOSED CUT & FILL PLAN

REDUCTION RATIO 1:150 @ A1
1:300 @ A3

SUBMISSION FOR DA

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Rev	Date	Description
A	13-07-2023	ISSUED FOR DA
B	04-10-2023	UPDATED TO SUIT WITH COUNCIL'S REQUEST
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Project
PROPOSED CORE & CLUSTER REFUGE

Site Address
10A PARK STREET
EAST MAITLAND NSW 2323

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Drawing Title
PROPOSED CUT & FILL PLAN

Design LB
Drawn JS
Check LM

Original Sheet Size A1
Revision C

Certification

Project No 40560
Drawing No C30

SITEWORKS NOTES

1. ORIGIN OF LEVELS :- AHD.
2. SUB-CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
3. ALL WORK IS TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS AND THE DIRECTIONS OF THE SUPERINTENDENT.
4. EXISTING SERVICES HAVE BEEN OBTAINED FROM SURFACE INSPECTION ONLY. IT IS THE RESPONSIBILITY OF THE SUB-CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPER-INTENDENT. CLEARANCES SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY.
5. WHERE NEW WORKS ABUT EXISTING THE SUB-CONTRACTOR SHALL ENSURE THAT A SMOOTH EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
6. THE SUB-SUB-CONTRACTOR SHALL ARRANGE ALL SURVEY SETOUT TO BE CARRIED OUT BY A REGISTERED SURVEYOR.
7. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
8. ON COMPLETION OF CONSTRUCTION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL AND GRASSED AREAS AND ROAD PAVEMENTS.
9. MAKE SMOOTH TRANSITION TO EXISTING SURFACES.
10. THE SUB-CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS AND MOUNDS TO ENSURE THAT AT ALL TIMES EXPOSED SURFACES ARE FREE DRAINING AND WHERE NECESSARY EXCAVATE SUMPS AND PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS. ALL WORK TO BE UNDERTAKEN WITH ADHERENCE TO THE REQUIREMENTS OF THE SOIL AND WATER MANAGEMENT PLAN.
11. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, STRUCTURAL, HYDRAULIC AND MECHANICAL DRAWINGS AND SPECIFICATIONS.

BULK EARTHWORKS APPROVALS

1. APPROVAL IS REQUIRED BY ALL RELEVANT AUTHORITIES PRIOR TO COMMENCEMENT OF WORKS ON SITE.

2. THE BULK EARTHWORKS PLANS AND ALL SUPPORTING INFORMATION INCLUDING ALL EROSION AND SEDIMENT CONTROL PLANS SHALL REMAIN ON SITE AT ALL TIMES.

EXISTING SERVICES

1. EXACT LOCATION OF ALL SERVICES SHALL BE LOCATED PRIOR TO THE COMMENCEMENT OF WORK. IT IS THE BUILDERS RESPONSIBILITY TO CONFIRM THE DEPTH AND LOCATION OF SERVICES AND BARNSON PTY LTD ACCEPTS NO RESPONSIBILITY FOR THE COMPLETENESS OR ACCURACY OF THE SERVICES SHOWN.

ADJOINING PROPERTY

1. IT IS THE SUB-CONTRACTOR'S RESPONSIBILITY TO ENSURE THE EFFECTS OF THE EARTHWORKS DO NOT HAVE AN IMPACT TO THE NEIGHBOURING PROPERTIES. SHOULD AN ISSUE ARISE ON SITE, THE SUB-CONTRACTOR SHALL INFORM THE SUPERINTENDENT IMMEDIATELY.

2. THE SUB-CONTRACTOR IS TO RECEIVE WRITTEN PERMISSION PRIOR TO ENTERING OR COMMENCING WORK OUTSIDE THE DEVELOPMENT SITE AND SHALL RECEIVE PERMISSION FROM EASEMENT HOLDERS AND LOCAL AUTHORITY PRIOR TO WORK COMMENCING.

AUTHORITY REGULATIONS

1. HAUL ROUTES FROM SITE IS TO BE AS FOLLOWS: SITE > TO BE CONFIRMED, STAY ON MAIN ROADS.

2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO WORK COMMENCING AS REQUIRED BY THE COUNCIL APPROVED SEDIMENT & EROSION CONTROL PLAN.

3. ALL VEGETATION PROTECTION AND PRESERVATION MEASURES SHALL BE INSTALLED PRIOR TO COMMENCEMENT OF WORK.

SOIL CONTAMINATION

1. ANY SUSPECTED GROUND OR GROUND WATER CONTAMINATION SHALL BE INVESTIGATED BY A SUITABLY QUALIFIED GEOTECHNICAL ENGINEER.

CONSTRUCTION RECORDS

1 ADEQUATE RECORDS SHALL BE KEPT THROUGHOUT CONSTRUCTION INCLUDING, BUT NOT LIMITED TO;

- LOCATION AND QUANTITY OF EXCESS CUT (DUMP SITE);
- THE AREAS ON SITE OF ALL FILL;
- LEVELS OF STRIPPED SURFACE;
- LOCATION OF ANY VEGETATION REMOVED;
- LOCATION OF SITE CONTAMINATION/UNSUITABLE MATERIAL;
- LEVELS AT COMPLETION OF BULK EARTHWORKS WORK;
- DETAILS OF SUB-GRADE TEST ROLLING (PROOF ROLLING);
- TYPES/SOURCE OF FILL MATERIAL;
- LOCATION LEVEL AND RESULT OF EACH COMPACTION TEST;
- RECORD OF ALL ACTIONS TAKEN ON SITE.

UNSUITABLE MATERIALS

1. REFER TO GEOTECHNICAL ENGINEER, AS REQUIRED, FOR DETERMINATION OF SUITABILITY OF MATERIAL WON ON SITE, OR BORROW PIT TO BE USED AS FILL MATERIAL.

2. ALL UNSUITABLE FILL SHALL BE EITHER REMOVED OR USED ORGANIC MATTER FROM BUILDING AND PAVEMENT AREAS TO AN 3. PRIOR TO ANY EARTHWORKS STRIP TOPSOIL, CONTAINING AS PER THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT. APPROXIMATE DEPTH OF 0.10M, SPOIL MATERIAL AS DIRECTED BY THE MANAGER. REMOVE RUBBLE, OVER SATURATED MATERIALS AND ALL ORGANIC MATTER.

TESTING/INSPECTIONS

1. ALL TESTING OF EARTHWORKS SHALL BE DONE AT THE SUB-CONTRACTOR'S EXPENSE, UNLESS NOTED OTHERWISE. SHALL A SUB-GRADE OR PROOF ROLL INSPECTION FAIL, OR 2. ADDITIONAL INSPECTIONS BE REQUIRED FOR ANY REASON OUTSIDE, THE SUB-CONTRACTOR WILL WEAR THE COSTS OF ANY SUBSEQUENT RE-INSPECTIONS UNLESS NOTED OTHERWISE.

EARTHWORKS SEQUENCE

1. INSTALL ALL VEGETATION PROTECTION, EROSION AND SEDIMENT CONTROL, AND SITE-SPECIFIC MEASURES PRIOR TO THE COMMENCEMENT OF ANY WORK.

2. STRIP ALL TOPSOIL/ORGANIC MATERIAL FROM CONSTRUCTION AREA AND REMOVE FROM SITE OR STOCKPILE AS DIRECTED BY THE SUPERINTENDENT.

3. EXCAVATE MATERIAL AS INDICATED ON THE BULK EARTHWORKS PLAN.

4. PRIOR TO PLACING FILL, PROOF ROLL EXPOSED SUB-GRADE WITH AN 8 TONNE (MINIMUM) ROLLER OR WATER TRUCK TO DETECT THEN REMOVE SOFT SPOTS, REPLACE UNSUITABLE MATERIAL WITH SUITABLE GRANULAR MATERIAL AND COMPACT TO THE MINIMUM COMPACTION REQUIREMENTS LISTED. (TO BE UNDERTAKEN IN THE PRESENCE OF A CIVIL/GEOTECHNICAL ENGINEER

5. GEOTECHNICAL ENGINEER TO UNDERTAKE SUB-GRADE COMPACTION TESTING TO LEVEL 1, AS PER AS 3798 (2007) AND PROVIDE CBR VALUES FOR ADJUSTMENT TO PAVEMENT DESIGN.

6. FILLING IS TO BE PLACED AND COMPACTED IN MAXIMUM 150MM LAYERS AND TO THE MINIMUM COMPACTION REQUIREMENTS LISTED.

7. AFTER ALL BULK EARTHWORKS HAVE OCCURRED, PROOF ROLL THE FINISHED PAD LEVEL WITH AN 8 TONNE (MINIMUM) ROLLER OR WATER TRUCK TO DETECT, THEN REMOVE SOFT SPOTS, REPLACE UNSUITABLE MATERIAL WITH SUITABLE GRANULAR MATERIAL AND COMPACT TO THE MINIMUM COMPACTION REQUIREMENTS LISTED.

SCOUR PROTECTION NOTES

1. SCOUR PROTECTION IS TO BE PROVIDED AS A 3000mm WIDE DISTRIBUTION x 300mm DEEP D_{50}100mm RIP RAP PLACED ON A SINGLE LAYER OF GEOTEXTILE (BIDIM A34 OR EQUIVALENT)
2. GRADING TO BE AS PER TABLE BELOW

EQUIVALENT SPHERICAL DIAMETER ##	PERCENT (BY WEIGHT) OF RIP RAP OF SMALLER SIZE
1.5 - 2.0 TIMES D_{50}++	100%
D_{50}	50%
0.3 D_{50}	10 - 20%

THE DIAMETER OF A SPHERE WITH AN EQUIVALENT VOLUME TO THE INDIVIDUAL ROCK.

++ D_{50} IS THE MEDIAN RIP RAP DIAMETER OF THE ROCK MIX. (i.e. 50% (BY WEIGHT) IS SMALLER AND 50% (BY WEIGHT) IS LARGER).

TYPICAL EARTHWORKS EMBANKMENT NOTES

1. IT IS THE BUILDER'S RESPONSIBILITY TO ENSURE THAT THE SITE WORKS DO NOT COMPROMISE/UNDERMINE OR PLACE ADDITIONAL SURCHARGE ON ANY EXISTING STRUCTURES.

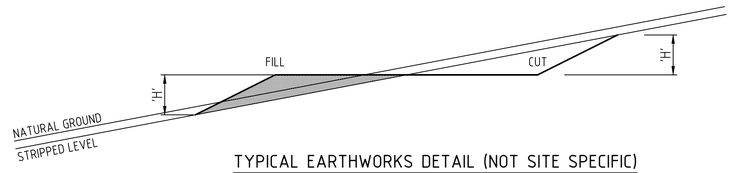
2. BATTER ANGLES MUST COMPLY WITH LOCAL AUTHORITY REQUIREMENTS AND ARE TO CONFORM TO THE ABOVE DIAGRAM.

3. ALL BATTERS SHALL BE PROTECTED FROM EROSION, AND ADEQUATE EROSION AND SEDIMENT CONTROL MEASURES IN PLACE PRIOR TO THE COMMENCEMENT OF WORK.

4. SHOULD THE ABOVE CONDITIONS NOT BE ACHIEVED, BARNSON MUST BE CONTACTED PRIOR TO ANY SITE WORKS BEING UNDERTAKEN.

PAD AND FINISHED LEVEL NOTES

1. ACTUAL FINISHED LEVELS SHOWN ON THIS PLAN ARE FOR THE SUB-CONTRACTOR'S GUIDANCE ONLY. ACTUAL FINISHED LEVELS SHALL BE SET-OUT IN ACCORDANCE WITH ARCHITECTURAL PLANS (REPORT ANY DISCREPANCIES TO BARNSON IMMEDIATELY).



TYPICAL EARTHWORKS DETAIL (NOT SITE SPECIFIC)
NOT TO SCALE

BATTER ANGLES - SHORT TERM

SLOPE = H:L H<2m	MATERIAL TYPE (REFER GEOTECHNICAL REPORT)					
	STABLE ROCK	SAND	SILT	FIRM CLAY	SOFT CLAY	SOFT SOILS
COMPACTED FILL	1:1	1:3	1:4	1:2	N/A	N/A
CUTTING	N/A	1:3	1:4	1:2	1:3	N/A

N/A = REFER TO GEOTECHNICAL REPORT FOR TREATMENT OF UNSUITABLE MATERIAL

ALL BATTER ANGLES ARE APPROXIMATE ONLY AND SHOULD BE CONFIRMED BY A GEOTECHNICAL ENGINEER.

SUBMISSION FOR DA

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BARNSON PTY LTD

phone 1300 BARNSON (1300 227 676)
email generalenquiry@barnson.com.au
web barnson.com.au

Rev	Date	Description
A	13-07-2023	ISSUED FOR DA
B	12-06-2024	REISSUED FOR DA

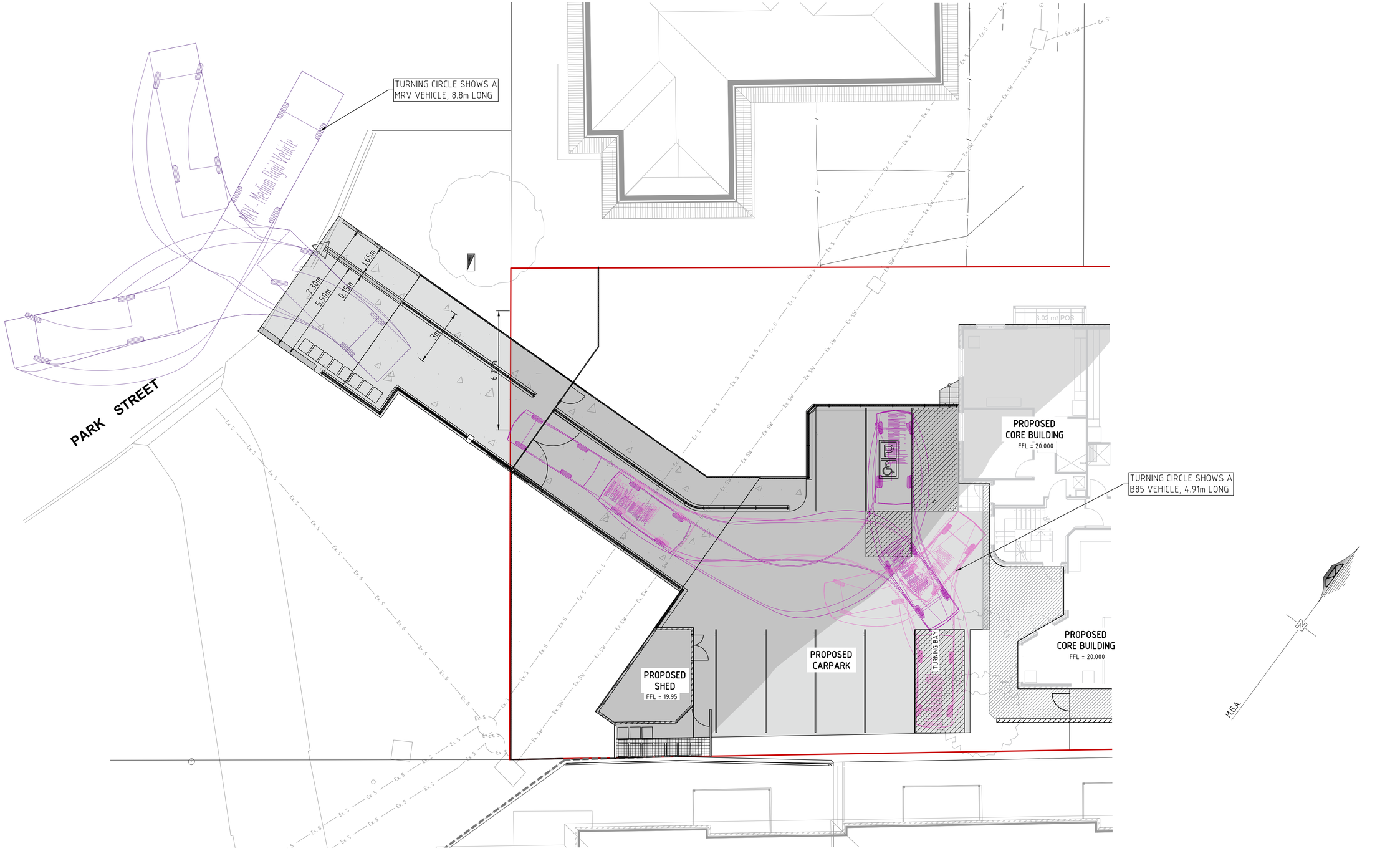
Project
CIVIL CONSTRUCTION DOCUMENTATION
PROPOSED CORE & CLUSTER REFUGE
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
BULK EARTHWORKS SPECIFICATIONS

Design LB
Drawn JS
Check LM
Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No C31



TURNING PATH ANALYSIS PLAN

REDUCTION RATIO 1:100 @ A1
1:200 @ A3

SUBMISSION FOR DA

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DESIGN . PLAN . MANAGE

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Rev	Date	Description
A	04-10-2023	ISSUED FOR DA
B	13-02-2024	BIN AREA WIDENED & BIN TRUCK TURNING CIRCLE ADDED
C	12-06-2024	REISSUED FOR DA

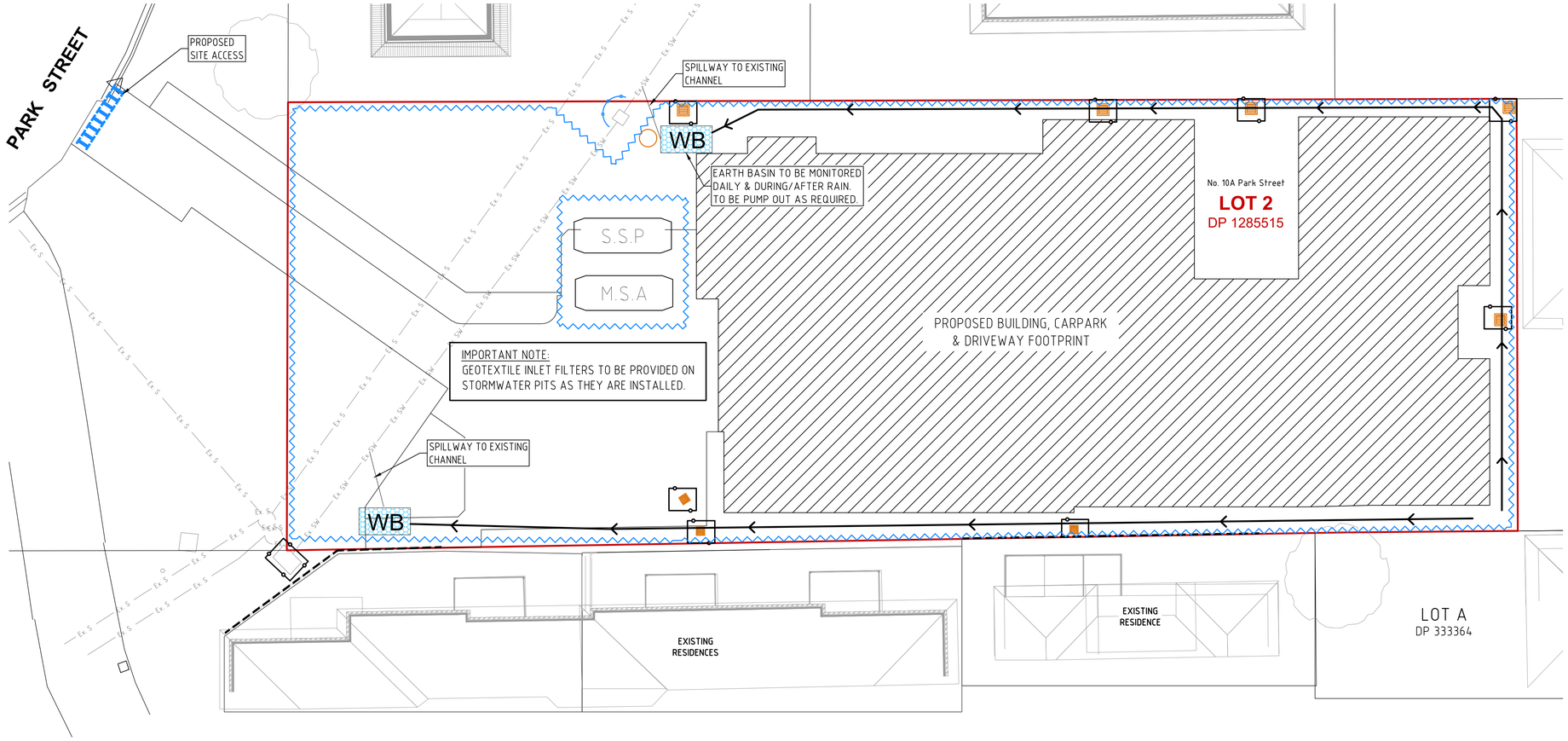
Project
CIVIL CONSTRUCTION DOCUMENTATION
PROPOSED CORE & CLUSTER REFUGE
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
TURNING PATH ANALYSIS PLAN

Design LB
Drawn JS
Check DOS
Original Sheet Size A1
Revision C

Certification

Project No 40560
Drawing No C40



SEDIMENT AND EROSION CONTROL NOTES:

1. ALL SEDIMENT AND EROSION CONTROL STRUCTURES TO BE INSTALLED PRIOR TO SITE DISTURBANCE, UNLESS STATED OTHERWISE ON THIS PLAN.
2. SEDIMENT AND EROSION CONTROL STRUCTURES TO BE BUILT AS PER DIAGRAMS PROVIDED.
3. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AND MAINTAINED BY PROJECT MANAGER AT LEAST WEEKLY AND FOLLOWING EACH RAINFALL EVENT. IF STRUCTURES ARE TO BE REMOVED, THEY ARE TO BE REINSTALLED AND INSPECTED BY PROJECT MANAGER.
4. ALL SEDIMENT RETAINING STRUCTURES TO BE CLEARED ON REACHING 50% STORAGE CAPACITY AND SPREAD ON DISTURBED AREAS.
5. TOPSOIL FROM ALL AREAS THAT WILL BE DISTURBED TO BE STRIPPED AND STOCKPILED WITHIN A NOMINATED AREA ONSITE. STOCKPILES TO BE NO HIGHER THAN 600MM. THIS IS BE ACCOMPANIED BY APPROPRIATE SEDIMENT AND EROSION CONTROLS (STRAW BALE SEDIMENT FILTER OR SEDIMENT FENCE OR OTHER DEVICE AS SPECIFIED ON THIS PLAN) LOCATED DOWNSLOPE OF STOCKPILES. IF STOCKPILES ARE TO REMAIN FOR LONGER THAN ONE MONTH, THEY ARE TO BE STABILISED WITHIN 14 DAYS. STOCKPILED TOPSOIL IS TO BE RESPREAD ON DISTURBED AREAS, SEEDED AND FERTILISED IN ACCORDANCE WITH THE REHABILITATION SPECIFICATION SHOWN ON THIS PLAN AS PART OF REHABILATION WORKS.
6. STOCKPILES OF ERODABLE BUILDING MATERIALS INCLUDING SAND AND SOIL TO BE LOCATED WITHIN DESIGNATED MATERIAL STORAGE AREAS (MSA) AND PROTECTED WITH SEDIMENT FENCE OR STRAW BALE SEDIMENT FILTERS OR OTHER DEVICE AS SPECIFIED ON THIS PLAN. THE PROJECT MANAGER TO NOMINATE SPECIFIED STORAGE AREAS WITHIN THE BOUNDARIES OF THE DISTURBED AREA.
7. ALL VEGETATION OUTSIDE THE DISTURBED AREA BOUNDARY TO REMAIN UNDISTURBED. EXISTING VEGETATION ONSITE TO BE RETAINED AS PER RESTRICTION ON USE OF THE LAND. DISTURBANCE TO VEGETATIVE GROUND COVER TO BE MINIMISED AS FAR AS PRACTICABLE.
8. ALL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL REMAIN IN PLACE UNTIL THE SITE IS FULLY STABILISED AND/OR REVEGETATED (UNLESS OTHERWISE STATED ON THIS PLAN).
9. NO STORAGE OF VEHICLES OR VEHICLE MOVEMENTS ARE TO OCCUR OUTSIDE THE DISTURBED AREA BOUNDARY.
10. ACCESS TO THE SITE TO BE THROUGH VIA CONSTRUCTION ENTRANCE AS DEPICTED ON THIS PLAN.
11. THE PROJECT MANAGER IS TO INFORM ALL CONTRACTORS OF THEIR OBLIGATIONS UNDER THIS PLAN.
12. ALL SEWER, WATER AND DRAINAGE LINES ARE TO BE BACKFILLED WITHIN 24 HOURS OF INSPECTION AND APPROVAL.
13. TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES ARE SHOWN ON THIS PLAN.
14. OPEN CHANNELS, RETENTION BASINS AND TABLE DRAINS ASSOCIATED WITH INTERNAL ROADS TO BE STABILISED AND REHABILITATED IN ACCORDANCE WITH THE REHABILITATION SPECIFICATION DEPICTED ON THIS PLAN WITHIN 14 DAYS OF THE COMPLETION OF EARTHWORKS.
15. ALL CUT AND FILL BATTERS SHALL BE EFFECTIVELY STABILISED WITHIN 14 DAYS OF COMPLETION OF EARTHWORKS.
16. ALL AREAS DISTURBED AS A RESULT OF EARTHWORKS SHALL BE PROGRESSIVELY STABILISED AND/OR REVEGETATED SO THAT NO AREAS REMAIN EXPOSED TO EROSION DAMAGE FOR MORE THAN 14 DAYS UPON COMPLETION OF EARTHWORKS. LIKEWISE ALL HARDSTAND AREAS SHALL BE STABILISED WITH COMPACTED SUB-GRADE AS SOON AS POSSIBLE AFTER THEIR FORMATION. THE RESPONSIBILITY FOR PROGRESSIVE REVEGETATION AND STABILISATION LIES WITH THE PROJECT MANAGER.
17. THIS PLAN IS TO BE READ IN CONJUNCTION WITH STORMWATER MANAGEMENT PLANS AND OTHER APPLICABLE PLANS INCLUDING PLANS.
18. SEDIMENT FENCES ASSOCIATED WITH TABLE DRAINS ALONG INTERNAL AND EXTERNAL ROADS TO BE AT A MAXIMUM OF 60 METRE SPACINGS.

SEDIMENT AND EROSION CONTROL LEGEND

- PROPOSED SEDIMENT FENCE
- PROPOSED EARTH BANK (SEE 40560-C51)
- WB — PROPOSED EARTH BASIN WET (SEE 40560-C51)
- STABILISED SITE ACCESS (SEE 40560-C51)
- S.S.P — SOIL STOCK PILE (SEE 40560-C51)
- M.S.A — MATERIALS STORAGE AREA
- PROPOSED BUILDING FOOTPRINT
- GEOTEXTILE INLET FILTERS
- PROPOSED STORMWATER PIT
- MESH & GRAVEL INLET FILTER (SEE 40560-C51)

SCALE 1:150(A1)

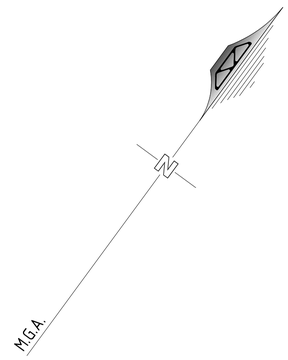
0 1 2 4 6 8 10

0 1 2 4 6 8 10

SCALE 1:300(A3)

PROPOSED SEDIMENT & EROSION CONTROL PLAN

REDUCTION RATIO 1:150 @ A1
1:300 @ A3



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Rev	Date	Description
A	04-10-2023	ISSUED FOR DA
B	12-06-2024	REISSUED FOR DA

Project
PROPOSED CORE & CLUSTER REFUGE

Site Address
10A PARK STREET
EAST MAITLAND NSW 2323

Client
HOUSING PLUS ORANGE

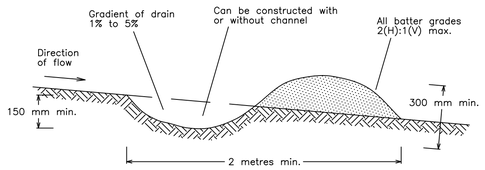
Drawing Title
PROPOSED EROSION AND SEDIMENT CONTROL PLAN

Design LB
Drawn LB
Check DOS

Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No C50

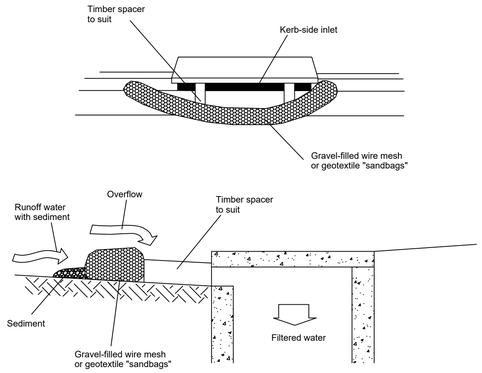


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

EARTH BANK (LOW FLOW) SD 5-5

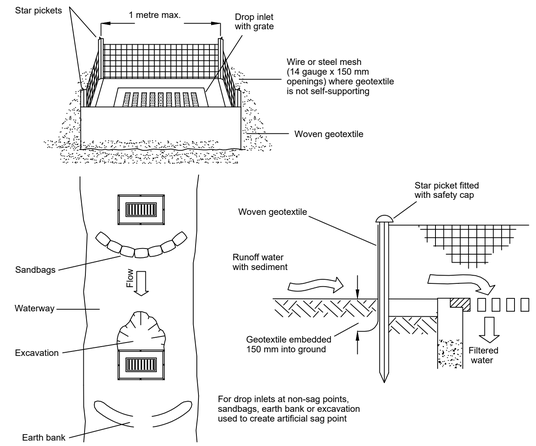


NOTE: This practice only to the used where specified in on approved SWMP/ESCP.

Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100 mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for mesh or geotextile providing they are placed so that they firmly abut each other and sedimetn-laden waters cannot pass between.

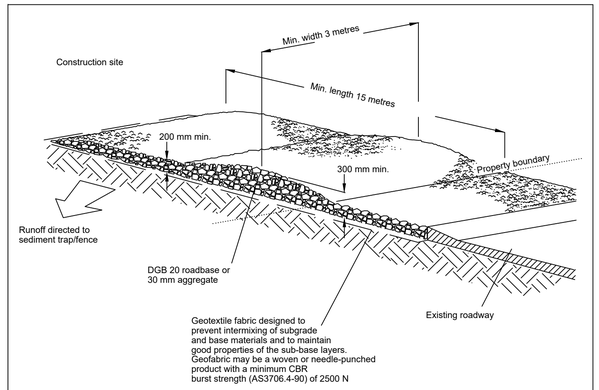
MESH AND GRAVEL INLET FILTER SD 6-11



Construction Notes

1. Fabricate a sediment barrier made from geotextile or straw bales.
2. Follow Standard Drawing 6-7 and Standard Drawing 6-8 for installation procedures for the straw bales or geofabric. Reduce the picket spacing to 1 metre centres.
3. In waterways, artificial sag points can be created with sandbags or earth banks as shown in the drawing.
4. Do not cover the inlet with geotextile unless the design is adequate to allow for all waters to bypass it.

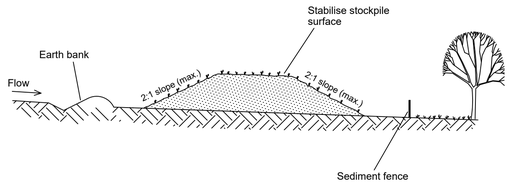
GEOTEXTILE INLET FILTER SD 6-12



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200 mm thick pad over the geotextile using road base or 30 mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

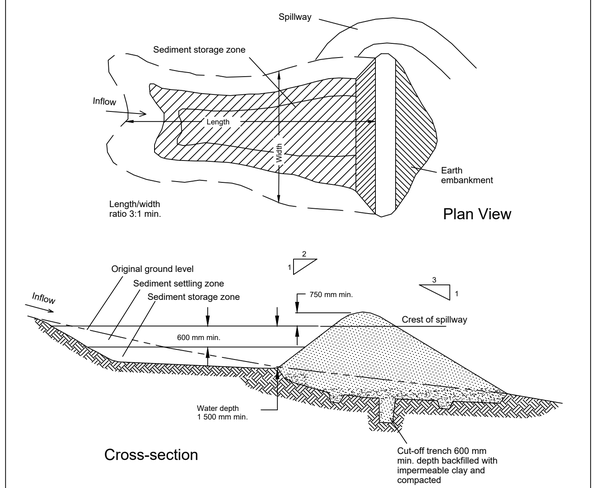
STABILISED SITE ACCESS SD 6-14



Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-8) 1 to 2 metres downslope.

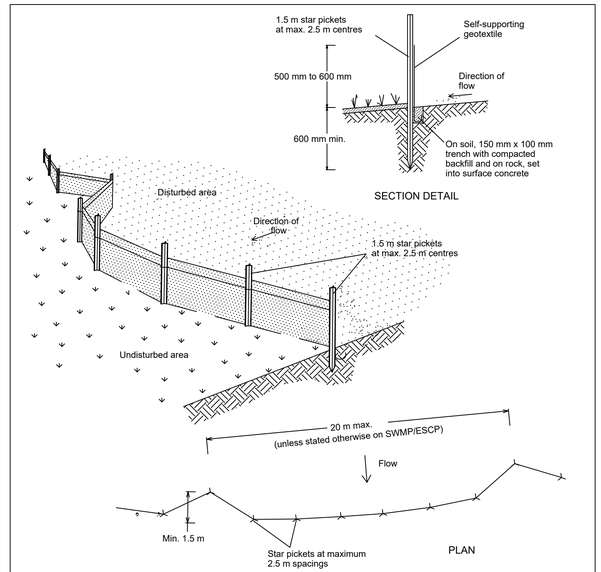
STOCKPILES SD 4-1



Construction Notes

1. Remove all vegetation and topsoil from under the dam wall and from within the storage area.
2. Construct a cut-off trench 500 mm deep and 1,200 mm wide along the centreline of the embankment extending to a point on the gully wall level with the riser crest.
3. Maintain the trench free of water and recompact the materials with equipment as specified in the SWMP to 95 per cent Standard Proctor Density.
4. Select fill following the SWMP that is free of roots, wood, rock, large stone or foreign material.
5. Prepare the site under the embankment by ripping to at least 100 mm to help bond compacted fill to the existing substrate.
6. Spread the fill in 100 mm to 150 mm layers and compact it at optimum moisture content following the SWMP.
7. Construct the emergency spillway.
8. Rehabilitate the structure following the SWMP.

EARTH BASIN - WET SD 6-4
(APPLIES TO 'TYPE D' AND 'TYPE F' SOILS ONLY)



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE SD 6-8

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Rev	Date	Description
A	04-10-2023	ISSUED FOR DA
B	12-06-2024	REISSUED FOR DA

Project
PROPOSED CORE & CLUSTER REFUGE

Site Address
10A PARK STREET
EAST MAITLAND NSW 2323

Client
HOUSING PLUS ORANGE

Drawing Title
EROSION AND SEDIMENT CONTROL DETAILS

Design LB
Drawn LB
Check DOS

Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No C51

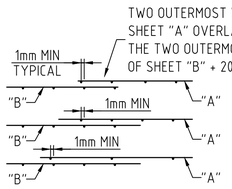
GENERAL NOTES:
1. THESE DRAWINGS SHALL BE READ IN CONJUNCTION WITH ALL ARCHITECTURAL AND OTHER CONSULTANTS' DRAWINGS AND SPECIFICATIONS AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED DURING THE COURSE OF THE CONTRACT. ANY DISCREPANCIES SHALL BE REFERRED TO THE ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE RELEVANT AND CURRENT SAA CODES AND BY-LAWS AND ORDINANCES OF THE RELEVANT BUILDING AUTHORITIES EXCEPT WHERE VARIED BY THE PROJECT SPECIFICATION.
3. ALL DIMENSIONS SHOWN SHALL BE VERIFIED BY THE BUILDER ON SITE. ENGINEER'S DRAWINGS SHALL NOT BE SCALED FOR DIMENSIONS.
4. UNLESS NOTED OTHERWISE ALL LEVELS ARE IN METRES AND ALL DIMENSIONS ARE IN MILLIMETRES.

SITE PREPARATION NOTES:
1. STRIP SITE REMOVING ALL TOPSOIL, ORGANIC MATTER, AND DELETERIOUS MATERIAL, PROOF ROLL, MAKE GOOD ANY SOFT SPOTS, AND RAISE TO LEVEL WITH COMPACTED GRANULAR MATERIAL ALL AS SPECIFIED BY THE CIVIL ENGINEER AND THE GEOTECHNICAL ENGINEER. REFER TO PROJECT CONSULTING ENGINEERS DRAWINGS FOR DETAILS OF THE SUB-BASE AND BASE COURSES, AND FOR NOTES ON COMPACTION.
2. EXCAVATE GROUND RESTRAINTS AND EDGE THICKENINGS AS DETAILED ON THE DRAWINGS TO THE SETOUT DIMENSIONS PROVIDED. MINOR FLUCTUATIONS IN THE WIDTH, STRAIGHTNESS, PARALLEL ALIGNMENT ETC WILL ENHANCE THE EFFECTIVENESS OF THE RESTRAINTS AND ARE THEREFORE ENCOURAGED.
REMOVE ALL LOOSE MATERIAL FROM EXCAVATIONS.
3. ANY SERVICE TRENCHES UNDER THE SLAB SHALL BE BACKFILLED WITH FULLY CONSOLIDATED CLEAN SAND OR OTHER APPROVED COHESIONLESS MATERIAL.

CONCRETE NOTES
1. ALL WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3600-2018, FORMWORK TO AS3610.1-2018
2. CONCRETE SHALL NOT BE POURED WHEN THE AIR TEMPERATURE IS GREATER THAN 38 DEGREES, NOR LESS THAN 5 DEGREES CELSIUS WITHOUT APPROVAL FROM THE ENGINEER.
3. NO ON SITE WATER IS TO BE ADDED TO THE CONCRETE WITHOUT PERMISSION FROM THE ENGINEER.
4. THE USE OF CALCIUM CHLORIDE SHALL NOT BE PERMITTED.
5. ALL CONCRETE IS TO BE COMPACTED USING A HIGH FREQUENCY VIBRATOR.
6. CONCRETE IS TO BE CURED A MIN OF 7 DAYS
7. SIZES OF CONCRETE ELEMENTS DO NOT INCLUDE THICKNESS OF APPLIED FINISHES.
8. SPECIFIED COVER IS THE CLEAR DISTANCE BETWEEN ANY REINFORCING (INCLUDING FITMENTS) AND THE FACE OF THE STRUCTURAL ELEMENT.
9. NO HOLES, CHASES OR EMBEDMENT OF PIPES OTHER THAN THOSE SHOWN ON THE STRUCTURAL DESIGN DRAWINGS SHALL BE MADE IN ANY CONCRETE MEMBERS WITHOUT PRIOR APPROVAL OF THE ENGINEER.
10. CONSTRUCTION JOINTS SHALL ONLY BE PROVIDED IN LOCATIONS SPECIFICALLY SHOWN IN THE STRUCTURAL DESIGN DRAWINGS.
11. FREE DROPPING OF CONCRETE FROM A HEIGHT GREATER THAN 1000mm IS NOT PERMITTED.
12. CONCRETE SHALL BE SEPARATED FROM SUPPORTING MASONRY BY TWO LAYERS OF DAMP-PROOF COMPRESSIBLE JOINT FILLER. VERTICAL FACES OF CONCRETE SHALL BE KEPT FREE OF ADJOINING SURFACES BY 10mm THICKNESS OF COMPRESSIBLE JOINT FILLER UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL NON-LOADBEARING WALLS SHALL BE KEPT CLEAR OF THE UNDERSIDE OF SLABS AND BEAMS BY 20mm UNLESS NOTED OTHERWISE ON THE DRAWINGS.
13. BRICKWORK MUST NOT BE BUILT ON CONCRETE SLABS OR BEAMS UNTIL FORMWORK SUPPORTING SAME, HAS BEEN REMOVED.
14. THE FOLLOWING REQUIREMENTS SHALL BE INCORPORATED INTO THE FORMWORK DESIGN AND/OR ALLOWED FOR BY THE FORMWORK SUB-CONTRACTOR AS APPROPRIATE:-

CONCRETE NOTES continued
A) MINIMUM FORMWORK STRIPPING TIMES ARE TO BE AS FOLLOWS, PROVIDED THE AVERAGE AMBIENT TEMPERATURE OVER THAT PERIOD IS BETWEEN 12 AND 20 DEGREES CELSIUS:-
(i) VERTICAL SURFACES MAY BE STRIPPED OF FORMWORK WHEN THE MINIMUM MEAN COMPRESSIVE STRENGTH OF THE CONCRETE HAS REACHED 5 MPa OR A MINIMUM OF 2 DAYS AFTER CONCRETE POUR.
(ii) SOFFITS OF BEAMS AND SLABS MAY BE STRIPPED OF FORMWORK WHEN THE MINIMUM MEAN COMPRESSIVE STRENGTH OF THE CONCRETE HAS REACHED 22 MPa OR A MINIMUM OF 6 DAYS AFTER CONCRETE POUR.
(ii) REMOVAL OF FORMWORK SUPPORT (PROPS) TO BEAM AND SLAB SOFFITS MAY BE UNDERTAKEN WHEN THE MINIMUM MEAN COMPRESSIVE STRENGTH OF THE CONCRETE HAS REACHED 28 MPa OR A MINIMUM OF 18 DAYS AFTER CONCRETE POUR.
B) ALL CONCRETE COMPRESSIVE STRENGTH (20-32 MPa) SHALL BE DETERMINED FROM SAMPLE CYLINDER TESTING BY A NATA REGISTERED LABORATORY.

REINFORCEMENT NOTES
1. ALL REINFORCEMENT SHALL BE IN ACCORDANCE WITH AS/NZS 4671-2019.
2. REINFORCEMENT IS REPRESENTED DIAGRAMMATICALLY, AND IS NOT NECESSARILY SHOWN IN TRUE PROJECTION.
3. REINFORCEMENT DESIGNATIONS AS FOLLOWS:
A) N - GRADE 500N HS DEFORMED BAR
B) R - GRADE 250R HOT ROLLED BAR
C) SL AND RL - GRADE 500L SQUARE MESH
D) TM - GRADE 500L TRENCH MESH
4. TRENCH MESH SHALL BE SPLICED WHERE NECESSARY BY A LAP OF 500mm.
5. A LAPPED SPLICE FOR PROPRIETARY WELDED MESH SHALL BE MADE SO THAT THE TWO OUTERMOST CROSS-BARS OF THE LAPPING SHEET OVERLAP THE TWO OUTERMOST CROSS-BARS OF THE SHEET BEING LAPPED. THE BARS OF THE PROPRIETARY WELDED MESH SHOULD BE SPACED NOT LESS THAN 100mm APART. THE MINIMUM LENGTH OF THE OVER LAP SHALL EQUAL 100mm. REFER BELOW DIAGRAM.



6. REINFORCEMENT STRESS DEVELOPMENT AND LAP SPLICING LENGTHS TO BE IN ACCORDANCE WITH AS3600-2018. REFER TABLE BELOW UNLESS NOTED OTHERWISE ON DRAWINGS.

REINFORCEMENT BAR SCHEDULE

BAR SIZE	DEVELOPMENT LENGTH & LAP LENGTH BARS IN TENSION (Lsy.tb.lap) mm	BAR COG LENGTHS mm
N12	500	170
N16	730	205
N20	990	245
N24	1220	295
N28	1470	345

NOTE: MULTIPLY ALL VALUES BY 1.3 WHEN SLIP FORMING, WHEN LIGHTWEIGHT CONCRETE IS USED OR WHEN MORE THAN 300mm OF CONCRETE IS CAST BELOW THE BARS. MULTIPLY ALL VALUES BY 1.5 WHEN EPOXY COATED BARS ARE USED.

7. WELDING OF REINFORCEMENT SHALL NOT BE PERMITTED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
8. ALL REINFORCEMENT IS TO BE ADEQUATELY SUPPORTED IN ITS REQUIRED POSITION. MESH AND BAR SUPPORT CHAIRS ARE TO BE AT 800mm MAX CENTERS, BOTH DIRECTIONS. BAR SUPPORT CHAIRS SHALL BE PROVIDED ALONG THE EDGES OF ALL CONSTRUCTION JOINTS.
9. BARS SHALL BE EVENLY DISTRIBUTED OVER THE WIDTH OF THE STRIP UNLESS NOTED OTHERWISE.
10. REINFORCEMENT SHALL NOT BE CUT OR WELDED ON SITE UNLESS APPROVED BY THE ENGINEER. BARS CONFLICTING WITH SMALL HOLES AND OTHER MINOR PENETRATIONS LESS THAN 300mm LONG MAY BE DISPLACED LATERALLY.

STRUCTURAL STEELWORK NOTES
1.0 ALL WORKMANSHIP & MATERIALS TO BE IN ACCORDANCE WITH AS4100-2020 STEEL STRUCTURES AND AS/NZS 5131-2016 STRUCTURAL STEELWORK FABRICATION & ERECTION
1.1 MATERIALS - ALL STRUCTURAL STEEL TO BE IN ACCORDANCE WITH AS4100-2020 FOR THE BELOW GRADES (UNO)
a) ROLLED SECTIONS - GRADE 300 PLUS
b) HOLLOW SECTIONS - GRADE 350
c) PLATE - GRADE 250
d) PURLINS/GIRTS - MINIMUM GRADE 450 TO AS1397-2021. TO BE STRAMIT OR LYSAGHT MANUFACTURE AND PROVIDED WITH CONNECTIONS AND BRIDGING TO MANUFACTURERS SPECIFICATION
1.2 CONSTRUCTION CATEGORY - IN ACCORDANCE WITH THE REQUIREMENTS OF AS/NZS 5131 THE CONSTRUCTION CATEGORIES FOR THIS PROJECT ARE DEFINED IN THE TABLE BELOW:

ELEMENT	IMPORTANCE LEVEL	SERVICE CATEGORY	FABRICATION CATEGORY	CONSTRUCTION CATEGORY
ALL STRUCTURAL STEELWORK UNO.	IL2	SC1	FC1	CC2

2.0 STRUCTURAL STEELWORK FABRICATION - ALL STRUCTURAL STEELWORK SHALL BE FABRICATED IN ACCORDANCE WITH AS/NZS 5131.
ALL WORK ON THIS PROJECT SHALL BE UNDERTAKEN BY COMPETENT PERSONNEL. REQUIREMENTS AND EXAMPLES OF QUALIFICATIONS FOR COMPETENT PERSONNEL ARE CONTAINED IN AS/NZS 5131.
MEMBER SIZES SHALL BE AS SHOWN ON THE STRUCTURAL DRAWINGS. NO SUBSTITUTION IS PERMITTED WITHOUT APPROVAL IN WRITING FROM THE ENGINEER.
2.1 BOLTING
4.6/S COMMERCIAL GRADE 4.6 BOLTS TO AS 1111, AS 1110 TIGHTENED TO A SNUG TIGHT CONDITION TO AS/NZS 5131
8.8/S HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS/NZS 1252.1, AS 1110 TIGHTENED TO A SNUG TIGHT CONDITION TO AS/NZS 5131
8.8/TB HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS/NZS 1252.1, FULLY TENSIONED TO AS/NZS 5131 AS A BEARING JOINT
8.8/TF HIGH STRENGTH STRUCTURAL BOLTS OF GRADE 8.8 TO AS/NZS 1252.1, FULLY TENSIONED TO AS/NZS 5131 AS A FRICTION JOINT
2.2 WELDING - ALL SHOP AND SITE WELDS TO BE - WELD CATEGORY G.P. E48 UNO. WELDING CONSUMABLES SHALL CONFORM TO THE REQUIREMENTS OF AS/NZS 1554, BASED ON THE YIELD STRENGTH OF THE STEEL TO BE WELDED, AS DEFINED BELOW:
a) NOMINAL YIELD STRENGTH OF STEEL TO BE WELDED ≤ 500MPa TO CONFORM WITH AUSTRALIAN STANDARD AS/NZS 1554.1
b) NOMINAL YIELD STRENGTH OF STEEL TO BE WELDED >500MPa; ≤ 690MPa TO CONFORM WITH AUSTRALIAN STANDARD AS/NZS 1554.4
c) NOMINAL YIELD STRENGTH OF STEEL TO BE WELDED ALL STEEL WITH GRADE ≤ 300MPa, NOMINAL TENSILE STRENGTH OF WELD METAL, Fuw 430MPa.
d) NOMINAL YIELD STRENGTH OF STEEL TO BE WELDED ALL STEEL WITH 300 < GRADE ≤ 450 MPa, NOMINAL TENSILE STRENGTH OF WELD METAL, Fuw 490MPa.
2.3 MINIMUM CONNECTION DETAILING GUIDELINES - UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS, CONNECTION DETAILS SHALL BE IN ACCORDANCE WITH THE FOLLOWING MINIMUM REQUIREMENTS:
a) ALL WELDS SHALL BE 6mm CONTINUOUS FILLET WELD (CFW) ALL AROUND.
b) ALL STEEL TO STEEL BOLTED CONNECTIONS SHALL BE MINIMUM TWO M20 GRADE 8.8/S BOLTS.
c) A MINIMUM OF TWO THREADS SHALL EXTEND PAST THE NUT.
d) ALL PLATES SHALL BE 10mm MINIMUM THICK.
e) ALL PURLIN CLEATS SHALL BE 8mm MINIMUM THICK.
ALL DETAILING WHERE NOT SPECIFICALLY SHOWN SHALL BE IN ACCORDANCE WITH THE AUSTRALIAN STEEL INSTITUTE (ASI) CURRENT EDITIONS OF THE 'DESIGN CAPACITY TABLES FOR STRUCTURAL STEEL' AND THE ASI STANDARDIZED STRUCTURAL CONNECTION DETAILS CONTAINED THEREIN.
THE ENDS OF HOLLOW SECTION MEMBERS SHALL BE SEALED WITH NOMINAL THICKNESS PLATES AND CONTINUOUS SEAL WELDED UNLESS NOTED OTHERWISE. IF HOLLOW SECTIONS ARE TO BE HOT-DIP GALVANIZED, VENT AND DRAINAGE HOLES SHALL BE PROVIDED CONFORMING TO THE REQUIREMENTS OF AS/NZS 5131 IN NON-VIEWABLE LOCATIONS.
2.4 SURFACE TREATMENT AND CORROSION PROTECTION - UNLESS NOTED OTHERWISE IN THE CONTRACTUAL DOCUMENTATION, THE MINIMUM SURFACE TREATMENT OF BOTH INTERNAL AND EXTERNAL STEELWORK SHALL CONFORM TO THE REQUIREMENTS OF AS/NZS 5131. STRUCTURAL STEELWORK TO BE GALVANIZED SHALL CONFORM TO THE REQUIREMENTS OF AS/NZS 5131.

STRUCTURAL STEELWORK NOTES continued
3.0 STRUCTURAL STEELWORK ERECTION - STRUCTURAL STEELWORK ERECTION SHALL CONFORM TO THE REQUIREMENTS OF AS/NZS 5131.
ALL MEMBERS HAVING A NATURAL CAMBER WITHIN THE STRAIGHTNESS TOLERANCE SHALL BE ERECTED WITH THE NATURAL CAMBER UP.
4.0 ADDITIONAL CLAUSES - THE STRUCTURAL STEELWORK ERECTOR SHALL BE RESPONSIBLE FOR TEMPORARY STABILITY DURING ERECTION AND SHALL PROVIDE AND LEAVE IN PLACE UNTIL PERMANENT BRACING ELEMENTS ARE CONSTRUCTED, SUCH TEMPORARY BRACING AS IS NECESSARY TO SECURELY STABILIZE THE STRUCTURE DURING ERECTION.
4.1 SHOP DRAWINGS - SHALL BE SUBMITTED FOR APPROVAL. NO STEELWORK SHALL BE FABRICATED UNTIL FINAL APPROVAL OF THE SHOP DETAIL DRAWINGS HAS BEEN RECEIVED AND ALL REVIEW COMMENTS ON THE WORKSHOP DRAWINGS HAVE BEEN RESOLVED.
4.2 SITE WELDING - OTHER THAN SITE WELDS (IF ANY) SHOWN ON THE SHOP DRAWINGS, DO NOT WELD ON SITE WITHOUT PRIOR APPROVAL.
4.3 CONCRETE ENCASED STEELWORK - SHALL BE UNPAINTED AND FREE OF SCALE. ALL STEELWORK ABOVE GROUND SHALL BE PLACED CENTRALLY WITH 50mm MINIMUM COVER CONCRETE ENCASEMENT. ALL STEELWORK BELOW GROUND SHALL BE PLACED CENTRALLY WITH 75mm MINIMUM COVER CONCRETE ENCASEMENT. REFER TO DRAWINGS FOR ANY REINFORCEMENT REQUIREMENTS.

STRUCTURAL STEELWORK DURABILITY NOTES
1. ATMOSPHERIC CORRISIVITY CATEGORY C2 TO AS4312-2008:
A) COVERED STEELWORK: CLASS 2.5 BLAST PLUS 75 MICRON ZINC SILICATE COATING TO AS2312.1-2014 OR ILG 100 TO AS4792-2006.
B) EXPOSED STEELWORK: HDG320 TO AS4680-2006.
C) COLD FORMED STEELWORK: AZ150 OR AM150 TO AS1397-2011

HOUSING PLUS ORANGE

CORE & REFUGE AT 10A PARK STREET EAST MAITLAND NSW

STRUCTURAL DRAWING SCHEDULE

PRELIMINARY DRAWING
Not to be used for construction purposes

barnson
DESIGN . PLAN . MANAGE

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Rev	Date	Description
B	14.06.24	ISSUED FOR DA APPROVAL

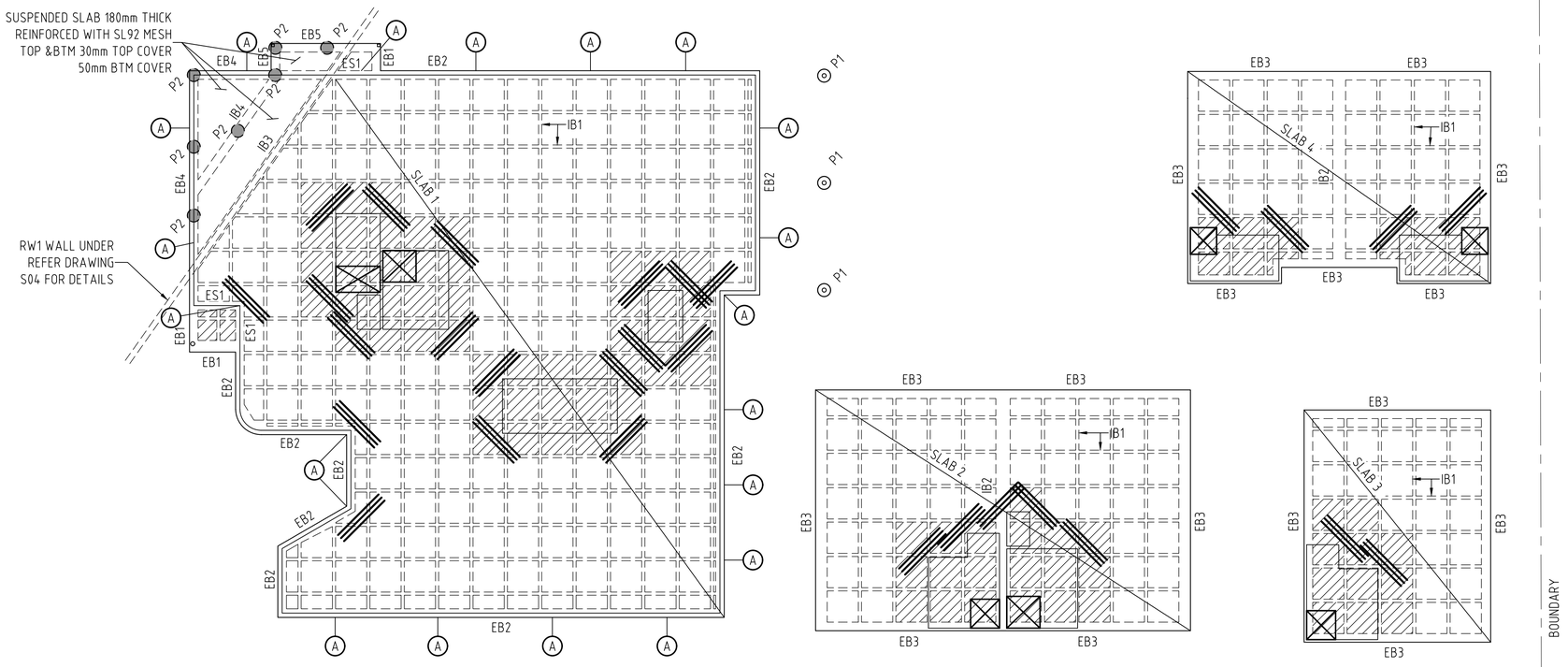
Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
COVER SHEET & NOTES

Design TR
Drawn EC
Check JS
Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No S01



CORE BUILDING AND STUDIO SLAB PLANS

SCALE = 1:100

SLAB LEGEND

- 1090 x 1090 x 225 DEEP WAFFLE PODS
- 1090 x 1090 x 225 DEEP WAFFLE PODS AT SET DOWN & WET AREA
- 1090 x 1090 PODS REMOVED, PROVIDE SL92 MESH BTM
- 3-N12 BARS x 2000 LONG OR 3-L11TM x 2000 LONG TIED TO UNDERSIDE OF MESH
- DENOTES SHOWER RECESS REFER DETAIL
- (A) MASONRY ARTICULATION JOINTS ARTICULATION OF MASONRY SHALL BE IN ACCORDANCE WITH TECHNICAL NOTE 61 - AUGUST 2008 BY THE CEMENT, CONCRETE & AGGREGATES AUSTRALIA
- P2 ϕ450 PIERS, SPACED AT MAX 2500 CTS REFER S201 FOR DETAILS
- P1 ϕ450 PIERS UNDER FIRST FLOOR COLUMNS REFER S201 FOR DETAILS
- EB EDGE BEAM REFER S201 FOR DETAILS
- IB INTERNAL BEAM REFER S201 FOR DETAILS

SLAB LOADING NOTES

1. ALL LOADS ARE ACCORDING TO AS1170
2. DEAD LOADS:
   A) SELF WEIGHT OF STRUCTURE
3. LIVE LOADS:
   A) 1.5 kPa RESIDENTIAL FLOOR LOADING TO AS1170.1-2002

BORED PIER NOTES

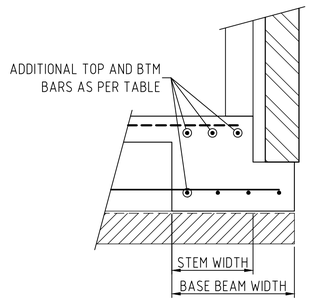
1. CONCRETE EXPOSURE CLASSIFICATION = A2 TO AS3600-2018
2. CONCRETE IS TO BE GRADE N25 (25 MPa STRENGTH AT 28 DAYS AGE)
3. PIERS TO BE ϕ450 MASS CONCRETE, PIERS GREATER THAN 1.5m DEEP SHALL BE ϕ450 REINFORCED WITH 4-N16 BARS VERTICAL, WITH R6 LIGS HORIZONTAL AT 300 MAX CTS.
4. SERVICES TO BE PLACED IN A 300mm WIDE x 450mm DEEP TRENCH A MINIMUM OF 600mm FROM EDGE OF BUILDING TO AVOID UNDERMINING OF FOOTINGS.

GEOTECHNICAL NOTES

1. THESE SLABS AND FOOTINGS HAVE BEEN DESIGNED FOR A CLASS "M" SITE AS DEFINED BY AS2870-2011. BASED UPON GEOTECHNICAL REPORT BY REGIONAL GEOTECHNICAL SOLUTIONS, REFERENCE RGS33442.1 - AJ DATED 13TH FEBRUARY 2023. SHOULD CONDITIONS DIFFER ON SITE CONTACT BARNSON.
2. FACTORED ULTIMATE BEARING CAPACITIES Qu TO BE CONFIRMED ON SITE
   A) SLABS = 100 kPa
   B) STRIP FOOTING BASE = 150kPa
   C) PIER BASE = >250kPa EXTREMELY WEATHERED SILTSTONE
3. SKIN FRICTION fs TO BE CONFIRMED ON SITE
   PIER SHAFT = 40kPa

WAFFLE POD SLAB NOTES

1. CONCRETE EXPOSURE CLASSIFICATION = A2 TO AS3600-2018
2. SLAB 1: 100mm THICK (T) SLAB PANEL REINFORCED WITH ONE LAYER, SL92 MESH TOP WITH 30mm COVER. SLAB BEAM BTM REINFORCEMENT AS SPECIFIED WITH 50mm COVER. WAFFLE POD VOID FORMERS SHALL BE 1090 x 1090 x 225 DEEP.
   SLAB 2-4: 85mm THICK (T) SLAB PANEL REINFORCED WITH ONE LAYER, SL82 MESH TOP WITH 30mm COVER. SLAB BEAM BTM REINFORCEMENT AS SPECIFIED WITH 50mm COVER, WAFFLE POD VOID FORMERS SHALL BE 1090 x 1090 x 225 DEEP.
3. CONCRETE IS TO BE GRADE N25 (25 MPa STRENGTH AT 28 DAYS)
4. BASE PREPARATION: FILL COMPACTED IN 150mm LAYERS TO 95% COMPACTION.
5. A WATERPROOF MEMBRANE CONSISTING OF A 0.2mm NOMINAL THICKNESS POLYETHYLENE FILM, SHALL BE PLACED UNDER ALL SLABS & BEAMS U.N.O. IT SHALL BE HIGH IMPACT RESISTANT IN ACCORD WITH CLAUSES 5.3.3.2 AND 5.3.3.3 OF AS2870-2011.
6. EDGE BEAMS TO BE PROVIDED AS PER RELATIVE DETAILS, 300 MIN WIDE.
7. ALL INTERNAL RIBS ARE TO BE 110mm WIDE U.N.O. FORMED USING A GRID OF STANDARD POD VOID FORMERS 1090mm x 1090mm.
8. TOP & BOTTOM REINFORCEMENT BARS ARE TO BE LAPPED 500mm.
9. WHERE THERE ARE SITE SPECIFIC REQUIREMENTS TO WIDEN SLAB BEAMS OR STEM WIDTHS, ADDITIONAL REINFORCEMENT TO THAT SHOWN IN THE DETAILS SHALL BE PROVIDED TOP AND BTM ACCORDING TO THE TABLE AND DIAGRAMS BELOW. BAR SIZE IS TO MATCH THE EXISTING SPECIFIED TOP AND BTM BAR SIZE SHOWN IN THE DETAILS.
10. SERVICES TO BE PLACED IN A 300mm WIDE x 450mm DEEP TRENCH A MINIMUM OF 600mm FROM EDGE OF BUILDING TO AVOID UNDERMINING OF FOOTINGS.



ADDITIONAL WAFFLE POD BEAM WIDTH REINFORCEMENT		
STEM WIDTH OR BASE BEAM WIDTH (mm)	QTY TOP REINFORCEMENT BARS FOR STEM WIDTH	QTY BTM REINFORCEMENT BARS FOR BASE BEAM WIDTH
110-150	0 STD, 1 OVER PIERS	1
151-220	1	2
221-330	2	3
331-440	3	4

PRELIMINARY DRAWING

Not to be used for construction purposes

barnson
DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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Rev	Date	Description
B	14.06.24	ISSUED FOR DA APPROVAL

Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

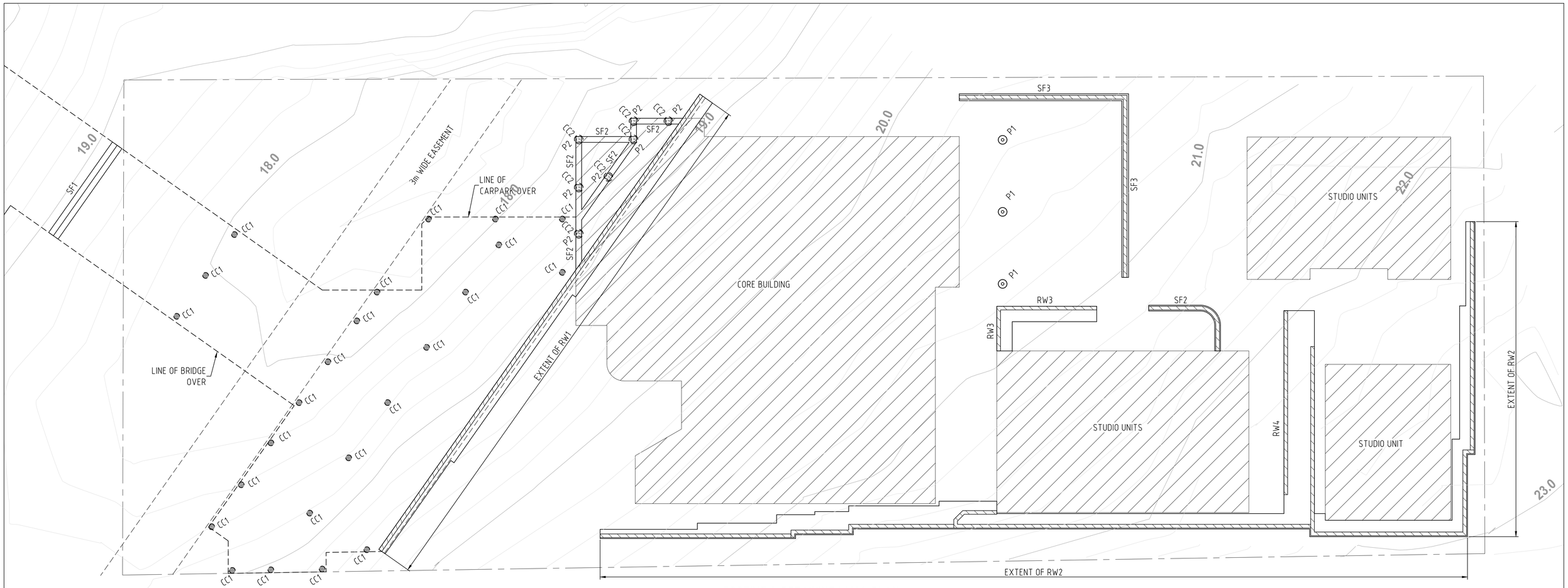
Drawing Title
CORE BUILDING & STUDIO SLAB PLANS

Design TR
Drawn EC
Check JS

Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No S101



FOOTING & RETAINING WALL PLAN

SCALE = 1:100

FOOTING LEGEND

- P2 — Φ450 PIERS, SPACED AT MAX 2500 CTS REFER S201 FOR DETAILS
- P1 — Φ450 PIERS UNDER FIRST FLOOR COLUMNS REFER S201 FOR DETAILS
- CC1 — Φ300 REINFORCED CONCRETE COLUMN REFER DETAILS
- CC2 — 300 x 300 REINFORCED CONCRETE COLUMN REFER DETAILS
- BLOCKWORK ARTICULATION JOINT. REFER TO DRAWING S203 FOR DETAILS. TO BE POSITIONED AT 6m MAXIMUM CENTRES

- RW1 — 1000 MAX HEIGHT RETAINING WALL REFER TO DRAWING S203 FOR DETAILS
- RW2 — 1800 MAX HEIGHT RETAINING WALL REFER TO DRAWING S203 FOR DETAILS
- RW3 — 1000 MAX HEIGHT RETAINING WALL REFER TO DRAWING S204 FOR DETAILS
- RW4 — 1000 MAX HEIGHT RETAINING WALL REFER TO DRAWING S204 FOR DETAILS
- SF# — STRIP FOOTING REFER SPECIFIC DETAILS

RETAINING WALL LOADING NOTES

1. ALL LOADS ARE ACCORDING TO AS1170
2. DEAD LOADS:
   - A) SELF WEIGHT OF STRUCTURE
3. LIVE LOADS:
   - A) 5.0kPa CLASS B RETAINING WALL TO AS 4678 - 2002
4. EARTH LOADS:
   - A) BACKFILL SOIL PROPERTIES Ka = 0.35, DENSITY = 18kN/m^3

GEOTECHNICAL NOTES

FOR GEOTECHNICAL NOTES REFER DRAWING S02

CARPARK & BRIDGE BORED PIER NOTES

1. CONCRETE EXPOSURE CLASSIFICATION = A2 TO AS3600-2018
2. CONCRETE IS TO BE GRADE N25 (25 MPa STRENGTH AT 28 DAYS AGE)
3. PIER DEPTH & WIDTH AS PER RELATIVE DETAILS
4. PIER REINFORCEMENT AS SPECIFIED IN RELEVANT DETAILS WITH 50mm COVER
5. SERVICES TO BE PLACED IN A 300mm WIDE x 450mm DEEP TRENCH A MINIMUM OF 600mm FROM EDGE OF BUILDING TO AVOID UNDERMINING OF FOOTINGS.

STRIP FOOTING / RETAINING WALL BASE NOTES

1. CONCRETE EXPOSURE CLASSIFICATION = A2 TO AS3600-2018
2. CONCRETE IS TO BE GRADE N25 (25 MPa STRENGTH AT 28 DAYS AGE)
3. FOOTING DEPTH & WIDTH AS PER RELATIVE DETAILS
4. FOOTING REINFORCEMENT AS SPECIFIED IN RELEVANT DETAILS WITH 50mm COVER
5. SERVICES TO BE PLACED IN A 300mm WIDE x 450mm DEEP TRENCH A MINIMUM OF 600mm FROM EDGE OF BUILDING TO AVOID UNDERMINING OF FOOTINGS.

PRELIMINARY DRAWING

Not to be used for construction purposes

barnson. DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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Rev	Date	Description
B	14.06.24	ISSUED FOR DA APPROVAL

Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

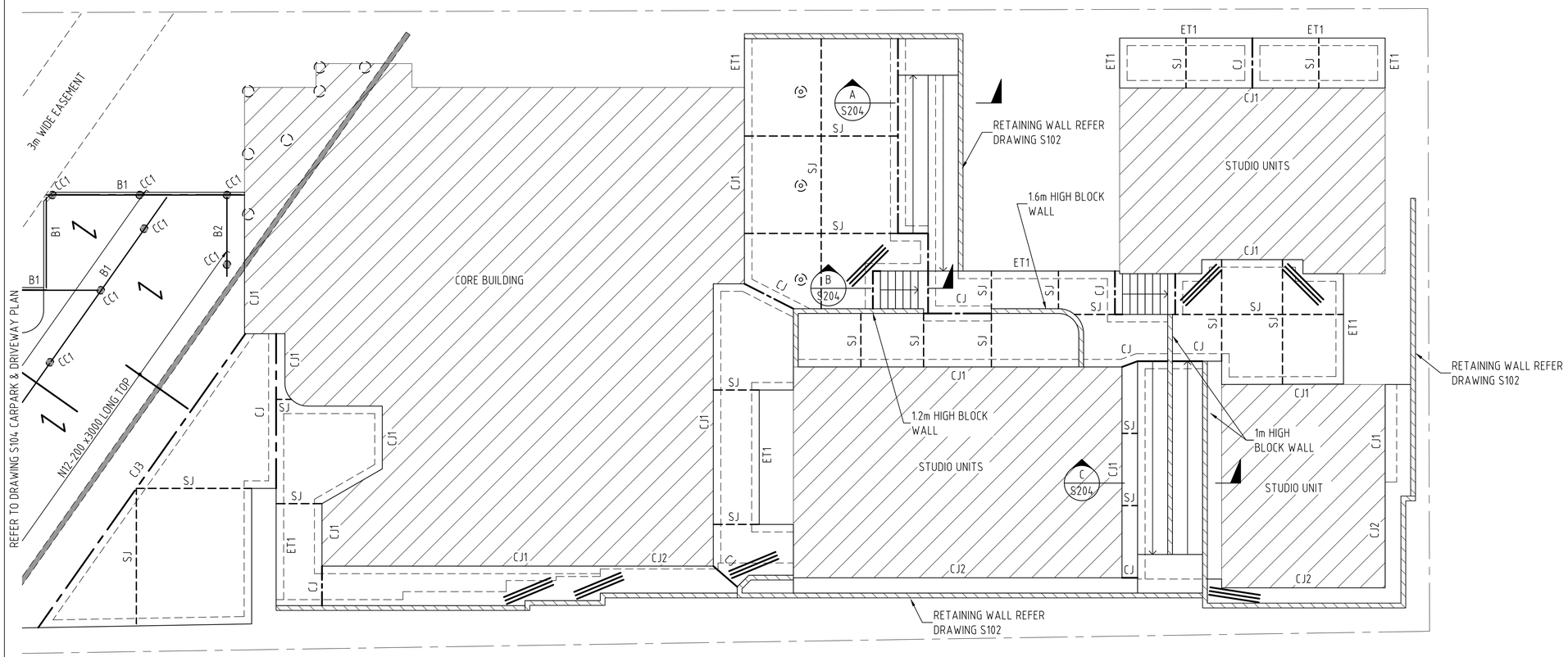
Drawing Title
FOOTING & RETAINING WALL PLAN

Design	TR	Original Sheet Size	A1
Drawn	EC		
Check	JS	Revision	B

Certification

Project No 40560

Drawing No S102



EXTERNAL PAVEMENT PLAN

SCALE = 1:100

SLAB LEGEND

DENOTES 3-N12 BARS x 2000 LONG OR
3-L11TM x 2000 LONG TIED TO UNDERSIDE OF MESH

SJ — TOOL JOINT OR SAW CUT TO 1/3 SLAB DEPTH, PLACED WITHIN 24 HOURS OF CONCRETE POUR REFER DETAIL

CJ — CONSTRUCTION JOINT - REFER S04 FOR DETAILS

GEOTECHNICAL NOTES

FOR GEOTECHNICAL NOTES REFER DRAWING S02

SLAB ON GROUND NOTES

RAMPS, FOOTPATHS, LANDINGS & CARPARK

1. CONCRETE EXPOSURE CLASSIFICATION = A2 TO AS3600-2018
2. 100mm THICK (T) SLAB PANEL REINFORCED WITH ONE LAYER SL72 MESH TOP WITH 30mm COVER.
3. CONCRETE IS TO BE GRADE N25 (25 MPa STRENGTH AT 28 DAYS)
4. BASE PREPARATION: MIN. 100mm HARD-CORE BASE (DGB20 OR SIMILAR APPROVED) COMPACTED IN 150mm LAYERS TO 98% STANDARD. COMPACTION.
5. A WATERPROOF MEMBRANE CONSISTING OF A 0.2mm NOMINAL THICKNESS POLYETHYLENE FILM, SHALL BE PLACED UNDER ALL SLABS & BEAMS U.N.O. IT SHALL BE HIGH IMPACT RESISTANT IN ACCORD WITH CLAUSES 5.3.3.2 AND 5.3.3.3 OF AS2870-2011.
6. SERVICES TO BE PLACED IN A 300mm WIDE x 450mm DEEP TRENCH A MINIMUM OF 600mm FROM EDGE OF BUILDING TO AVOID UNDERMINING OF FOOTINGS.

SLAB LOADING NOTES

1. ALL LOADS ARE ACCORDING TO AS1170
2. DEAD LOADS:
   A) SELF WEIGHT OF STRUCTURE
3. LIVE LOADS:
   A) 1.5 kPa RESIDENTIAL FLOOR LOADING TO AS1170.1-2002
   B) CARPARK SLAB - 20kPa MEDIUM VEHICLE LOADING TO AS1170.1-2002

PRELIMINARY DRAWING

Not to be used for construction purposes

barnson. DESIGN . PLAN . MANAGE

BARNSON PTY LTD

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Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

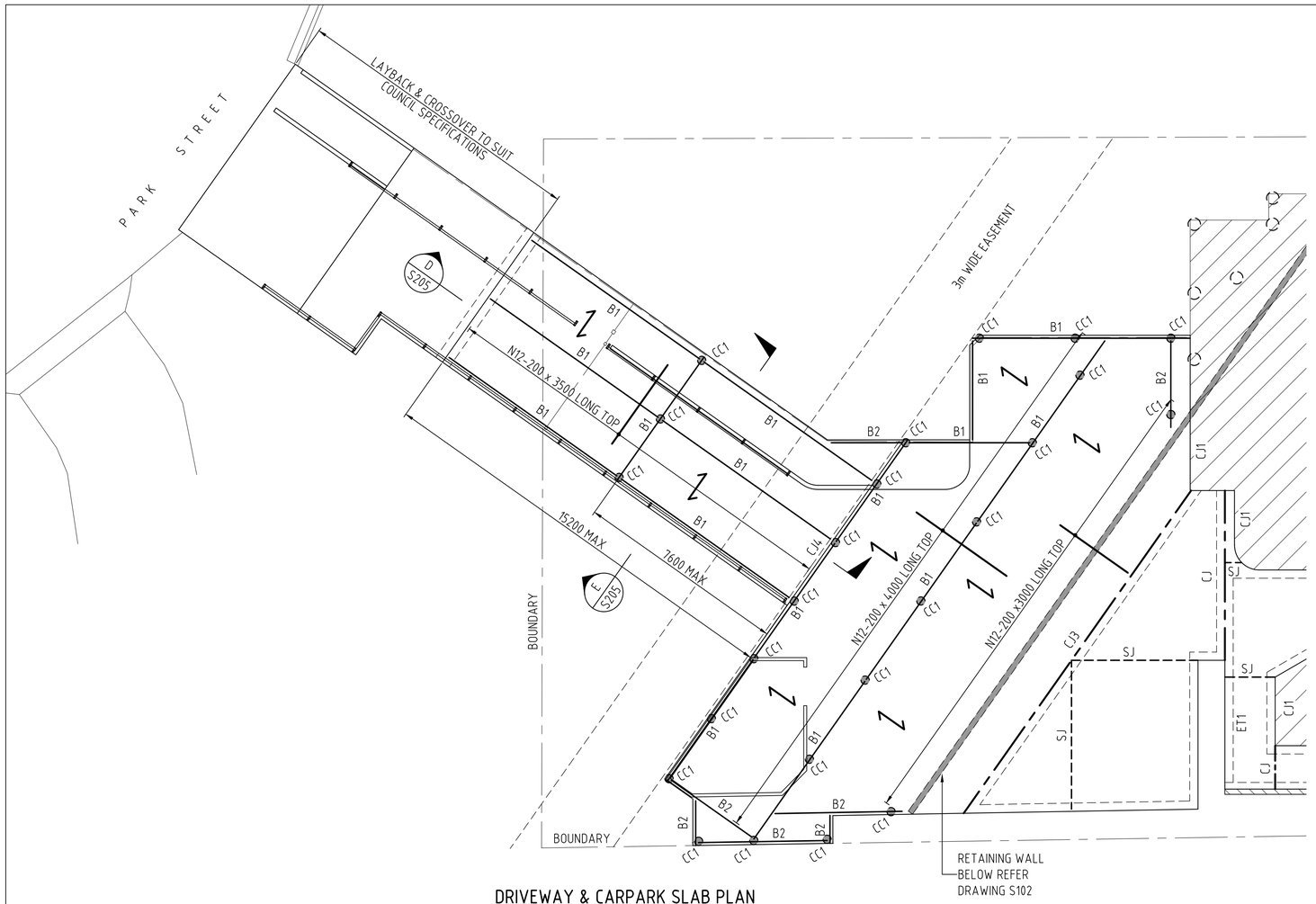
Drawing Title
EXTERNAL PAVEMENT PLAN

Design	TR	Original Sheet Size	A1
Drawn	EC		
Check	JS	Revision	B

Certification

Project No 40560

Drawing No S103



DRIVEWAY & CARPARK SLAB PLAN

SCALE = 1:100

SLAB LEGEND

- DENOTES 3-N12 BARS x 2000 LONG OR 3-L11TM x 2000 LONG TIED TO UNDERSIDE OF MESH
- SJ — TOOL JOINT OR SAW CUT TO 1/3 SLAB DEPTH, PLACED WITHIN 24 HOURS OF CONCRETE POUR REFER DETAIL
- CJ — CONSTRUCTION JOINT - REFER S04 FOR DETAILS
- BLOCKWORK ARTICULATION JOINT. REFER SPECIFIC DETAIL. TO BE POSITIONED AT 6m MAXIMUM CENTRES
- DENOTES SPAN DIRECTION OF 0.75 BONDEK SLAB
- CC1 — Ø300 REINFORCED CONCRETE COLUMN REFER DETAILS

LOADING NOTE: SIGNAGE TO BE PROVIDED THAT VEHICLES OVER 10 TONNE ARE NOT PERMITTED TO USE THE DRIVEWAY

STEELWORK MEMBER SCHEDULE		
MARK	MEMBER SIZE	REMARKS
B1	530UB82	GRADE 300 BEAM
B2	TO BE CONFIRMED	GRADE 300 BEAM

GEOTECHNICAL NOTES

FOR GEOTECHNICAL NOTES REFER DRAWING S02

DRIVEWAY & CARPARK SUSPENDED SLAB NOTES

1. CONCRETE EXPOSURE CLASSIFICATION = B1 TO AS3600-2018
2. DRIVEWAY - 125mm THICK (T) SLAB ON 0.75 BMT BONDEK REINFORCED WITH ONE LAYER SL92 MESH TOP WITH 30mm COVER.
   CARPARK - 150mm THICK (T) SLAB ON 0.75 BMT BONDEK REINFORCED WITH ONE LAYER SL92 MESH TOP WITH 30mm COVER.
3. CONCRETE IS TO BE GRADE N32 (32 MPa STRENGTH AT 28 DAYS)
4. BONDEK TO HAVE MIN BEARING DISTANCE 50mm, AND TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS.
5. ONE ROW OF TEMPORARY PROPS TO BE PROVIDED FOR EACH SPAN >1.8m.
6. TEMPORARY PROPS AND FORMWORK TO REMAIN IN PLACE UNTIL CONCRETE REACHES MIN 20 MPa STRENGTH, AS DETERMINED BY SAMPLE CYLINDER TESTING BY A NATA REGISTERED LABORATORY.
7. M19 x 75mm SHEAR STUDS COMPLYING WITH AS2327.1-2003 ARE TO BE PROVIDED TO STEELWORK SUPPORTS AT 200 MAX CTS, USING A HAND HELD ARC STUD WELDING GUN TO AS1554-2011.

DRIVEWAY & CARPARK LOADING NOTES

1. ALL LOADS ARE ACCORDING TO AS1170
2. DEAD LOADS:
   A) SELF WEIGHT OF STEELWORK STRUCTURE
   B) CONCRETE SLAB = 25kN/m^3
3. LIVE LOADS:
   A) 20kPa MEDIUM VEHICLE LOADING TO AS1170.1-2002
4. WIND LOADS:
   A) REGION A, TERRAIN CATEGORY 2.5 TO AS1170.2 : 2021
   B) Mt=Ms=1.0, STRUCTURAL IMPORTANCE LEVEL 2 TO AS1170.2-2021

PRELIMINARY DRAWING

Not to be used for construction purposes

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Rev	Date	Description
B	14.06.24	ISSUED FOR DA APPROVAL

Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

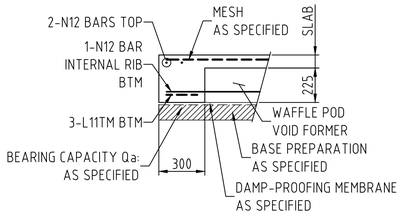
Drawing Title
DRIVEWAY & CARPARK SLAB PLAN

Design TR
Drawn EC
Check JS

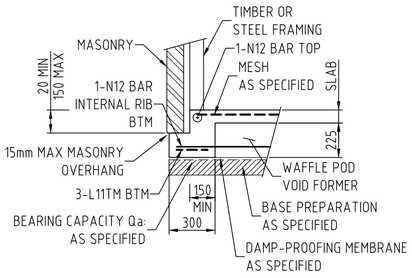
Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No S104



EB1 - EDGE BEAM
SCALE = 1:20



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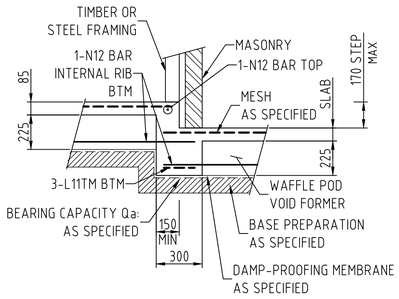

ES1 - EXTERNAL STEP
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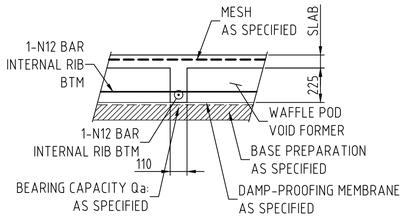

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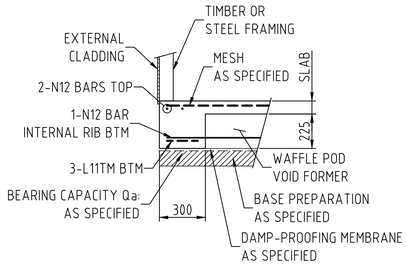

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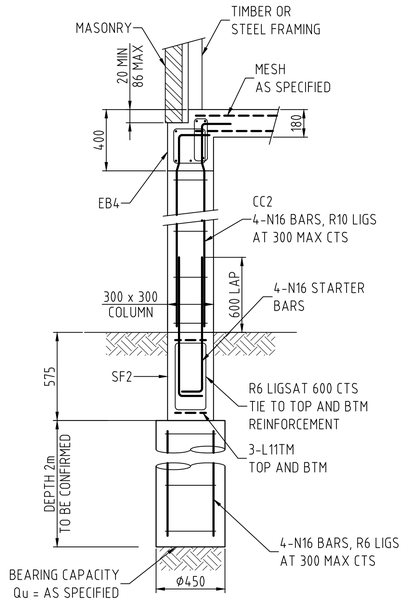

P2 - PIER + SF2 - STRIP FOOTING
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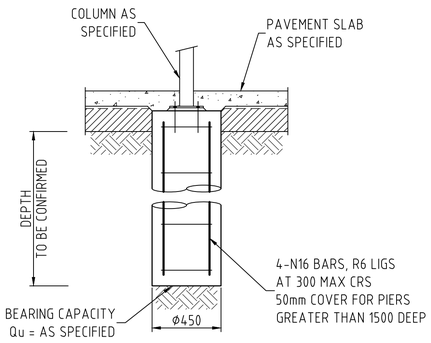

P1 - PIER
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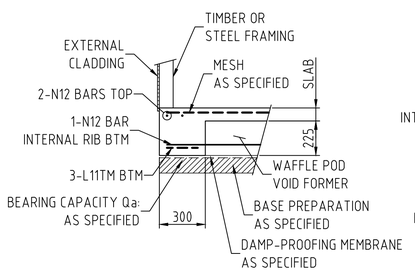

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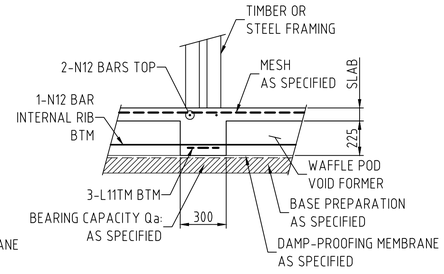

IB2 - INTERNAL BEAM
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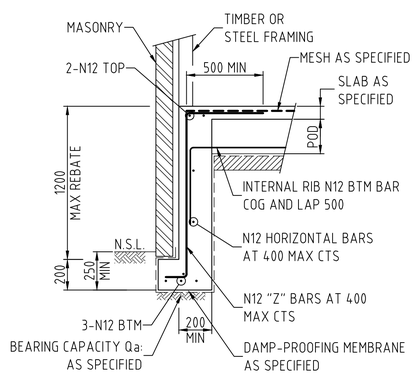

1200mm MAX REBATE
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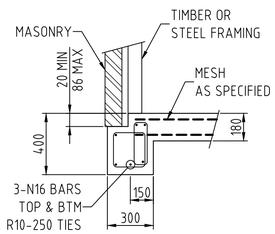

EB4 - EDGE BEAM
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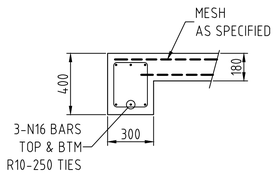

EB5 - EDGE BEAM
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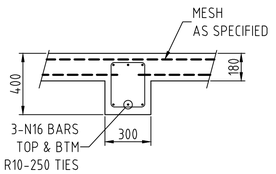

IB4 - INTERNAL BEAM (IB3 SIMILAR)
SCALE = 1:20

PRELIMINARY DRAWING
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Rev	Date	Description
B	14.06.24	ISSUED FOR DA APPROVAL

Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

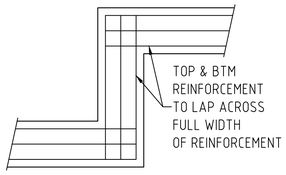
Drawing Title
SLAB & FOOTING DETAILS SHEET 1

Design TR
Drawn EC
Check JS

Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No S201



BEAM "L" INTERSECTION DETAIL
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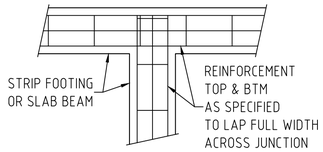

BEAM "T" INTERSECTION DETAIL
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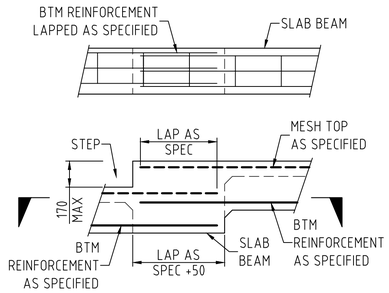

CONTINUOUS SLAB BEAMS
WITH DIFFERENT FOUNDING LEVELS
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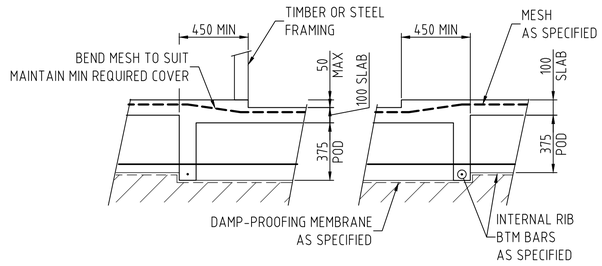

WET AREA RECESS
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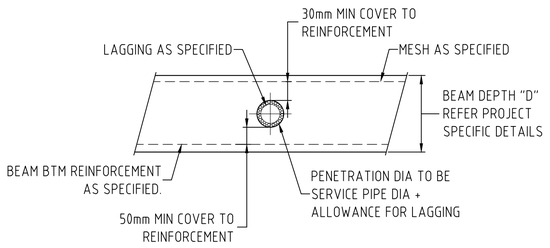
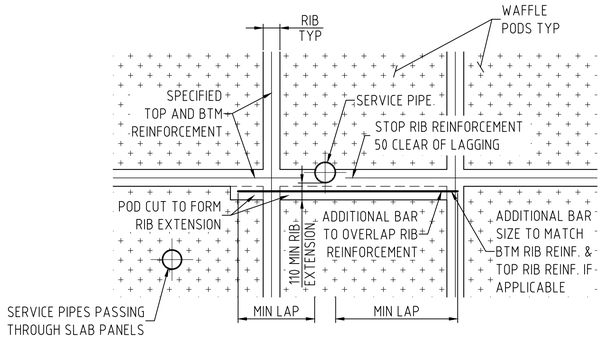


HORIZONTAL SERVICE PIPE PENETRATION
THRU MIDDLE THIRD OF BEAM
SCALE = 1:20



VERTICAL SERVICE PIPE PENETRATION
THRU WAFFLE POD RIB
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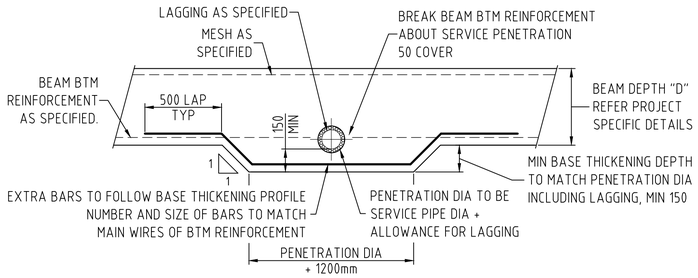

HORIZONTAL SERVICE PIPE PENETRATION
THRU LOWER REGION OF BEAM
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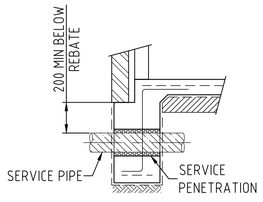

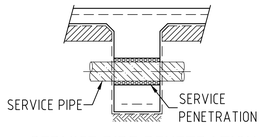

SERVICE PIPE PENETRATION
TYPICAL SECTIONS THRU BEAMS
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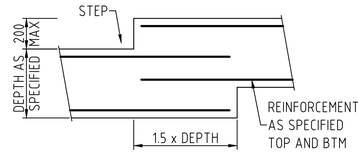
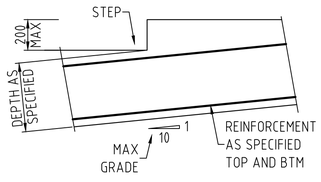
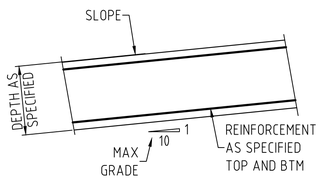




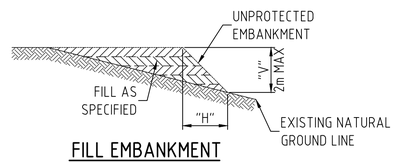


TYPICAL FOOTING STEP DETAILS
SCALE = 1:20

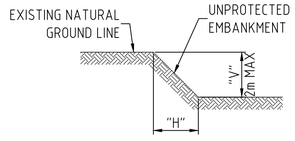
EXCAVATION NOTES

1. ANY PERMANENT VERTICAL OR NEAR VERTICAL EXCAVATION WITHIN 2m OF A BUILDING, AND DEEPER THAN 600mm SHALL BE BATTERED OR RETAINED.
2. THE GRADIENT OF UNPROTECTED EMBANKMENT FOR EXCAVATION INCLUDING BOTH CUT AND FILL SHALL BE ASCERTAINED FROM THE "UNPROTECTED EMBANKMENTS" TABLE.
3. EXCAVATION ADJACENT EXISTING BUILDINGS:
   A) EXCAVATION WORK FOR FOOTINGS, DRAINAGE TRENCHES OR OTHER SIMILAR WORKS ARE TEMPORARY.
   B) ELEMENTS REQUIRED SHOULD BE INSTALLED & CONSTRUCTED AS SOON AS PRACTICABLE AFTER EXPOSING THE EXISTING BUILDING FOOTING.
   C) THE EXISTING FOOTING SHOULD NOT REMAIN EXPOSED AFTER THE COMPLETION OF WORKS.
4. RETAINING WALLS OR OTHER TYPES OF SOIL RETAINING METHODS MUST BE INSTALLED WHERE:
   A) THE GRADIENT RATIO IS GREATER THAN THAT DESCRIBED IN THE "UNPROTECTED EMBANKMENTS" TABLE.
   B) SITE SOIL CLASSIFICATION OR DESCRIPTION IS NOT DESCRIBED IN THE "UNPROTECTED EMBANKMENTS" TABLE.
5. FILL SHALL BE PLACED AS FOLLOWS:
   A) THE GRADIENT RATIO OF FILL DETAILS SHALL BE ASCERTAINED FROM THE "UNPROTECTED EMBANKMENTS" TABLE.
   B) GENERAL FILL SHALL BE PLACED AND COMPACTED IN LAYERS WITH A VIBRATING PLATE OR SIMILAR COMPACTION EQUIPMENT TO ATTAIN STABILITY.
   C) WHERE FILL IS TO BE USED TO SUPPORT FOOTINGS OR SLABS, IT SHALL BE CONTROLLED FILL.
6. EMBANKMENTS THAT ARE TO BE LEFT EXPOSED AT THE END OF CONSTRUCTION WORKS MUST BE STABILISED BY VEGETATION OR SIMILAR WORKS TO PREVENT SOIL EROSION.

UNPROTECTED EMBANKMENTS		
SITE CLASSIFICATION OR NATURAL SOIL MATERIAL DESCRIPTION	COMPACTED FILL V:H GRADIENT RATIO	CUT V:H GRADIENT RATION
CLASS "A"- STABLE ROCK	2 : 3	8 : 1
CLASS "A"- SAND	1 : 2	1 : 2
CLASS "S", "M", "M-D" - FIRM CLAY	1 : 2	1 : 1
CLASS "S", "M", "M-D"- SOFT CLAY	NOT SUITABLE	2 : 3
CLASS "H1", "H1-D","H2", "H2-D", "P"- SOFT SOILS	NOT SUITABLE	NOT SUITABLE
CLASS "P"- SILT	1 : 4	1 : 4



FILL EMBANKMENT
SCALE = 1:50



CUT EMBANKMENT
SCALE = 1:50

SERVICE PENETRATION NOTES

1. HORIZONTAL SERVICE PENETRATIONS AS DEPICTED ARE DESIGNED TO SUIT PIPES UP TO A MAXIMUM DIAMETER OF ONE THIRD OF THE DESIGN BEAM DEPTH. i.e. D/3.
2. ALL HORIZONTAL PIPE PENETRATIONS THROUGH SLAB BEAMS OR RIBS ARE TO BE WRAPPED IN CLOSED CELL POLYETHYLENE LAGGING TO SUIT THE SITE CLASSIFICATION. NO LAGGING IS REQUIRED FOR SITE CLASSIFICATIONS A AND S. LAGGING NOT REQUIRED FOR VERTICAL SERVICE PANEL PENETRATIONS
3. WAFFLE POD SLAB TOP AND BOTTOM REINFORCEMENT REQUIRED SHALL BE ASCERTAINED FROM THE REINFORCEMENT REQUIREMENTS TABLE ON DRAWING S02

PRELIMINARY DRAWING
Not to be used for construction purposes

barnson
DESIGN . PLAN . MANAGE

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Rev	Date	Description
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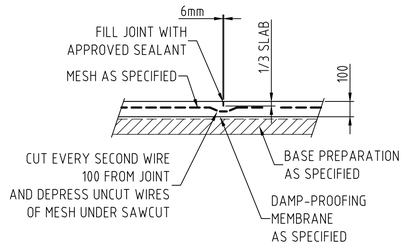
Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
SLAB & FOOTING DETAILS SHEET 2

Design	TR	Original Sheet Size	A1
Drawn	EC		
Check	JS	Revision	B

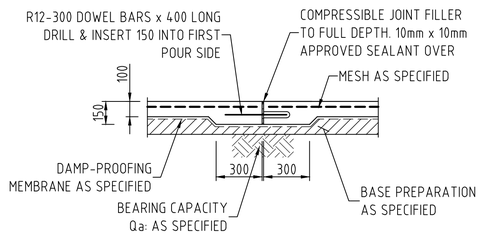
Certification

Project No 40560
Drawing No S202



FOOTPATH SAW JOINT - SJ

SCALE = 1:20



FOOTPATH CONSTRUCTION JOINT - CJ

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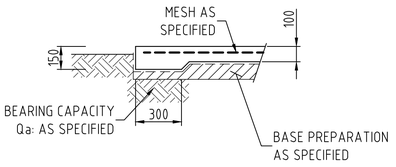
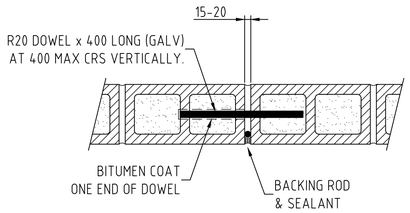


EDGE THICKENING - ET1

SCALE = 1:20

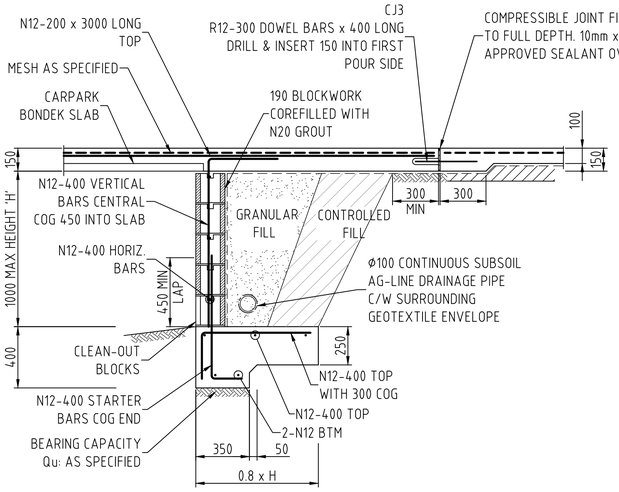


BLOCKWORK ARTICULATION JOINT DETAIL

SCALE = 1:10

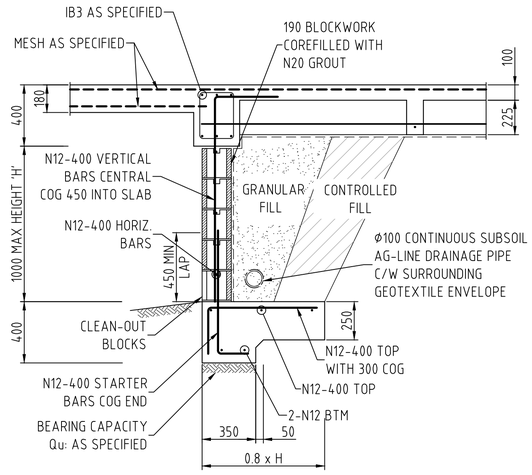
MASONRY NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH AS3700-2001.
2. THE DESIGN STRENGTH OF MASONRY SHALL BE IN ACCORDANCE WITH THE MASONRY SCHEDULE BELOW. MORTAR ADMIXTURES SHALL NOT BE USED WITHOUT THE WRITTEN APPROVAL OF THE ENGINEER.
3. MORTAR JOINTS SHALL BE 10mm THICK AND HAVE A MAXIMUM TOOLED DEPTH OF 3mm UNLESS NOTED OTHERWISE.
4. CLEANOUT HOLES SHALL BE PROVIDED AT THE BASE OF ALL CORES OR CAVITIES WHICH ARE TO BE GROUTED OR FILLED.
5. REINFORCING STEEL SHALL BE FIXED SECURELY IN POSITION PRIOR TO GROUTING.
6. ALL MORTAR OBSTRUCTIONS IN CORES OR CAVITIES SHALL BE REMOVED PRIOR TO GROUTING & FILLING. THIS MAY BE DONE USING A ROD FROM THE TOP OF THE WALL. ALL MORTAR THUS REMOVED SHALL BE CLEANED FROM THE BOTTOM OF THE WALL PRIOR TO CLEAN OUT HOLES BEING CLOSED FOR GROUTING.
7. GROUT FOR BOND BEAMS, LINTELS, CORE FILLING OR CAVITY FILLING SHALL COMPRISE OF A MIX OF CEMENT : LIME : 10mm AGGREGATE = 1:0.25:3 UNLESS OTHERWISE NOTED. MAXIMUM SLUMP TO BE 230mm.
8. CORES AND CAVITIES SHALL BE FILLED IN 1000mm MAXIMUM LIFTS WHERE REQUIRED.
9. GROUT SHALL BE THOROUGHLY COMPACTED USING A PLAIN BAR.
10. NO CHASES SHALL BE CUT INTO LOAD BEARING MASONRY WALLS WITHOUT THE APPROVAL OF THE ENGINEER.
18. ALL MASONRY ANCHORS ARE TO BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.



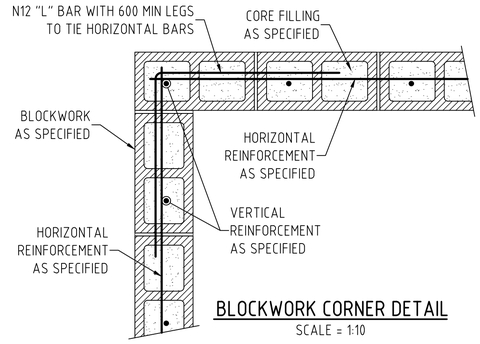
RETAINING WALL - RW1 AT CARPARK

SCALE = 1:20



RETAINING WALL - RW1 AT CORE BUILDING

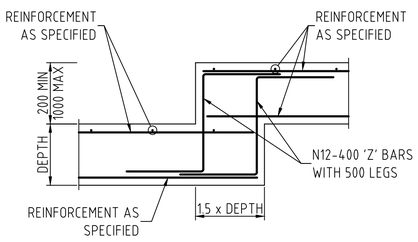
SCALE = 1:20



BLOCKWORK CORNER DETAIL

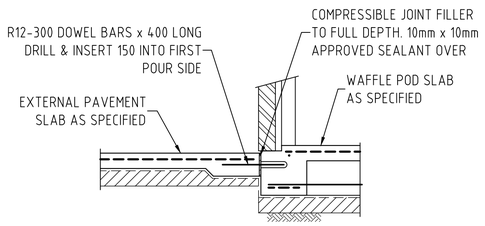
SCALE = 1:10

MASONRY SCHEDULE		
ELEMENT	CHARACTERISTIC UNCONFINED COMPRESSIVE STRENGTH (MPa)	MORTAR MIX CEMENT : LIME : SAND
LOADBEARING BLOCK WALLS	12	
LOADBEARING BRICK WALLS	40	



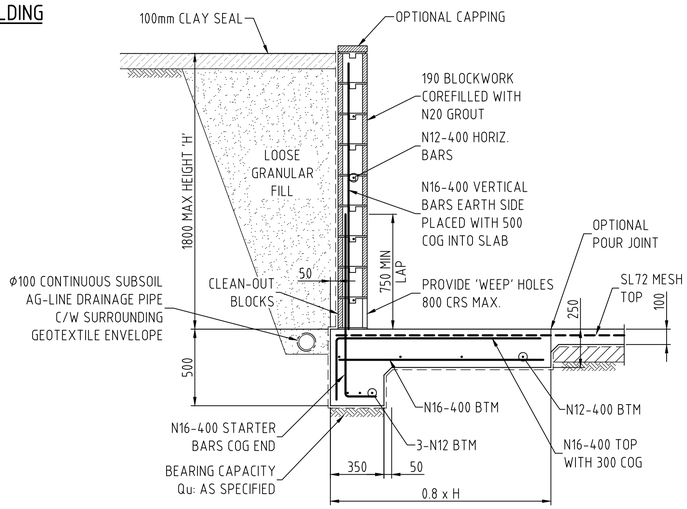
TYPICAL RETAINING WALL FOOTING STEP DETAIL

SCALE = 1:20



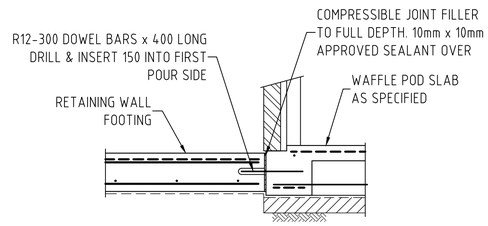
CONSTRUCTION JOINT - CJ1

SCALE = 1:20



RETAINING WALL - RW2

SCALE = 1:20



CONSTRUCTION JOINT - CJ2

SCALE = 1:20

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Rev	Date	Description
B	14.06.24	ISSUED FOR DA APPROVAL

Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

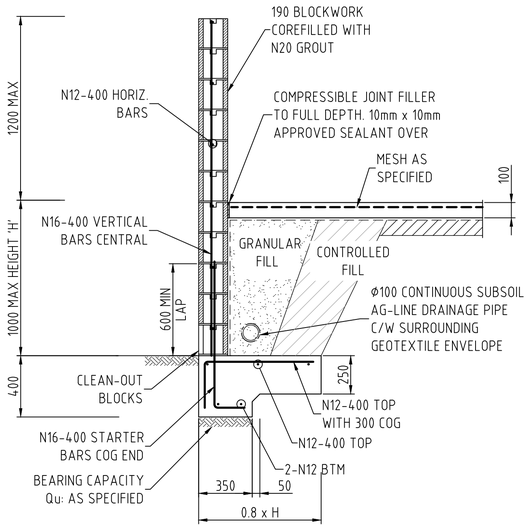
Drawing Title
SLAB & FOOTING DETAILS SHEET 3

Design TR
Drawn EC
Check JS

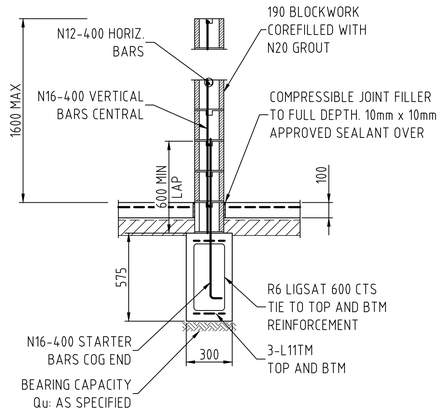
Original Sheet Size A1
Revision B

Certification

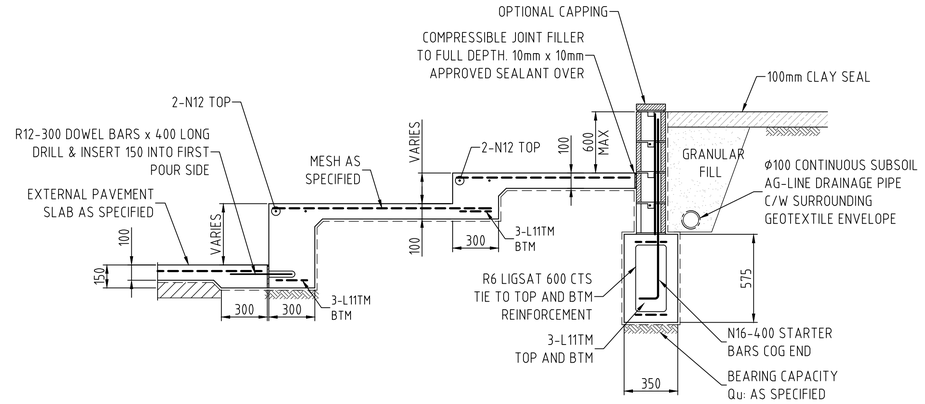
Project No 40560
Drawing No S203



RETAINING WALL - RW3
SCALE = 1:20

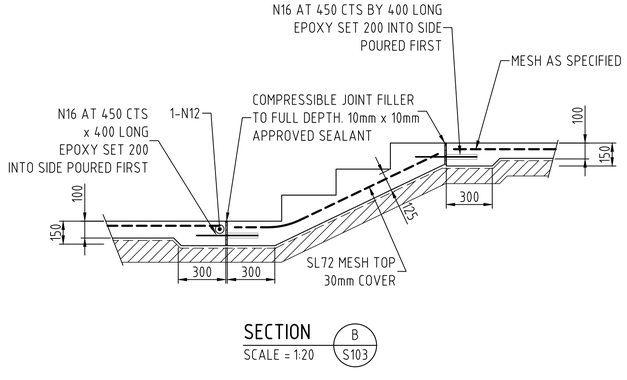


STRIP FOOTING - SF2
SCALE = 1:20

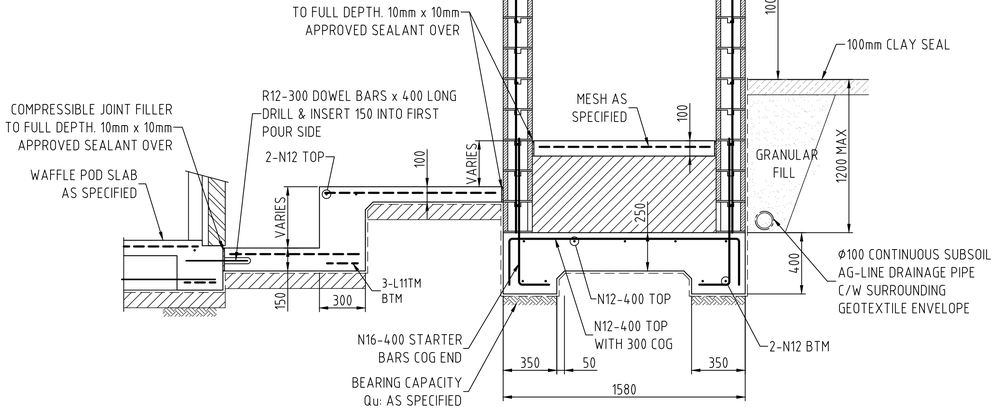


STRIP FOOTING - SF3

SECTION A / S103
SCALE = 1:20



SECTION B / S103
SCALE = 1:20



RETAINING WALL - RW4

SECTION C / S103
SCALE = 1:20

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Project
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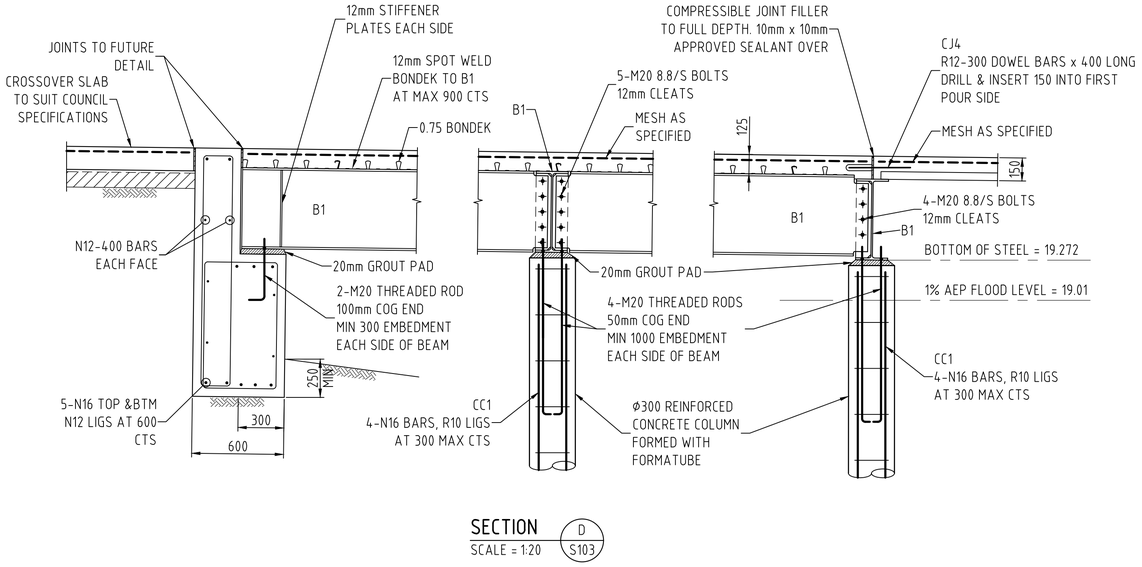
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
SLAB & FOOTING DETAILS SHEET 4

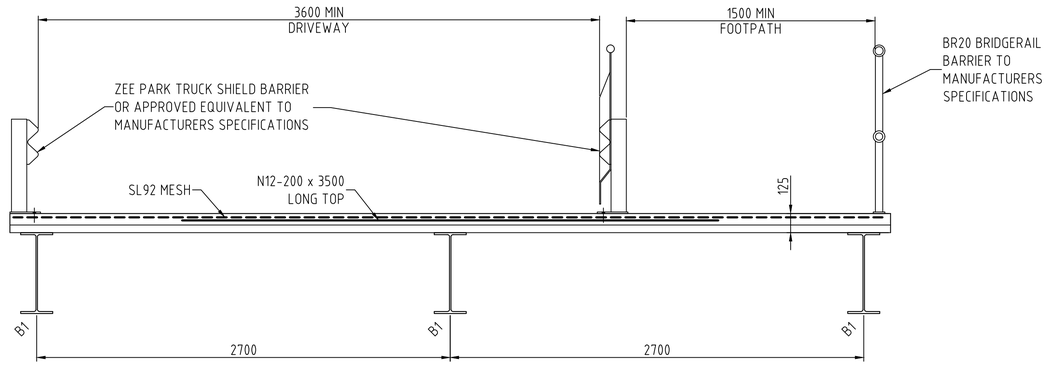
Design	TR	Original Sheet Size	A1
Drawn	EC		
Check	JS	Revision	B

Certification

Project No 40560
Drawing No S204



SECTION D
SCALE = 1:20 S103



SECTION E
SCALE = 1:20 S103

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Site Address
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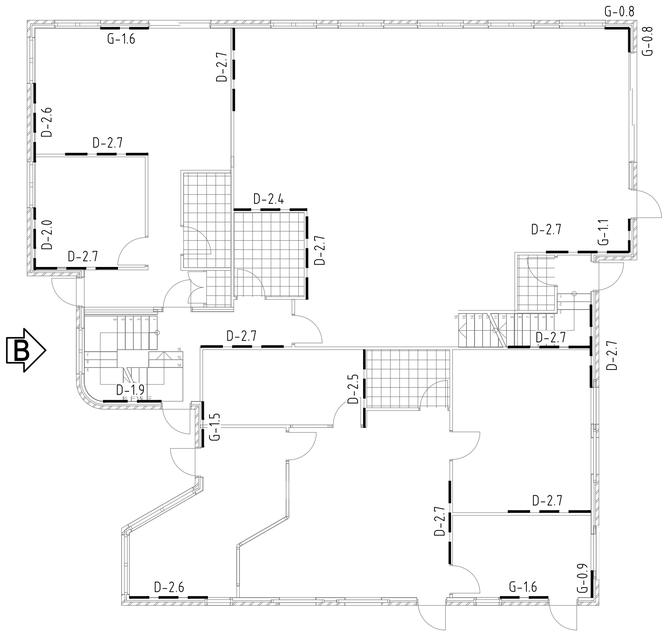
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
SLAB & FOOTING DETAILS SHEET 4

Design	TR	Original Sheet Size	A1
Drawn	EC		
Check	JS	Revision	B

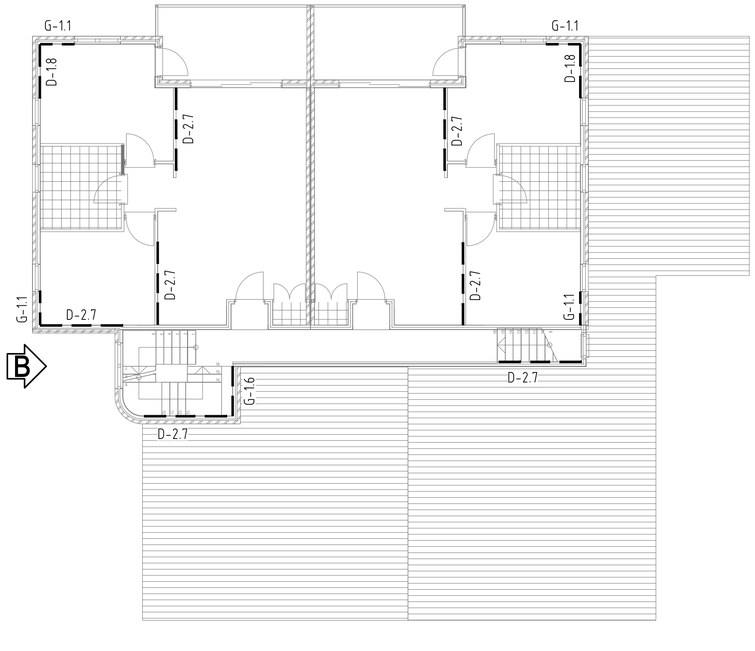
Certification

Project No 40560
Drawing No S205



CORE BUILDING GROUND FLOOR WALL BRACING PLAN

SCALE = 1:200



CORE BUILDING FIRST FLOOR WALL BRACING PLAN

SCALE = 1:200

GROUND FLOOR WIND BRACING

DIRECTION A — AREA OF ELEVATION = 77.3m^2

TOTAL RACKING FORCE (kPa) = PROJECTED AREA OF ELEVATION (m^2) x LATERAL WIND PRESSURE

DIRECTION A = 77.3m^{2}x 0.76 = 58.7kN TOTAL

BRACING USED = TYPE 'D' BRACING UNITS (17.9m x 3kN/m) = 53.7kN AND TYPE 'G' BRACING UNITS (4.3m x 3.4kN/m) = 14.6kN
TOTAL = 53.7kN + 14.6kN = 68.3kN
THEREFORE OK

DIRECTION B — AREA OF ELEVATION = 80.4m^2

TOTAL RACKING FORCE (kPa) = PROJECTED AREA OF ELEVATION (m^2) x LATERAL WIND PRESSURE

DIRECTION B = 80.4m^{2}x 0.87 = 69.9kN

BRACING USED = TYPE 'D' BRACING UNITS (23.1m x 3kN/m) = 69.3kN AND TYPE 'G' BRACING UNITS (4.0m x 3.4kN/m) = 13.6kN
TOTAL = 69.3kN + 13.6kN = 82.9kN
THEREFORE OK

FIRST FLOOR WIND BRACING

DIRECTION A — AREA OF ELEVATION = 22.8m^2

TOTAL RACKING FORCE (kPa) = PROJECTED AREA OF ELEVATION (m^2) x LATERAL WIND PRESSURE

DIRECTION A = 22.8m^{2}x 0.62 = 14.1kN TOTAL

BRACING USED = TYPE 'D' BRACING UNITS (14.4m x 3kN/m) = 43.2kN AND TYPE 'G' BRACING UNITS (3.8m x 3.4kN/m) = 12.9kN
TOTAL = 43.2kN + 12.9kN = 56.1kN
THEREFORE OK

DIRECTION B — AREA OF ELEVATION = 32.1m^2

TOTAL RACKING FORCE (kPa) = PROJECTED AREA OF ELEVATION (m^2) x LATERAL WIND PRESSURE

DIRECTION B = 32.1m^{2}x 0.56 = 17.9kN

BRACING USED = TYPE 'D' BRACING UNITS (8.1m x 3kN/m) = 24.3kN AND TYPE 'G' BRACING UNITS (2.2m x 3.4kN/m) = 7.5kN
TOTAL = 24.3kN + 7.5kN = 31.8kN
THEREFORE OK

SPECIFICATION WIND CLASS: N2

REGION: A — TERRAIN CATEGORY (TC) : 2

TOPOGRAPHICAL CLASSIFICATION: TO — SHIELDING : PS

DESIGN DATA

ROOF UPLOAD WIDTH = Xm — ROOF = COLORBOND ROOF SHEETING — PITCH = 5°

BATTEN SPACING = Xmm — TRUSS SPACING = Xmm — RAFTER SPACING = Xmm

JOINT TYPE

MEMBER	SPECIES	TYPE
TRUSSES	MGP10	JD4
FRAMES - STUDS @ 600 CTS	TREATED F7 OR MGP10 MIN	JD4

JOINT DETAIL

CONNECTION	TIE DOWN	ALLOWABLE LOAD
BATTENS @ 900 TRUSS SPACINGS UPLIFT (GEN 0.79 kN, EDGES 1.5kN)	GENERAL = 2 /75x 3.05 DEFORMED SHANK NAIL EDGES = 1 No14 TYPE 117 SCREW x 75mm	GENERAL = 1.3kN EDGES = 4.5kN
RAFTER/WALL FRAME @ 600 CTS UPLIFT 4.0kN	30 x 0.8mm G.I. STRAP C/W 3/Φ2.8mm NAILS	4.7kN
TRUSS TO WALL FRAME @ 900 CTS, UPLIFT = 6.6kN	2 /30x0.8mm G.I. STRAPS WITH c/w 3 /Φ2.8mm NAILS	8.4kN
BOTTOM PLATE TO FLOOR SLAB @ 1200 CTS UPLIFT = 3.0kN	1 /M10 CHEMSET ANCHOR 60mm EMBEDMENT @ 1200 CTS	6kN

BRACING TYPES

A. Two diagonally opposed pairs of timber or metal angle braces. 1.8m - 2.7m = 0.8kN/m	H. Plywood 1-M12 rod top to btm = 6.4kN/m or No rod but sheathing = 6.0kN/m Intermediate studs 300mm
B. Metal straps - Tensioned 1.8m - 2.7m = 1.5kN/m	I. Plywood - Vertical Nail spacing 100mm, 1-M12 rod top to btm. 4.5mm Ply = 7.5kN/m or 7mm Ply = 8.7kN/m
C. TImber & Metal angle braces 1.8m - 2.7m = 1.5kN/m	J. Decorative Plywood - Nail spacing top & btm plates & vertical edges = 100mm 2.1kN/m
D. Metal straps - Tensioned - With Stud Straps. 1.8m - 2.7m = 3.0kN/m	K. Decorative Plywood Glued & Nailed - Nail spacing top & btm plates & vertical edges = 200mm 5.3kN/m
E. Diagonal timber wall lining or cladding - Minumum thickness of Board 12mm Provide 30 x 0.8 G.I. strap to each corner of 2.1m wide x 2.7m max high panel Nail spacing 60mm = 2.1kN/m Nail spacing 40mm = 3.0kN/m	L. Hardboard Type A - Nail spacing top & btm plates = 80mm, Nail spacing vertical edges = 150mm. Min width = 900mm 3.4kN/m
F. Other timber, metal angle and strap bracing shall be designed & installed in accordance with engineering principles = T.B.A.kN	M. Hardboard Types B & C - Nail Spacing top & btm plate = 40mm, Nail spacing vertical edges = 150mm. Min width = 900mm Type B - Btm plate fixed w/M10 bolts each end & 1200 cts = 6.0kN/m Type C - M12 rod top to btm each end & 1800 cts = 9.0kN/m
G. Plywood = 3.4kN/m	N. Hardboard Types D & E - Nai l spacing top & btm plate = 80mm Type D, 40mm Type E, Nail spacing vert. edges = 150mm Min width = 460mm TypeD - M10 coach screw each corner =3.4kN/m TypeE - M12 rod each end = 6.0kN/m

ALL TIE DOWN DETAILING IN ACCORDANCE WITH THE REQUIREMENTS OF AS1684.2 - 2010. ALL TIE DOWN TO BE CONFIRMED AND APPROVED BY TRUSS AND FRAME MANUFACTURERS PRIOR TO THE COMMENCEMENT OF ANY WORKS

PRELIMINARY DRAWING

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B	14.06.24	ISSUED FOR DA APPROVAL

Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

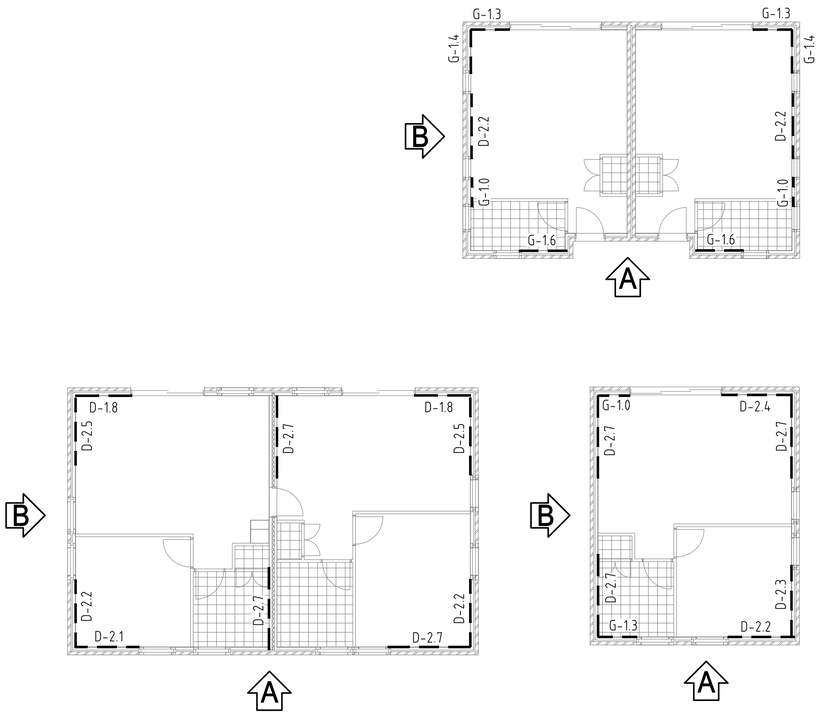
Drawing Title
WALL BRACING & TIE DOWN CORE BUILDING

Design TR
Drawn EC
Check JS

Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No S301



STUDIO'S WALL BRACING PLAN

SCALE = 1:200

SPECIFICATION WIND CLASS: N2

REGION: A	TERRAIN CATEGORY (TC) : 2
TOPOGRAPHICAL CLASSIFICATION: TO	SHIELDING : PS

DESIGN DATA

ROOF UPLOAD WIDTH = Xm	ROOF = COLORBOND ROOF SHEETING	PITCH = X°
BATTEN SPACING = Xmm	TRUSS SPACING = Xmm	RAFTER SPACING = Xmm

JOINT TYPE

MEMBER	SPECIES	TYPE
TRUSSES	MGP10	JD4
FRAMES - STUDS @ 600 CTS	TREATED F7 OR MGP10 MIN	JD4

JOINT DETAIL

CONNECTION	TIE DOWN	ALLOWABLE LOAD
BATTENS @ 900 TRUSS SPACINGS UPLIFT (GEN 0.79 kN, EDGES 1.5kN)	GENERAL = 2 /75x 3.05 DEFORMED SHANK NAIL EDGES = 1 No14 TYPE 117 SCREW x 75mm	GENERAL = 1.3kN EDGES = 4.5kN
RAFTER/WALL FRAME @ 600 CTS UPLIFT 4.0kN	30 x 0.8mm G.I. STRAP C/W 3/Φ2.8mm NAILS	4.7kN
TRUSS TO WALL FRAME @ 900 CTS, UPLIFT = 6.6kN	2 /30x0.8mm G.I. STRAPS WITH c/w 3 /Φ2.8mm NAILS	8.4kN
BOTTOM PLATE TO FLOOR SLAB @ 1200 CTS UPLIFT = 3.0kN	1 /M10 CHEMSET ANCHOR 60mm EMBEDMENT @ 1200 CTS	6kN

WIND BRACING

DIRECTION A — AREA OF ELEVATION = 65.1m^2

TOTAL RACKING FORCE (kPa) = PROJECTED AREA OF ELEVATION (m^2) x LATERAL WIND PRESSURE

DIRECTION A = 65.1m^{2}x 0.80 = 52.1kN TOTAL

BRACING USED = TYPE 'D' BRACING UNITS (29.6m x 3kN/m) = 88.8kN AND TYPE 'G' BRACING UNITS (4.8m x 3.4kN/m) = 16.3kN
TOTAL = 88.8kN + 16.3kN = 105.1kN
THEREFORE OK

DIRECTION B — AREA OF ELEVATION = 46.7m^2

TOTAL RACKING FORCE (kPa) = PROJECTED AREA OF ELEVATION (m^2) x LATERAL WIND PRESSURE

DIRECTION B = 46.7m^{2}x 0.65 = 30.4kN

BRACING USED = TYPE 'D' BRACING UNITS (13.0m x 3kN/m) = 39.0kN AND TYPE 'G' BRACING UNITS (8.1m x 3.4kN/m) = 27.5kN
TOTAL = 39.0kN + 27.5kN = 66.5kN
THEREFORE OK

BRACING TYPES

A. Two diagonally opposed pairs of timber or metal angle braces. 1.8m - 2.7m = 0.8kN/m	H. Plywood 1-M12 rod top to btm = 6.4kN/m or No rod but sheathing = 6.0kN/m Intermediate studs 300mm
B. Metal straps - Tensioned 1.8m - 2.7m = 1.5kN/m	I. Plywood - Vertical Nail spacing 100mm, 1-M12 rod top to btm. 4.5mm Ply = 7.5kN/m or 7mm Ply = 8.7kN/m
C. TImber & Metal angle braces 1.8m - 2.7m = 1.5kN/m	J. Decorative Plywood - Nail spacing top & btm plates & vertical edges = 100mm 2.1kN/m
D. Metal straps - Tensioned - With Stud Straps. 1.8m - 2.7m = 3.0kN/m	K. Decorative Plywood Glued & Nailed - Nail spacing top & btm plates & vertical edges = 200mm 5.3kN/m
E. Diagonal timber wall lining or cladding - Minumum thickness of Board 12mm Provide 30 x 0.8 G.I. strap to each corner of 2.1m wide x 2.7m max high panel Nail spacing 60mm = 2.1kN/m Nail spacing 40mm = 3.0kN/m	L. Hardboard Type A - Nail spacing top & btm plates = 80mm, Nail spacing vertical edges = 150mm. Min width = 900mm 3.4kN/m
F. Other timber, metal angle and strap bracing shall be designed & installed in accordance with engineering principles = T.B.A.kN	M. Hardboard Types B & C - Nail Spacing top & btm plate = 40mm, Nail spacing vertical edges = 150mm. Min width = 900mm Type B - Btm plate fixed w/M10 bolts each end & 1200 cts = 6.0kN/m Type C - M12 rod top to btm each end & 1800 cts = 9.0kN/m
G. Plywood = 3.4kN/m	N. Hardboard Types D & E - Nai l spacing top & btm plate = 80mm Type D, 40mm Type E, Nail spacing vert. edges = 150mm Min width = 460mm TypeD - M10 coach screw each corner =3.4kN/m TypeE - M12 rod each end = 6.0kN/m

ALL TIE DOWN DETAILING IN ACCORDANCE WITH THE REQUIREMENTS OF AS1684.2 - 2010. ALL TIE DOWN TO BE CONFIRMED AND APPROVED BY TR COMMENCEMEN

PRELIMINARY DRAWING

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B	14.06.24	ISSUED FOR DA APPROVAL

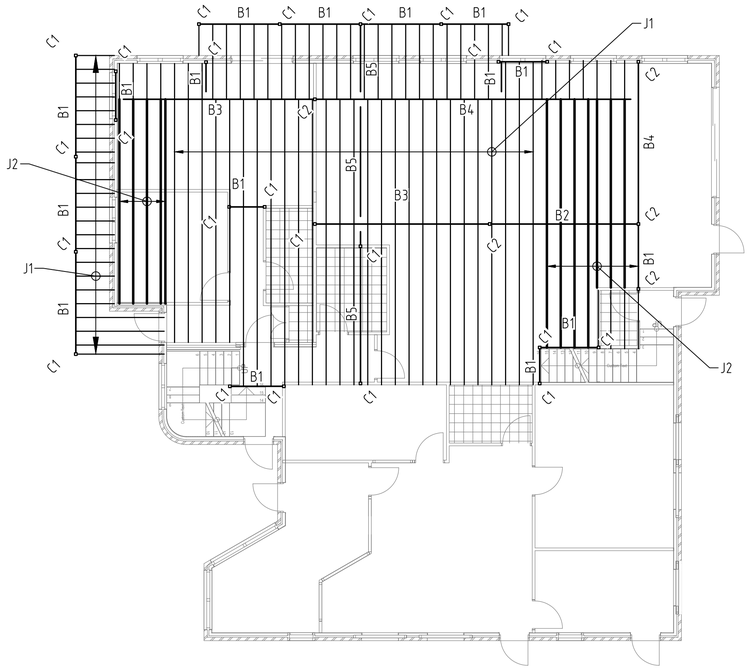
Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
WALL BRACING & TIE DOWN STUDIOS

Design	TR
Drawn	EC
Check	JS
Original Sheet Size	A1
Revision	B

Certification

Project No 40560
Drawing No S302



CORE BUILDING FIRST FLOOR FRAMING PLAN

SCALE = 1:100

STEELWORK MEMBER SCHEDULE		
MARK	MEMBER SIZE	REMARKS
J1	360x90	hYJOIST @ 450 CTS
J2	300x45	hyJOIST @ 450 CTS
B1	150 PFC	GRADE 300 BEAM
B2	250 UB 37.3	GRADE 300 BEAM
B3	360 UB 56.7	GRADE 300 BEAM
B4	410 UB 59.7	GRADE 300 BEAM
B5	200 UB 25.4	GRADE 300 BEAM
C1	89x3.5 SHS	GRADE 350 COLUMN
C2	100x6 SHS	GRADE 350 COLUMN

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Project
PROPOSED CORE & CLUSTER REFUGE AT
Site Address
10A PARK STREET
EAST MAITLAND NSW 2323
Client
HOUSING PLUS ORANGE

Drawing Title
FIRST FLOOR FRAMING PLAN
CORE BUILDING

Design TR
Drawn EC
Check JS

Original Sheet Size A1
Revision B

Certification

Project No 40560
Drawing No S303

Appendix C Flood Maps

FIGURE A0

Legend
- SITE LOCATION
- 1d_mh_junctions_dummy_P
- 1d_nwk_pipes_L
- 1d_nwk_PITS_P
- 2d_code_NULL_BUILDINGS_R
- 2d_po__L
- 2d_mat_EXTERNAL_BUILDINGS_R

2d_mat_EXTERNAL_R
- ROADS AND PAVED AREAS
- BUILDINGS
- VEGETATION
- 2d_bc_BOUNDARIES_L
- 2d_code_ROG_R

NA240952 - REV 01
DATE: 20.05.2024
DRAWN: KP
APPROVED: KP

CLIENT / ARCHITECT
HOUSING PLUS

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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND NSW

MODEL DOMAIN

0 60 120 180 240 m

FIGURE A.01

PARK STREET

KING STREET

NEWCASTLE STREET

NEWCASTLE STREET

OUTLET2

PO2

PO3

Bridge

600

1200

1050

900

16.4

16.6

16.8

17.0

17.2

17.4

17.6

18.0

18.4

18.6

18.8

19.0

19.2

19.4

19.8

20.0

20.2

20.4

21.6

21.8

22.2

22.8

24.2

24.6

25.8

34

35

36

32

31

30

Legend

SITE LOCATION

1p_pre_contour

MAITLAND_DESIGN_1P+025m+TP04_PRE_d_Max

Band 1

<= 0.15

0.15 - 0.3

0.3 - 0.5

0.5 - 1.0

1.0 - 2.0

> 2.0

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

NA240952 - REV 01
DATE: 20.05.2024
DRAWN: KP
APPROVED: KP

CLIENT / ARCHITECT

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD DEPTHS
1% AEP - PRE DEVELOPMENT

0 10 20 30 40 m

FIGURE A.02

PARK STREET

PO2

PO3

KING STREET

NEWCASTLE STREET

OUTLET2

NEWCASTLE STREET

Bridge

PARK STREET

34

35

36

32

31

30

1200

600

600

1050

1050

900

900

Legend

SITE LOCATION

MAITLAND_DESIGN_1P+025m+TP04_PRE_V_Max

Band 1

<= 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.50

2.50 - 3.50

> 3.50

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

2d_po__L

NA240952 - REV 01
DATE: 20.05.2024
DRAWN: KP
APPROVED: KP

CLIENT / ARCHITECT

HOUSING PLUS

ACOR Consultants Pty Ltd

Suite 2, Level 1, 33 Herbert Street
St Leonards NSW 2065

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD VELOCITY
1% AEP - PRE DEVELOPMENT

0 10 20 30 40 m

FIGURE A.03

PARK STREET
KING STREET
NEWCASTLE STREET
NEWCASTLE STREET
OUTLET2
PO2
PO3
Bridge
36
35
34
32
31
30
1200
600
600
1050
1050
900
900

Legend
- SITE LOCATION
- MAITLAND_DESIGN_1P+025m+TP04_PRE_Z0_Max Band 1
  - 0.20 and below
  - 0.20 to 0.40
  - 0.40 to 0.60
  - 0.60 to 0.80
  - 0.80 to 1.00
  - 1.00 and above
- 1d_mh_junctions_dummy_P
- 1d_nwk_pipes_L
- 1d_nwk_PITS_P
- 2d_po__L

NA240952 - REV 01
DATE: 20.05.2024
DRAWN: KP
APPROVED: KP

CLIENT / ARCHITECT
HOUSING PLUS

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ENGINEERS | MANAGERS | INFRASTRUCTURE PLANNERS | DEVELOPMENT CONSULTANTS

GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD VELOCITY x DEPTH
1% AEP - PRE DEVELOPMENT

0 10 20 30 40 m

FIGURE A.04

PARK STREET

KING STREET

NEWCASTLE STREET

NEWCASTLE STREET

OUTLET2

PO2

PO3

Bridge

34

35

36

32

31

30

600

600

1050

900

900

900

Legend

SITE LOCATION

MAITLAND_DESIGN_1P+025m+TP04_PRE_ZAEM1_M

Band 1

H1

H2

H3

H4

H5

H6

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

2d_po__L

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD HAZARD
1% AEP - PRE DEVELOPMENT

0 10 20 30 40 m

FIGURE A.11

PARK STREET

KING STREET

NEWCASTLE STREET

NEWCASTLE STREET

OUTLET2

PO2

PO3

Bridge

Legend

SITE LOCATION

MAITLAND_DESIGN_1P+025m+TP04_POST_d_Max

Band 1

- <= 0.15
- 0.15 - 0.3
- 0.3 - 0.5
- 0.5 - 1.0
- 1.0 - 2.0
- > 2.0

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

2d_lfcsh_Bridge_R

NA240952 - REV 02
DATE: 22.05.2024
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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD DEPTHS
1% AEP - POST DEVELOPMENT

0 10 20 30 40 m

FIGURE A.12

PARK STREET

KING STREET

NEWCASTLE STREET

NEWCASTLE STREET

OUTLET2

PO2

PO3

Bridge

36

35

34

32

31

30

1200

600

600

1050

1050

900

900

Legend

SITE LOCATION

MAITLAND_DESIGN_1P+025m+TP04_POST_V_Max

Band 1

<= 0.50

0.50 - 1.00

1.00 - 1.50

1.50 - 2.50

2.50 - 3.50

> 3.50

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

2d_lfcsh_Bridge_R

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD VELOCITY
1% AEP - POST DEVELOPMENT

0 10 20 30 40 m

FIGURE A.13

PARK STREET

KING STREET

NEWCASTLE STREET

NEWCASTLE STREET

OUTLET2

PO2

PO3

Bridge

PARK STREET

34

35

36

32

31

30

1200

600

600

1050

1050

600

900

Legend

SITE LOCATION

MAITLAND_DESIGN_1P+025m+TP04_POST_Z0_Max Band 1

0.20 and below

0.20 to 0.40

0.40 to 0.60

0.60 to 0.80

0.80 to 1.00

1.00 and above

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

2d_lfcsh_Bridge_R

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD VELOCITY x DEPTH
1% AEP - POST DEVELOPMENT

0 10 20 30 40 m

FIGURE A.14

PARK STREET

PO2

PO3

KING STREET

NEWCASTLE STREET

OUTLET2

Bridge

34

35

36

32

31

30

600

600

1050

900

900

Legend

SITE LOCATION

MAITLAND_DESIGN_1P+025m+TP04_POST_ZAEM1_

Band 1

H1

H2

H3

H4

H5

H6

1d_mh_junctions_dummy_P

1d_nwk_pipes_L

1d_nwk_PITS_P

2d_lfcsh_Bridge_R

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

PEAK FLOOD HAZARD
1% AEP - POST DEVELOPMENT

0 10 20 30 40 m

FIGURE A.21

PO4
PO3
PO2
PO1
OUTLET2
Bridge
37
36
35
34
32
31
30
27
600
600
1050
PARK STREET
KING STREET
NEWCASTLE STREET
GEORGE STREET
MCGINLEY STREET

Legend
SITE LOCATION
MAITLAND_1p_AFFLUX_WL
Band 1
<= -0.0500
-0.0500 - -0.0300
-0.0300 - -0.0200
-0.0200 - -0.0100
-0.0100 - 0.0100
0.0100 - 0.0200
0.0200 - 0.0300
> 0.0300
1d_mh_junctions_dummy_P
1d_nwk_pipes_L

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

AFFLUX - DIFFERENTIAL DEPTHS
1% AEP - POST DEVELOPMENT

0 20 40 60 80 m

FIGURE A.21

PARK STREET
KING STREET
NEWCASTLE STREET
OUTLET2
GEORGE STREET
MCGINLEY STREET
Bridge
PO1
PO2
PO3
PO4
37
36
35
34
32
31
30
27
600
1050

Legend

- SITE LOCATION
- MAITLAND_1p_AFFLUX_VEL
  - Band 1
  - <= -2.0
  - -1.50 - -2.0
  - -1.0 - -1.50
  - -0.50 - -1.0
  - -0.50 - 0.50
  - 0.5 - 1.0
  - 1.0 - 1.5
  - >1.5
- 1d_mh_junctions_dummy_P
- 1d_nwk_pipes_L
- 1d_nwk_PITS_P
- 2d_lfcsh_Bridge_R
- 2d_po__L

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GROUP HOME DEVELOPMENT

10A PARK STREET, EAST MAITLAND
NSW

AFFLUX - DIFFERENTIAL VELOCITY
1% AEP - POST DEVELOPMENT

0 20 40 60 80 m