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Flood Design Certificate

Proposed Orange Fields - Café

44-50 Tench Avenue, Jamisontown NSW 2750

Prepared for: Mr. Phillip Hallani

Document No: MBR19039.FIA.DA

Issue: A Date: 09/12/2019

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Project No: MBR19039		Client: Mr. Phillip Hallani		
Site Address: 44-50 Tench Avenue, Jamisontown NSW 2750				
Issue	**Date**	**Description**	**Prepared By**	**Certified By**
A	09/12/2019	Issue for DA	Michael Bou Rada	Kamyar Eivazzadeh B.E., M.I.E. (Aust), C.P.Eng., N.E.R. 3443237

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Certificate Basis

This letter presents the identified flood impacts associated with the above project site in accordance with Penrith Council's Development Control Plan (DCP) & Local Environmental Plan (LEP) and is based upon the review of the following documents:

- **Appendix A**: The Flood Advice Letter issued by Penrith City Council (Ref ECM 8862952, dated 15/10/2019);
- **Appendix B**: The architectural plans prepared by Killing Matt Woods (Job No 0461, Issue D, dated 27/09/2019);
- **Appendix C**: The stormwater plan prepared by MBR Consulting Engineers (Project No 19039, Rev A, dated 09/12/2019);
- **Appendix D**: The survey plan prepared by WumaraGroup (Ref 130719A, dated 16/07/2019).

Flood Assessment

We understand that a flood design certificate is required to accompany the Development Application of a proposed Orange Fields – Café.

As identified in the flood advice letter, the front of the subject site is affected by the 1% AEP mainstream flooding from the Nepean River. The rear of the subject site is affected by the 1% AEP overland flooding from upstream catchments.

A flood study of the Nepean River has been undertaken by Advisian (Nepean River Flood Study, 2008) and has been adopted by Penrith City Council. This study shows that the frontage of the subject site is affected by mainstream flows during the 100-year ARI storm event at a level of RL 27.70m AHD.

Another flood study of the Peach Tree and Lower Surveyor Creeks has been undertaken by Catchment Simulation Solutions (Peach Tree and Lower Surveyor Creeks Flood Study, 2019) and has been adopted by Penrith City Council. This study shows that the rear of the subject site is affected by local overland flooding during the 100-year ARI storm event at a level of RL 26.50m AHD.

The proposed development is subject to the provisions of Penrith Development Control Plan 2014 Section 3.5 Flood Planning, and any development on the subject site must satisfy Council's criteria for Development Applications.

As such, the proposed development will meet the requirements as follows:

- As mentioned, the 1% AEP flood level is RL 27.70m AHD at the frontage of the site and RL 26.50m AHD at the rear. Therefore, the proposed areas (e.g. Dinning Pavilion, Kitchen,

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Bakery & Retail, Amenities …) are designed to be at RL 28.20m AHD providing 500mm adequate freeboard as required by Council;

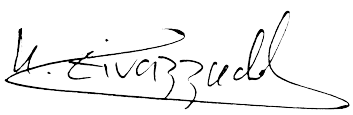
- The existing dwelling on site is to be retained and transformed into a House Dining area. The existing finished floor level of dwelling is RL 28.65m AHD providing 950mm freeboard above the 1% AEP flood levels;
- The proposed structures and works are designed to be outside of the inundated areas to minimise the impact on the 1% AEP flood behaviour;
- The proposed filling on site is kept to a minimum within the 'flood free' areas. The filling is only proposed to accommodate the proposed structures and their floor levels.
- The inundated areas at the rear-half of the site are kept at existing ground levels to follow the same topography in order to maintain the same behavioural characteristics of the 1% AEP flood;
- An open style fencing is proposed all around the site's perimeter where the flood extent exists to ensure no blockages/obstructions to the external flows and to minimise the impact on the surrounding properties;

We consider that the proposed development will therefore meet the relevant requirements set out in the Penrith Development Control Plan 2014 Section 3.5 Flood Planning. The proposed development will not be undertaken in a flood storage area, floodway area, flow path, high hazard area or high-risk area.

Furthermore, the development will have no impact on flooding to the surrounding properties or the wider catchment area, with safe provisions of refuge and/or evacuation during the 1% AEP flood event.

We trust that the above is sufficient for your present requirements.

Yours faithfully
MBR Consulting Engineers Pty Ltd



Name of Certifier: Kamyar Eivazzadeh

Qualifications: BE, MIEAust, CPEng, NER 3443237

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Glossary

Terminology in this Glossary has been derived or adapted from the Floodplain Development Manual (NSW DIPNR 2005), where appropriate.

- **Annual Exceedance Probability (AEP)**
  The chance of a flood of a given or larger size occurring in any one year, expressed as a percentage.
- **Australian Height Datum (AHD)**
  A common national surface level datum approximately corresponding to sea level.
- **Average Recurrence Interval (ARI)**
  The long-term average number of years between the occurrence of a flood as big as or larger than the selected event.
- **Local Overland Flooding**
  Inundation by local runoff rather than overbank discharge from a stream, river, estray, lake or dam.
- **Mainstream Flooding**
  Inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estray, lake or dam.
- **Catchment**
  The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
- **Flood**
  relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.
- **Flood Planning Levels (FPLs)**
  Combinations of flood levels (derived from significant historical flood events or floods of specific ARIs) and freeboard selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans.
- **Freeboard**
  Provides reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis for the FPL is actually provided. It is a factor of safety typically used in relation to the setting of floor levels, levee crest levels etc… (see Section K5 of Floodplain Development Manual).

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Appendix A

Flood Advice Letter Issue by Penrith City Council

PENRITH

Our reference: ECM 8862952
Contact: Dr Elias Ishak
Telephone: 4732 7579

15 October 2019

Ms Melissah Osland
PO Box 1556
PORT MACQUARIE NSW 2444

Dear Ms Osland

Flood Level Enquiry
Lot 7 DP 38950 - No. 44-50 Tench Avenue Jamisontown

Please find enclosed Flood Level information for the above property.

Should you require any further information please do not hesitate to contact me on 4732 7579

Yours sincerely

Dr Elias Ishak
Acting Engineering Stormwater Supervisor

Penrith City Council
PO Box 60, Penrith
NSW 2751 Australia
T 4732 7777
F 4732 7958
penrithcity.nsw.gov.au

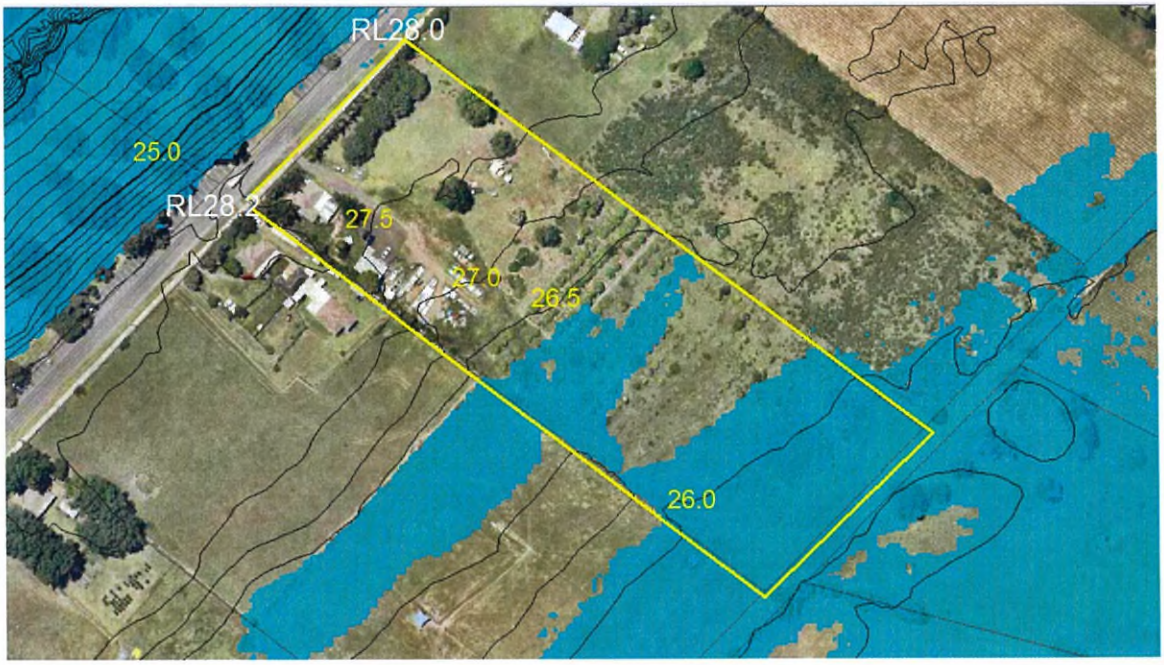
PENRITH
CITY COUNCIL

Flood Information
Lot 7 DP 38950 - No. 44-50 Tench Avenue Jamisontown

Date of issue: 15 October 2019

The 1% AEP flood levels affecting the above property are estimated to be RL27.7m AHD at the front boundary and RL26.5m AHD at the rear boundary.

Property less than 0.5m above the 1% AEP flood level is subject to Penrith Development Control Plan 2014 Section C3.5 Flood Planning. The Penrith Development Control Plan 2014 is available from Council's website www.penrithcity.nsw.gov.au.



Definitions

AEP – *Annual Exceedance Probability* – the chance of a flood of this size occurring in any one year.

AHD – *Australian Height Datum* – A standard level datum used throughout Australia, approximately equivalent to mean sea level.

Legend

	Extent of 1% AEP local catchment overland flow path. Generally depths less than 150mm is not shown.

Notes:

1. The contours shown above in yellow numbering are at 0.5m intervals and are based on Aerial Laser Scanning (ALS) Survey undertaken in 2002. The contour levels are approximate and for general information only. Accurate ground levels should be obtained by a Registered Surveyor.
2. The flood level is based on current information available to Council at the date of issue. The flood level may change in the future if new information becomes available. The 1% AEP flood is the flood adopted by Council for planning controls. Rarer and more extreme flood events will have a greater effect on the property.
3. Council's studies are reflected in flood mapping for the City which show properties potentially affected by overland flows in excess of 150mm.
4. This property is shown on Council's flood mapping as potentially so affected.
5. Council imposes flood related development controls where, in its opinion, such controls are justified. Such controls may or may not be imposed with respect to this property in the event of an application for development consent.
6. If a development proposal is submitted with respect to this property, Council will consider the possibility of flood or overland flow in the context of the application. Council may impose a requirement that the applicant for development consent carry out a detailed assessment of the possible overland water flows affecting the property (a flood study) and/or may impose other controls on any development designed to ameliorate flood risk.
7. You are strongly advised if you propose to carry out development upon the property, that you retain the assistance of an experienced flooding engineer and have carried out a detailed investigation.
8. Council accepts no liability for the accuracy of the flood levels (or any other data) contained in this certificate, having regard to the information disclosed in Notes "1" to "4". As such you should carry out and rely upon your own investigations.

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Dr Elias Ishak
Acting Engineering Stormwater Supervisor

PENRITH
CITY COUNCIL

Our Ref: ECM No. 8883373
Contact: Amir Abbasnia
Telephone: (02) 47328002

15 October 2019

Ms Melissah Osland
PO Box 1556
Port Macquarie NSW 2444

Dear Ms Osland

FLOOD LIABLE LAND – Lot 7 DP 38950 (No. 44-50 Tench Avenue, Jamisontown)

I refer to your request for a written flood report on the above property.

Council has adopted as its Standard Flood Level the 1% Annual Exceedance Probability (AEP) flood level. The 1% AEP means the probability of experiencing a flood event with flood levels higher than this value is 1% in any single year. This does not mean that this is the highest possible flood that may affect the particular property.

The Standard Flood Levels in this location are estimated to be RL27.7m Australian Height Datum (AHD) at the front boundary and RL26.5m AHD at the rear boundary based on information contained with the Nepean River Flood Study (Advisian, 2018) and Peach Tree and Lower Surveyors Creeks Flood Study (Catchment Simulation Solutions, 2019) prepared for Penrith City Council.

The property is subject to the provisions of Penrith Development Control Plan 2014 Section 3.5 Flood Planning. A copy of this policy and a copy of flood information for this property is attached. In determining development applications, Council has adopted a merits based approach to assess each case. Any development or building on this property must satisfy Council's criteria for Development Applications. For planning purposes, Council's adopted minimum habitable floor level at this location is required to be 0.5m above the current Standard Flood Level.

Field survey indicates that the property ground levels are approximately RL28.2m AHD at the western corner and RL28.0m AHD at northern corner of the front boundary as shown in the attached map. The survey also shows that the existing house floor level at the front is approximately RL28.7m AHD which is 1m above the Standard Flood Level and 0.5m above the adopted floor level planning requirement. The existing house floor level at the rear is approximately 28.6m AHD which is 0.9m above the Standard Flood Level and 0.4m above the adopted floor level planning requirement. The garage floor level is approximately RL27.5m AHD which is 0.2m below the Standard Flood Level.

Yours faithfully

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penrithcity.nsw.gov.au

Adam Wilkinson
Engineering Services Manager

Attach: Penrith Development Control Plan 2014 Section 3.5 Flood Planning

v) The vulnerability of groundwater locally and the pollution potential of the development; and

vi) The presence and distribution of groundwater dependent systems (environmental attributes having a dependence on groundwater) in the vicinity and the potential for adverse impacts to occur as a result of the development.

c) Groundwater shall not generally be pumped or extracted without specific licensed approval for any purpose other than temporary construction dewatering at the site identified in the development application.

d) Where construction is proposed below the water table:

i) The volume of any groundwater abstracted for the purposes of temporary dewatering should be minimised, e.g. by minimising the length of time that any basement excavations below the water table are left open. In general, the Office of Water will not authorise temporary construction dewatering for periods of more than 12 months.

ii) The design and construction of the building should prevent any long–term take of groundwater by making any below–water table levels watertight for the anticipated life of the building. Waterproofing of below–ground levels must be sufficiently extensive to incorporate adequate provision for unforeseen high water table elevations to prevent potential future inundation.

iii) A reasonable estimate of the total volume of groundwater to be extracted shall be calculated and a report provided to the NSW Office of Water. Details of the calculation method shall be included in the report.

D. Other Information

People seeking further information on groundwater may wish to refer to the following:

- *NSW State Groundwater Policy Framework Document* (1997) NSW Government
- *NSW State Groundwater Quality Protection Policy* (1998) NSW Government
- *NSW State Groundwater Dependent Ecosystems Policy* (2002) NSW Government
- *Hawkesbury-Nepean Catchment Groundwater Vulnerability Map* (1998) Department of Land and Water Conservation
- *Hawkesbury-Nepean Catchment Groundwater Availability Map* (1998) Department of Land and Water Conservation.

3.5 Flood Planning

A. Background

Impact of Flooding

The Hawkesbury/Nepean River system has one of the most dramatic flood behaviours in the world. The geography and topography of the area mean that flood waters are contained in the Nepean Gorge until they reach the floodplains at Penrith, resulting in unusually rapid rises in water levels. These floods continue to modify the physical environment of the valley as well as causing social and economic challenges to the valley's inhabitants.

Relevant Policies

Local government is the primary authority responsible for both flood risk management and land use planning in NSW. However, the State Government has introduced the *Flood Prone*

Land Policy and the associated *Floodplain Development Manual* (2005) (FDM) to reduce the impacts of flooding and flood liability on individual owners and occupiers of flood prone property, and to reduce private and public losses resulting from floods, utilising ecologically positive methods wherever possible. To achieve this objective, the supporting FDM acknowledges a broad risk management hierarchy of:

- avoidance of flood risk;
- minimisation of flood risk using appropriate planning controls; and
- flood risk mitigation.

Generally, the Flood Prone Land Policy adopts the following approach:

- The impact of flooding and flood liability on existing developed areas shall be reduced by flood mitigation works and measures, appropriate development and building controls and the voluntary acquisition of property in hazardous areas;
- The potential for flood losses in all new developed areas shall be contained by the application of effective planning and development controls;
- A merit approach to all development and building decisions which takes account of social, economic factors, as well as flooding considerations, should be followed.

Local Environmental Plan

The LEP contains provisions for development on land at or below the flood planning level, defined in the LEP as the level of a 1:100 Average Recurrence Interval (ARI) (1% AEP (100 year ARI)) flood event plus 0.5m freeboard.

The 1% AEP (100 year ARI) flood event is a tool for broadly assessing the suitability of land for development. It is not an assessment of flood risk, nor does reference to the 1% AEP (100 year ARI) flood event mean that properties and development above this level are not subject to flood risk.

Average Recurrence Interval (ARI) is the long term average number of years between the occurrence of a flood as big as or larger than the selected event. For example, floods with a discharge as great as or greater than the 100 year ARI flood event will occur on average once every 100 years.

Consideration of Floods Larger than the 1% AEP (100 year ARI) Flood Event

The 1% AEP (100 year ARI) flood is not, in most cases, the largest flood that can occur. There have been documented floods which exceeded this level for the Nepean River on a number of occasions over the last 200 years. The highest flood event at Penrith occurred in June 1867 and is estimated at greater than the 1:200 ARI event. Floodwaters reached a peak height of 27.5m above Australian Height Datum and covered most of the present day Emu Plains and large parts of Penrith. The 1967 flood for Ropes Creek and the 1956 and 1988 floods for South Creek were also major flood events.

For this reason, developments that may have a significant impact on the extent of flooding experienced by nearby or downstream properties may be asked to consider floods larger that the 1% AEP (100 year ARI) flood event. Significant areas of Penrith are affected by the Probable Maximum Flood (PMF) and in some cases this will need to be considered in determining flood hazard.

Probable Maximum Flood (PMF) is the largest flood that could conceivably occur at a particular location.

Flood Hazard Classifications

In order to determine what development may occur in areas subject to partial or full flooding, it is necessary to classify land according to flood hazard.

The greatest flood hazard occurs in land that is a 'floodway'. They are often aligned with obvious naturally defined channels.

Floodway is defined as those areas of the floodplain where a significant discharge of water occurs during floods.

In addition, there are significant risks in 'flood storage areas'.

Flood storage areas are defined as those parts of the floodplain that are important for the temporary storage of floodwaters during the passage of a flood.

Floodplain is defined as the area of land which is subject to inundation by floods up to and including the PMF event.

The remaining area of land affected by flooding after floodway and flood storage areas have been defined is the 'flood fringe area'.

Alterations to Land at or below the Flood Planning Level/Watercourses

One key issue with the development of land at or below the flood planning level is that some developments have the potential to adversely affect flood behaviour (including flow distributions and velocities). This can result in detrimental increases in the potential flood impacts on other development or properties and/or impacts on the floodplain environment that could cause erosion, siltation, destruction of riparian vegetation or a reduction in the stability of the river bank/watercourse.

Developments that would partially or fully block floodways or flood storage areas may result in redistribution of flood flows or impacts. The greatest impact comes from filling land at or below the flood planning level in order to raise development above the flood planning level. Therefore, these impacts must be minimised in the location and design of any structures on the land.

Minimising Flood Impacts on Property

Flood impacts on property can be reduced not only by appropriate location of development but also by design, layout and structure. This Plan provides controls for appropriate levels for 'habitable rooms' or 'flood proofing' of buildings.

Habitable rooms are defined as a living area such as a lounge room, dining room, rumpus room, kitchen and bedroom and excluding garages.

Flood proofing refers to the combination of measures incorporated in the design, construction and alteration of individual buildings or structures subject to flooding to reduce or eliminate flood damages.

B. Objectives

a) To ensure floodplain risk management minimises the potential impact of development and other activity upon the aesthetic, recreational and ecological value of the waterway corridors;

b) To maintain the existing flood regime and flow conveyance capacity and avoid significant adverse impacts on flood behaviour;

c) To avoid significant adverse effects on the floodplain environment that would cause erosion, siltation, destruction of riparian vegetation or a reduction in the stability of the river bank/watercourse;

d) To reduce the impact of flooding and flood liability on individual owners and occupiers;

e) To limit the potential risk to life and property resulting from flood events;

f) To contain the potential for flood losses in all new developed areas by the application of effective planning and development controls;

g) To apply a "merit approach" to all development and building decisions, which takes account of social, economic and ecological factors as well as flooding considerations;

h) To prevent the introduction of unsuitable land uses on land subject to the flood planning provisions of the LEP; and

i) To deal equitably and consistently (where possible) with applications for development on land affected by potential floods, in accordance with the principles contained in the Floodplain Development Manual, issued by the NSW Government.

C. Controls

The following controls only apply to land subject to the flood planning provisions of the LEP.

1) Submission Requirements

a) Where relevant, a comprehensive flood study, incorporating:

i) a survey of the main watercourse;

ii) a survey of the site; and

iii) a detailed flood and drainage investigation which establishes the estimated 1% AEP (100 year ARI) flood level;

is to be submitted with any development application on land identified as fully or partially flood affected. The levels on the survey are required to be verified during construction by a survey certificate.

b) The applicant shall be required to demonstrate to the satisfaction of Council (on the basis of a qualified consultant report) that:

i) The development will not increase the flood hazard or risk to other properties;

ii) The structure of the proposed building works shall be adequate to deal with flooding situations;

iii) The proposed building materials are suitable;

iv) The buildings are sited in the optimum position to avoid flood waters and allow safe flood access for evacuation;

v) The proposed redevelopment will not expose any resident to unacceptable levels of risk or any property to unreasonable damage; and

vi) Compliance of any existing buildings with the *Standard - Construction of Buildings in Flood Hazard Area* and the accompanying handbook developed by the Australian Building Codes Board (2012).

2) Flood Hazard Classifications

a) Council will consider development on land subject to the flood planning provisions of the LEP but will not grant consent to new development in floodways or in high hazard areas.

Flood hazard (high) or high flood hazard occurs when there is possible danger to life and limb; evacuation by trucks is difficult; there is potential for structural damage; and social disruption and financial losses could be high.

b) Consideration will be given to such matters as depth and nature of flood waters, whether the area forms flood storage, the nature and risk posed to the development by flood waters, the velocity of floodwaters and the speed of inundation, and whether the development lies in an area classed as a 'floodway', 'flood fringe area' or 'flood storage area'.

3) Residential - New Developments - Single Dwellings

b) Residential – upper storey additions will not be considered as 'New Development' provided; the first floor additions are above the Flood Planning level and the additions and alterations do not increase the building footprint at ground level beyond 35m^2. (Ground floor additions include all non-habitable buildings such as garages, storage areas, carports and the like).

c) Floor levels of habitable rooms shall be at least 0.5m above the 1% AEP (100 year ARI) flood; i.e. the flood planning level.

d) The lowest floor level of habitable rooms shall be not more than 3.0m above ground level.

e) Any portion of buildings subject to inundation shall be built from flood compatible materials.

f) Flood safe access and emergency egress shall be provided to all new developments and for dwelling replacements where practicable.

Flood safe access means access that is generally considered satisfactory when the depth of flooding over vehicular driveways and roads is limited to approximately 0.25m with low velocities.

g) All services associated with the development shall be adequately flood proofed.

h) A certificate, prepared by a registered surveyor to verify the lowest floor level of a habitable room of a residential building to the required Australian Height Datum (AHD) level, shall be submitted to the Council upon completion of the building to that level. The building shall not be further constructed until approval is given by Council to proceed with construction works.

4) Residential - Minor Extensions

a) This section does not apply to minor extensions for the purpose of dual occupancy development, an existing single storey home which retains essentially the outer walls of the existing dwelling and proposes an upper floor addition, a knockdown rebuild that retains exactly the same building footprint, or a building burnt down and replaced with the same building footprint. These shall be treated as new development.

b) Once only extensions with a floor area up to 30m^2 may be approved with floor levels below the 1% AEP (100 year ARI) flood, if the applicant can demonstrate that no practical alternatives exists for constructing the extension above the 1% AEP (100 year ARI) flood.

c) Once only extensions which increase the existing floor area by between 30 and 35m^2 may be approved with floor levels at or above the 1% AEP (100 year ARI) flood.

d) Extensions greater than 35m^2 will be treated as a new development.

5) Non-Habitable Extensions or Alterations, Outbuildings and Swimming Pools

a) All electrical services shall be adequately flood proofed.

b) All flood sensitive equipment (including electric motors and switches) shall be located above the 1% AEP (100 year ARI) flood.

6) Industrial/Commercial - New Development

a) Floor levels shall be at least 0.5m above the 1% AEP (100 year ARI) flood or the buildings shall be flood-proofed to a least 0.5m above the 1% AEP (100 year ARI) flood. If floor levels are below the 1% AEP (100 year ARI) flood the matters listed in section 7 i) – vii) shall be addressed.

b) Flood safe access and emergency egress shall be provided to all new developments.

7) Industrial/Commercial - Extensions and Infill Development

a) Where the application is for an extension to an existing building on land at or below the flood planning level or for new development that can be classed as infill development, Council may approve of the development with floor levels below the 1% AEP (100 year ARI) flood if it can be demonstrated by the applicant that all practical measures will be taken to prevent or minimise the impact of flooding. In considering such applications and determining the required floor level, Council shall take into account such matters as:

i) The nature of the business to be carried out;

ii) The frequency and depth of flooding;

iii) The potential for personal and property loss;

iv) The utility of the building for its proposed use;

v) Whether the filling of the site or raising of the floor levels would render the development of the property unworkable or uneconomical;

vi) Whether the raising of the floor levels would be out of character with adjacent buildings; and

vii) Any risk of pollution of water from storage or use of chemicals within the building.

b) Any portion of the proposed building extension subject to inundation shall be built from flood compatible materials.

8) Change of Use of Existing Buildings

a) Development consent for change of use of an existing building with floor levels below the 1% AEP (100 year ARI) flood will only be given where it can be demonstrated by the applicant that:

i) There is no foreseeable risk of pollution associated with the proposed use of the building in the event that the 1% AEP (100 year ARI) flood occurs;

ii) All practical measures shall be taken to minimise the risk of flood damage to the property within the building by the 1% AEP (100 year ARI) flood. These measures could include:

- Flood proofing the building to the level of the 1% AEP (100 year ARI) flood by either construction of a wall or levee bank or some other means of preventing water entry;

- Raising the floor level of the building to the level of the 1% AEP (100 year ARI) flood; and/or
- Storing all equipment, machinery and stock above the 1% AEP (100 year ARI) flood level.

9) Rural Uses

a) Applications for minor extensions to existing buildings and new buildings associated with rural uses that are below the 1% AEP (100 year ARI) flood (other than residential buildings) will be considered on their merits having regard to the proposed use and the potential for property loss.

10) Subdivision

a) Generally, subdivision of land below the flood planning level will not be supported. Further provisions relating to the proposed subdivision of such land can be found in the Subdivision Section of this Plan.

11) Residential Accommodation and Caravan Parks

a) Applications for residential accommodation, defined in the LEP, with the exception of dwelling houses, will be treated as per subdivisions. Applications for caravan parks will also be treated as per subdivisions. Other land uses which may attract large numbers of people.

b) Council will generally not support an application for any land use which may attract large numbers of people (including schools, function centres, child care centres, hostels, etc.) on land below the flood planning level and on land that cannot be safely and effectively evacuated during a 1% AEP (100 year ARI) flood event.

12) Storage of Potential Pollutants above 1% AEP (100 year ARI) Flood

a) All potential pollutants that are stored or detained on-site (such as on-site effluent treatment plants, pollutant stores or on-site water treatment facilities) should be stored above the 1% AEP (100 year ARI) flood. Details must be provided as part of any application to Council.

13) Overland Flow Flooding

a) Council has undertaken a Penrith Overland Flow Flood 'Overview' Study. Consideration must be given to the impact on any overland flow path. Generally, Council will not support development obstructing overland flow paths. Development is required to demonstrate that any overland flow is maintained for the 1% AEP (100 year ARI) overland flow. A merit based approach will be taken when assessing development applications that affect the overland flow.

b) Council's *Stormwater Drainage Specification for Building Developments* provides information on the details required in the preparation of an overland flow study.

14) Filling of Land At or Below the Flood Planning Level

a) Council will not grant consent to filling of floodways or high hazard areas. The filling of other land at or below the flood planning level will generally not be supported; however, Council will adopt a merits based approach. In particular, an application to fill land shall also

describe the purpose for which the filling is to be undertaken. Council may consider such an application when the following criteria are met:

i) Flood levels are not increased by more than 0.1m by the proposed filling;

ii) Downstream velocities are not increased by more than 10% by the proposed filling;

iii) Proposed filling does not redistribute flows by more than 15%;

iv) The potential for cumulative effects of possible filling proposals in that area is minimal;

v) There are alternative opportunities for flood storage;

vi) The development potential of surrounding properties is not adversely affected by the filling proposal;

vii) The flood liability of buildings on surrounding properties is not increased;

viii) No local drainage flow/runoff problems are created by the filling; and

ix) The filling does not occur within the drip line of existing trees.

b) The above criteria can only be addressed and satisfied by the submission of a detailed flood study report by an appropriate consulting engineer. The flood study report would involve both hydrologic and hydraulic analysis of the watercourse and the effects of the proposed filling on flood levels, flow velocities and distribution of flows as listed in i) to iii) above. In addition, the report needs to address items iv) to ix) listed above. Any filling of land also needs to be in accordance with the other provisions in this Plan.

15) Rezoning of Land

a) Council will not support the rezoning of any land located in a floodway or high hazard area.

b) Council will generally not support the rezoning of rural land situated below the 1% AEP (100 year ARI) flood where the development of that land may require or permit the erection of buildings or works even if the surface of the land can be raised to a level above the 1% AEP (100 year ARI) flood by means of filling.

c) Where land below the flood planning level is currently zoned to permit urban development, Council will generally not support the rezoning of land to permit a higher economic use or an increase in the density of development.

D. Other Information

People seeking further information on flood planning lands or preparing development applications may wish to refer to the following:

- Penrith City Council's *Stormwater Drainage Specification for Building Developments*
- NSW Government's *Flood Prone Land Policy* and associated *Floodplain Development Manual* (2005)
- Penrith City Council's *Sustainability Blueprint for urban release areas* (June 2005)
- *Standard - Construction of Buildings in Flood Hazard Areas* and accompanying handbook, developed by the Australian Building Codes Board (2012).

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Appendix B

Architectural Plans prepared by Killing Matt Woods

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Appendix C

Stormwater Plans Prepared by MBR Consulting Engineers

44-50 TENCH AVENUE, JAMISONTOWN NSW 2750
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLANS - DEVELOPMENT APPLICATION

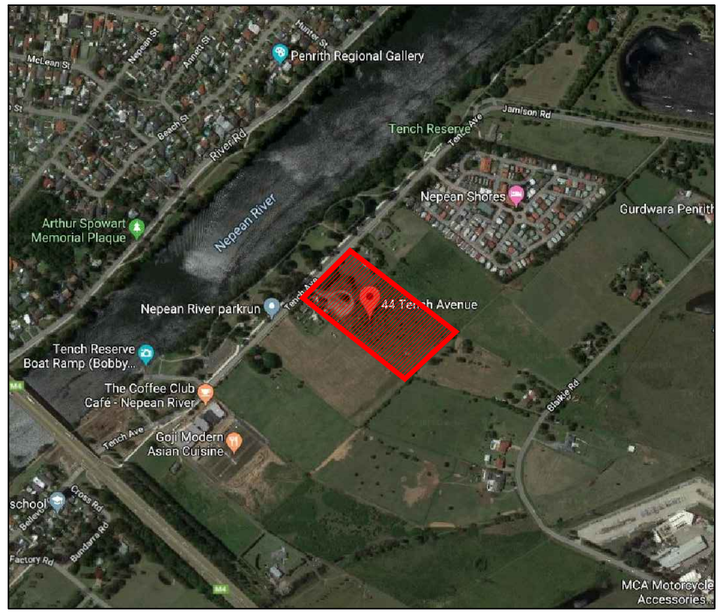
STORMWATER NOTES

1. CONTRACTOR MUST VERIFY ALL DIMENSIONS & EXISTING LEVELS, SERVICES & STRUCTURES ON SITE PRIOR TO COMMENCEMENT OF WORK.
2. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, LANDSCAPE, STRUCTURAL, HYDRAULIC, & OTHER SERVICES DRAWINGS & SPECIFICATIONS. IF THERE EXISTS AND DISCREPANCIES BETWEEN THE DRAWINGS, THE BUILDER SHALL REPORT THE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORKS.
3. EQUIVALENT STRENGTH REINFORCED CONCRETE PIPES MAY BE USED.
4. WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS & VEHICULAR PAVEMENTS, UNSLOTTED uPVC SEWER GRADE PIPE SHALL BE USED.
5. CHARGED LINES TO BE SEWER GRADE & SEALED.
6. ALL PIPES TO HAVE MIN 150mm COVER IF LOCATED WITHIN PROPERTY.
7. ALL PITS IN DRIVEWAYS TO BE CONCRETE & ALL PITS IN LANDSCAPED AREAS TO BE PLASTIC.
8. PITS LESS THAN 600mm DEEP MAY BE BRICK, PRECAST OR CONCRETE.
9. ALL BALCONIES & ROOFS TO BE DRAINED & TO HAVE SAFETY OVERFLOWS IN ACCORDANCE WITH RELEVANT AUSTRALIAN STANDARDS.
10. ALL GRATES TO HAVE CHILD PROOF LOCKS.
11. ALL DRAINAGE WORKS TO AVID TREE ROOTS.
12. ALL DOWNPIPES & GUTTERS TO HAVE LEAF GUARDS.
13. COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.
14. ALL WORKS SHALL BE IN ACCORDANCE WITH B.C.A. & A.S.3500.3.
15. CARE TO BE TAKEN AROUND EXISTING SEWER. STRUCTURAL ADVICE REQUIRED FOR SEWER PROTECTION AGAINST ADDITIONAL LOADING FROM NEW PITS, PIPES, RETAINING WALLS & OSD BASIN WATER LEVELS.
16. ALL Ø300 DRAINAGE PIPES & LARGER SHALL BE CLASS 2 APPROVED SPIGOT & SOCKET RCP PIPES WITH RUBBER RING JOINTS (U.N.O.). ALL DRAINAGE PIPES UP TO & INCLUDING Ø225 SHALL BE SEWER GRADE uPVC WITH SOLVENT WELD JOINTS (U.N.O.).
17. EQUIVALENT STRENGTH FRC PIPES MAY BE USED.
18. ALL PIPE JUNCTIONS, BENDS & TAPERS UP TO & INCLUDING Ø450 SHALL BE VIA PURPOSE MADE FITTINGS.
19. CONTRACTOR TO SUPPLY & INSTALL ALL FITTINGS & SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPE WORK.
20. ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER, & THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH.
21. WHERE TRENCHES ARE IN ROCK, THE PIPE SHALL BE BEDDED ON A MIN. 50mm CONCRETE BED (OR 75mm THICK BED OF 12mm BLUE METAL) UNDER THE BARREL OF THE PIPE. THE PIPE COLLAR AT NO POINT SHALL BEAR ON THE ROCK. IN OTHER THAN ROCK, PIPES SHALL BE LAID ON A 75mm THICK SAND BED. IN ALL CASES, BACKFILL THE TRENCH WITH 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% STANDARD MAX. DRY DENSITY.
22. BEDDING SHALL BE TYPE H1 (U.N.O.), IN ACCORDANCE WITH CURRENT RELEVANT AUSTRALIAN STANDARDS.
23. WHERE STORMWATER LINES PASS UNDER FLOOR SLABS, SEWER GRADE RUBBER RING JOINTS ARE TO BE USED.
24. ALL PIPES IN BALCONIES TO BE Ø65 uPVC CAST IN CONCRETE SLAB .
25. Ø65 PVC @ MIN 1.0% Ø90 PVC @ MIN 1.0% Ø100 PVC @ MIN 1.0%
    Ø150 PVC @ MIN 1.0% Ø225 PVC @ MIN 0.5% Ø300 PVC @ MIN 0.4%
    UNLESS NOTED OTHERWISE
26. CONTRACTOR TO PROVIDE A BREAK / OPEN VOID IN RAIL / BALLUSTRADE FOR STORMWATER EMERGENCY OVERFLOW.
27. ALL ENCLOSED AREAS/PLANTER BOXES BE FITTED WITH FLOOR WASTES & TO DRAINED TO OSD.
28. DOWNPIPES TO BE CHECKED BY ARCHITECT & PLUMBER PRIOR TO CONSTRUCTION .
29. PROVIDE 3.0m LENGTH OF Ø100 SUBSOIL DRAINAGE PIPE WRAPPED IN FABRIC SOCK, AT UPSTREAM END OF EACH PIT.
30. ALL THE CLEANING EYES (OR INSPECTION EYES) FOR THE UNDERGROUND PIPES HAVE TO BE TAKEN UP TO THE FINISHED GROUND LEVEL FOR EASY IDENTIFICATION & MAINTENANCE PURPOSES.
31. ALL SUB-SOIL DRAINAGE SHALL BE A MIN OF Ø65 & SHALL BE PROVIDED WITH A FILTER SOCK. THE SUBSOIL DRAINAGE SHALL BE INSTALLED IN ACCORDANCE WITH DETAILS TO BE PROVIDED BY THE LANDSCAPE ARCHITECT.
32. PRIOR TO COMMENCING ANY WORKS, THE BUILDER SHALL ENSURE THAT THE INVERT LEVELS OF WHERE THE SITE STORMWATER SYSTEM CONNECTS INTO THE COUNCILS KERB/DRAINAGE SYSTEM MATCHED THE DESIGN LEVELS. ANY DISCREPANCIES SHALL BE REPORTED TO THE DESIGN ENGINEER IMMEDIATELY.

DRAWING INDEX

SITEWORKS NOTES

1. ORIGIN OF LEVELS : AUSTRALIAN HEIGHT DATUM (A.H.D.)
2. CONTRACTOR MUST VERIFY ALL DIMENSIONS & EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK.
3. ALL WORKS ARE TO BE UNDERTAKEN IN ACCORDANCE WITH THE DETAILS SHOWN ON THE DRAWINGS, THE SPECIFICATIONS & THE DIRECTIONS OF THE PRINCIPAL'S REPRESENTATIVE.
4. EXISTING SERVICES HAVE BEEN PLOTTED FROM SUPPLIED DATA & AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION & LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE PRINCIPAL'S REPRESENTATIVE. 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 REGISTERED SURVEYOR.
7. CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER COMMUNICATIONS OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS.
8. ALL SERVICE TRENCHES UNDER VEHICULAR PAVEMENTS SHALL BE BACKFILLED WITH AN APPROVED NON-NATURAL GRANULAR MATERIAL & COMPACTED TO 98% STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS.1289.5.1.1.
9. ALL TRENCH BACKFILL MATERIAL SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT MATERIAL.
10. ON COMPLETION OF PIPE INSTALLATION, ALL DISTURBED AREAS MUST BE RESTORED TO ORIGINAL, INCLUDING KERBS, FOOTPATHS, CONCRETE AREAS, GRAVEL & GRASSED AREAS & ROAD PAVEMENTS.
11. PROVIDE 12mm WIDE EXPANDING CORK JOINTS BETWEEN CONCRETE PAVEMENTS & ALL BUILDINGS , WALLS, FOOTINGS, COLUMNS, KERBS, DISH DRAINS, GRATED DRAINS, BOLLARD FOOTINGS ETC
12. CONTRACTOR TO OBTAIN ALL AUTHORITY APPROVALS.
13. ALL BATTERS TO BE GRASSED LINED WITH MIN 100mm TOPSOIL & APPROVED COUCH LAID AS TURF.
14. MAKE SMOOTH TRANSITION TO EXISTING SERVICES & MAKE GOOD.
15. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY DIVERSION DRAINS & MOUNDS TO ENSURE THAT, AT ALL TIMES, EXPOSED SURFACES ARE FREE DRAINING &, WHERE NECESSARY, EXCAVATE SUMPS & PROVIDE PUMPING EQUIPMENT TO DRAIN EXPOSED AREAS.
16. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, LANDSCAPE, STRUCTURAL, HYDRAULIC & ELECTRICAL DRAWINGS & SPECIFICATIONS. IF THERE EXISTS AND DISCREPANCIES BETWEEN THE DRAWINGS, THE BUILDER SHALL REPORT THE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORKS.
17. TRENCHES THROUGH EXISTING ROAD & CONCRETE PAVEMENTS SHALL BE SAWCUT TO FULL DEPTH OF CONCRETE & A MIN 50mm IN BITUMINOUS PAVING.
18. ALL BRANCH GAS & WATER SERVICES UNDER DRIVEWAYS & BRICK PAVING SHALL BE LOCATED IN Ø80 uPVC SEWER GRADE CONDUITS EXTENDING A MIN OF 500mm PAST PAVING.
19. ALL WORKS WITHIN COUNCIL RESERVE TO BE INSPECTED BY COUNCIL PRIOR TO CONSTRUCTION.
20. COUNCIL'S ISSUED FOOTWAY DESIGN LEVELS TO BE INCORPORATED INTO THE FINISHED LEVELS ONCE ISSUED BY COUNCIL.



LOCALITY PLAN
N.T.S

PERSPECTIVE PLAN
N.T.S

DIAL BEFORE YOU DIG NOTE

DIAL BEFORE YOU DIG www.1100.com.au

THE CONTRACTOR MUST CONTACT ALL SERVICES & MAINTAIN A SET OF 'DIAL BEFORE YOU DIG' DRAWINGS ON SITE AT ALL TIMES.

EROSION & SEDIMENT CONTROL NOTES

GENERAL INSTRUCTIONS:

E1. THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS, & ANY OTHER PLANS OR WRITTEN INSTRUCTIONS THAT MAY BE ISSUED & RELATING TO DEVELOPMENT AT THE SUBJECT SITE.

E2. THE SITE SUPERINTENDENT WILL ENSURE THAT ALL SOIL & WATER MANAGEMENT WORKS ARE LOCATED AS INSTRUCTED IN THIS SPECIFICATION.

E3. ALL BUILDERS & SUB-CONTRACTORS WILL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION & POLLUTION TO DOWNSLOPE LANDS & WATERWAYS.

CONSTRUCTION SEQUENCE:

E4. THE SOIL EROSION POTENTIAL ON THIS SITE SHALL BE MINIMISED. HENCE, WORKS SHALL BE UNDERTAKEN IN THE FOLLOWING SEQUENCE :

a. INSTALL SEDIMENT FENCES, TEMPORARY CONSTRUCTION EXIT & SANDBAG KERB INLET SEDIMENT TRAP.
b. UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS. PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.

EROSION CONTROL:

E5. DURING WINDY CONDITIONS, LARGE, UNPROTECTED AREAS WILL BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.

E6. FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE & WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.

FENCING:

E7. STOCKPILES WILL NOT BE LOCATED WITHIN 2m OF HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS. WHERE THEY ARE BETWEEN 2 & 5m FROM SUCH AREAS, SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSLOPE WATERS, E.G. THROUGH INSTALLATION OF SEDIMENT FENCING.

E8. ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE & WITHIN 10 WORKING DAYS FROM PLACEMENT.

E9. WATER WILL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNLESS IT IS RELATIVELY SEDIMENT FREE, I.E. THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND/OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.

E10. TEMPORARY SOIL & WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.

OTHER MATTERS:

E11. ACCEPTABLE RECEPTORS WILL BE PROVIDED FOR CONCRETE & MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS & LITTER.

E12. RECEPTORS FOR CONCRETE & MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS & LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SITE SUPERINTENDENT.

SITE INSPECTION & MAINTENANCE:

E13. EROSION & SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AFTER RAINFALL EVENTS TO ENSURE THAT THEY OPERATE EFFECTIVELY. REPAIR & OR MAINTENANCE SHALL BE UNDERTAKEN AS REQUIRED.

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ALL PLANS MUST BE PRINTED IN COLOUR & READ PRIOR TO CONSTRUCTION

Issue	Description	Date	Design	Check
A	ISSUE FOR DEVELOPMENT APPLICATION	09/12/2019	MBR	KE

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Erskineville NSW 2043
EMAIL : solid@killingmattwoods.com
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Client
MKD Cafe Pty Ltd

PENRITH CITY COUNCIL

Scale @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
COVER SHEET, NOTES & DRAWING INDEX

Project No. 19039
Dwg. No. 000
Rev A

DIAL BEFORE YOU DIG NOTE

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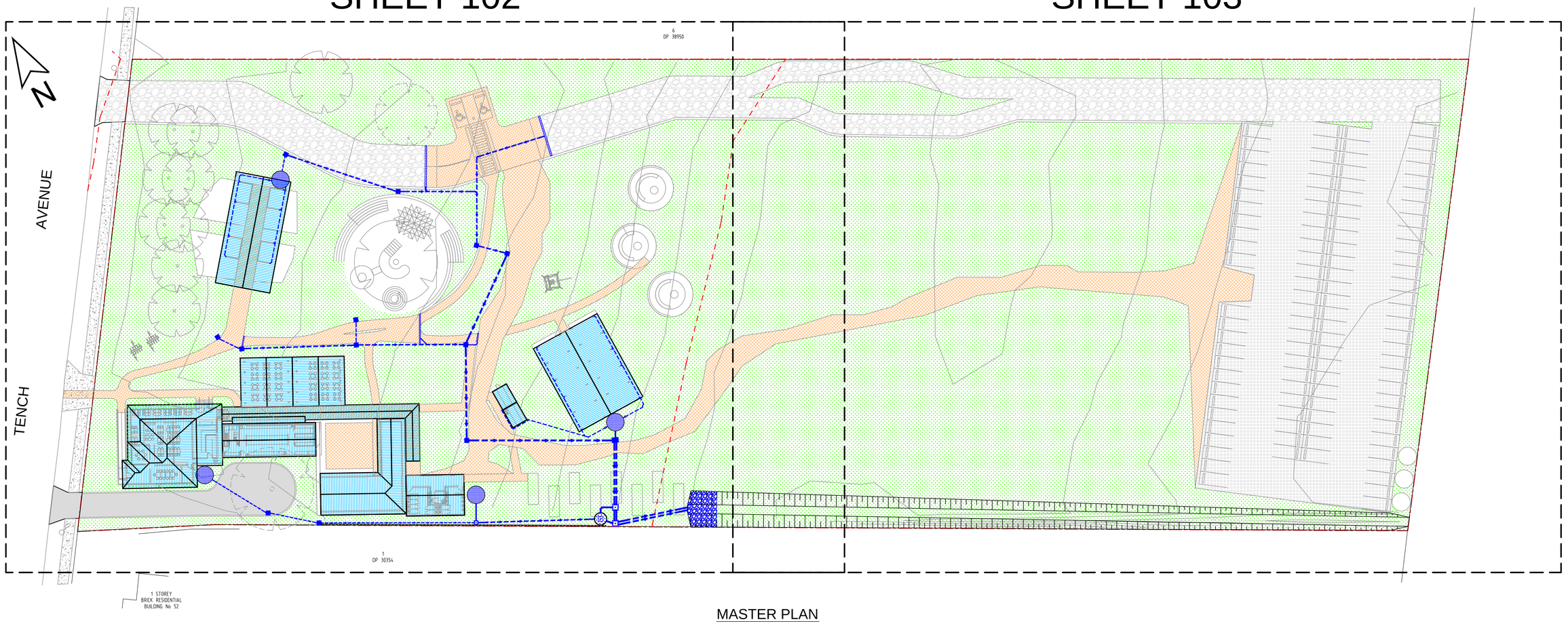
THE CONTRACTOR MUST CONTACT ALL SERVICES & MAINTAIN A SET OF 'DIAL BEFORE YOU DIG' DRAWINGS ON SITE AT ALL TIMES.

SHEET 102

SHEET 103



MASTER PLAN

SCALE 1:400

LEGEND

- PROPOSED BOUNDARY SHOWN OUTSIDE FOR CLARITY
- PROPOSED CONCRETE AREA
- RUSTIC LANDSCAPING (FEATHER GRASS OR SIMILAR TO FUTURE SPECIFICATION)
- PERMEABLE PATH (FIELDSTONES OR SIMILAR TO FUTURE SPECIFICATION)
- ACCESSIBLE PAVED PATHWAY & PARKING (TO FUTURE SPECIFICATION)
- COMPRESSED GRAVEL DRIVE (TO FUTURE SPECIFICATION)
- SENI PERMEABLE GROUND COVERING (TO FUTURE SPECIFICATION)
- EXISTING CONCRETE AREA
- PROPOSED OSD STORAGE AREA
- PROPOSED WATER QUALITY AREA
- PROPOSED STORMWATER PIPE
- PROPOSED STORMWATER CHARGED LINE DRAINING TO RWT
- ROOF SLOPE
- GUTTER DOWNPIPE
- DP1 100 — DOWNPIPE NUMBER & SIZE
- CE — Ø300 CLEANING EYE
- PROPOSED GRATED / SEALED PIT
- PROPOSED GRATED DRAIN
- COMBINED RAINWATER TANK & OSD TANK
- SURFACE FLOW ARROWS
- RL 22.22 — DESIGN SURFACE LEVEL
- + 26.45 — EXISTING SURFACE LEVEL
- CLEAR PASSAGE & OPEN STYLE FENCING
- TREES TO BE RETAINED
- TREES TO BE REMOVED

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Scale @ A1
0 8 16 32 m
SCALE 1:400 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
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Drawing Title
STORMWATER CONCEPT PLAN
MASTER PLAN

Project No. 19039
Dwg. No. 101
Rev A

N

6
DP 38950

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

PROPOSED DRIVEWAY CROSSOVER SIZE & LAYOUT TO COMPLY WITH COUNCIL VEHICULAR CROSSING POLICY.

1% AEP FLOOD LEVEL RL 27.70m AHD

PROPOSED COMPACTED GRAVEL DRIVEWAY TO FOLLOW NATURAL FALL OF EXISTING SITE TOPOGRAPHY. THE NEW ROAD IS TO INCLUDE CAMBER TO ALLOW WATER TO DRAIN OFF & TO ENSURE NO POOLING IN THE CETRE OF DRIVEWAY.

AVENUE

TENCH

RL 28.15

PIT 15
600 x 600
SL 27.95
IL 27.10

PROPOSED 18,200L CORRUGATED METAL COMBINED OSD & RAINWATER TANK 1.

Ø150 PVC @ 6.67%

IL 27.30

Ø225 PVC @ 0.99%

RL 28.05

CE

RL 27.90

DP 100

Ø150 PVC

RL 28.15

RL 28.05

RL 27.90

PROPOSED PAVED AREA TO BE GRADED TO THE GRATED DRAINS

PIT 13
GRATED DRAIN
(HD) 300 x 200
SL 27.45
IL 27.25

PIT 12
GRATED DRAIN
(HD) 300 x 200
SL 27.30
IL 27.10

Ø225 PVC @ 1.03%

IL 26.82

IL 26.73

PIT 14
600 x 600
SL 27.50
IL 26.88

PIT 11
600 x 600
SL 27.30
IL 26.63

Ø225 PVC
@ 0.9%

PIT 10
600 x 600
SL 27.20
IL 26.58

PROPOSED COMPACTED GRAVEL DRIVEWAY TO FOLLOW NATURAL FALL OF EXISTING SITE TOPOGRAPHY. THE NEW ROAD IS TO INCLUDE CAMBER TO ALLOW WATER TO DRAIN OFF & TO ENSURE NO POOLING IN THE CETRE OF DRIVEWAY.

1% AEP FLOOD LEVEL RL 26.50m AHD

PROPOSED RUSTIC LANDSCAPING TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PROPOSED PERMEABLE PATH TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PIT 21
600 x 600
SL 27.95
IL 26.90

PIT 20
GRATED DRAIN
SL 27.90
IL 27.80

PIT 19
600 x 600
SL 27.90
IL 26.85

PIT 18
600 x 600
SL 27.90
IL 26.75

PIT 16
GRATED DRAIN
SL 27.85
IL 27.70

Ø300 PVC @ 0.75%

Ø150 PVC
@ 2.58%

PIT 9
GRATED DRAIN
SL 27.80
IL 27.65

Ø225 PVC @ 0.98%

Ø150 PVC
@ 1.07%

RL 28.00

RL 28.05

IL 26.51

PIT 17
600 x 600
SL 27.90
IL 26.64

PIT 8
600 x 600
SL 27.80
IL 26.44

Ø300 PVC @ 0.73%

FFL 28.20

RL 28.15

RL 28.05

RL 27.90

EXISTING DRIVEWAY TO REMAIN UNDISTURBED.

FFL 28.65

FFL 28.20

PIT 7
600 x 600
SL 27.95
IL 26.31

Ø150 PVC

Ø300 PVC @ 0.75%

CE

IL 26.35

PROPOSED 18,200L CORRUGATED METAL COMBINED OSD & RAINWATER TANK 4.

RL 27.10

2 x Ø300
PVC @ 0.82%

PIT 6
900 x 600
SL 27.00
IL 26.10

PROPOSED RUSTIC LANDSCAPING TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

CONSTRUCT A HEADWALL OUTLET WITH SCOUR PROTECTION TO COUNCIL'S REQUIREMENTS & MAKE CONNECTION WITH THE PROPOSED STORMWATER CHANNEL AT INVERT IL 25.75.

RL 25.75

RL 25.725

IL 27.50

Ø150 PVC @ 2.04%

Ø150 PVC @ 2.13%

Ø150 PVC @ 2.87%

Ø225 PVC @ 1.02%

PROPOSED 18,200L CORRUGATED METAL COMBINED OSD & RAINWATER TANK 3.

IL 26.60

PIT TO HAVE A SEALED LID

PIT 2
600 x 600
SL 26.60
IL 26.00

IL 25.97

IL 25.97

IL 25.83

2 x Ø300 PVC @ 0.51%

PROPOSED DRIVEWAY CROSSOVER SIZE & LAYOUT TO COMPLY WITH COUNCIL VEHICULAR CROSSING POLICY.

PROPOSED 18,200L CORRUGATED METAL COMBINED OSD & RAINWATER TANK 2.

PIT 5
Ocean Guard
600 x 600
SL 28.00
IL 27.25

PIT 4
600 x 600
SL 27.85
IL 27.05

TOW 27.85
BOW 27.85

PIT 3
600 x 600
SL 27.50
IL 26.20

PIT TO HAVE A SEALED LID

TOW 27.50
BOW 27.00

5x690mm CARTRIDGE MANHOLE STORMFILTER SYSTEM (Ø2.25m INTERNAL). REFER TO SHEETS 104, 105 & 106 FOR MORE DETAILS.

PIT 1
900 x 900
SL 26.60
IL 25.82

PIT TO HAVE A SEALED LID

TOW 26.60
BOW 26.60

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

1
DP 30354

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PENRITH CITY COUNCIL

Scale @ A1
0 4 8 12 m
SCALE 1:200 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
SHEET 1 OF 2

Project No. 19039
Dwg. No. 102
Rev A

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

1% AEP FLOOD LEVEL RL 26.50m AHD

PROPOSED COMPACTED GRAVEL DRIVEWAY TO FOLLOW NATURAL FALL OF EXISTING SITE TOPOGRAPHY. THE NEW ROAD IS TO INCLUDE CAMBER TO ALLOW WATER TO DRAIN OFF & TO ENSURE NO POOLING IN THE CETRE OF DRIVEWAY.

PROPOSED RUSTIC LANDSCAPING TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PROPOSED SEMI PERMEABLE GROUND CARPARK COVERING TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PROPOSED PERMEABLE PATH TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PROPOSED RUSTIC LANDSCAPING TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PROPOSED SEMI PERMEABLE GROUND CARPARK COVERING TO FOLLOW THE NATURAL FALL OF EXISTING SITE TOPOGRAPHY TO MAINTAIN THE SAME BEHAVIOURAL CHARACTERISTICS OF THE 1% AEP FLOOD.

PROPOSED SWALE TO DRAIN THE STORMWATER DISCHARGE OF THE SUBJECT SITE. LEVELS ARE PROVIDED AT 22.5m INTERVALS.

PROPOSED SWALE

BASE WIDTH	1.75m
DEPTH	0.2m
SIDE SLOPE	1 in 4
LENGTH	135m
LONG. SLOPE	0.11%

RL 25.725

RL 25.70

RL 25.675

RL 25.65

RL 25.625

EX 25.60

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

OPEN STYLE FENCING FOR STORMWATER & FLOODING PURPOSES

PROPOSED SEWERAGE STORAGE & ODOUR CONTROL

PROPOSED SWALE TO MATCH EXISTING GROUND LEVELS AT THIS POINT

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N

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ALL PLANS MUST BE PRINTED IN COLOUR & READ PRIOR TO CONSTRUCTION

Issue	Description	Date	Design	Check
A	ISSUE FOR DEVELOPMENT APPLICATION	09/12/2019	MBR	KE

Architect
Killing Matt Woods
1/160 Rochford Street,
Erskineville NSW 2043
EMAIL : solid@killingmattwoods.com
PHONE : 0421 848 462

Client
MKD Cafe Pty Ltd

PENRITH CITY COUNCIL

Scale @ A1
0 4 8 12 m
SCALE 1:200 @ A1

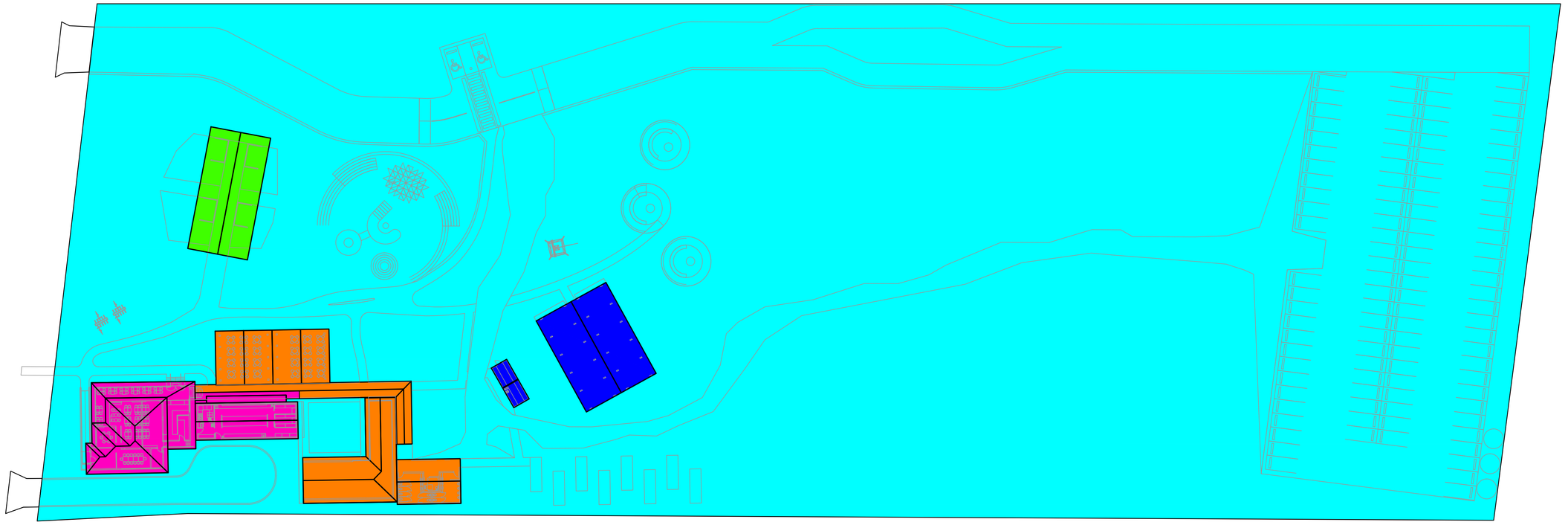
Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
STORMWATER CONCEPT PLAN
SHEET 2 OF 2

Project No. 19039
Dwg. No. 103
Rev A

OSD CATCHMENT LEGEND

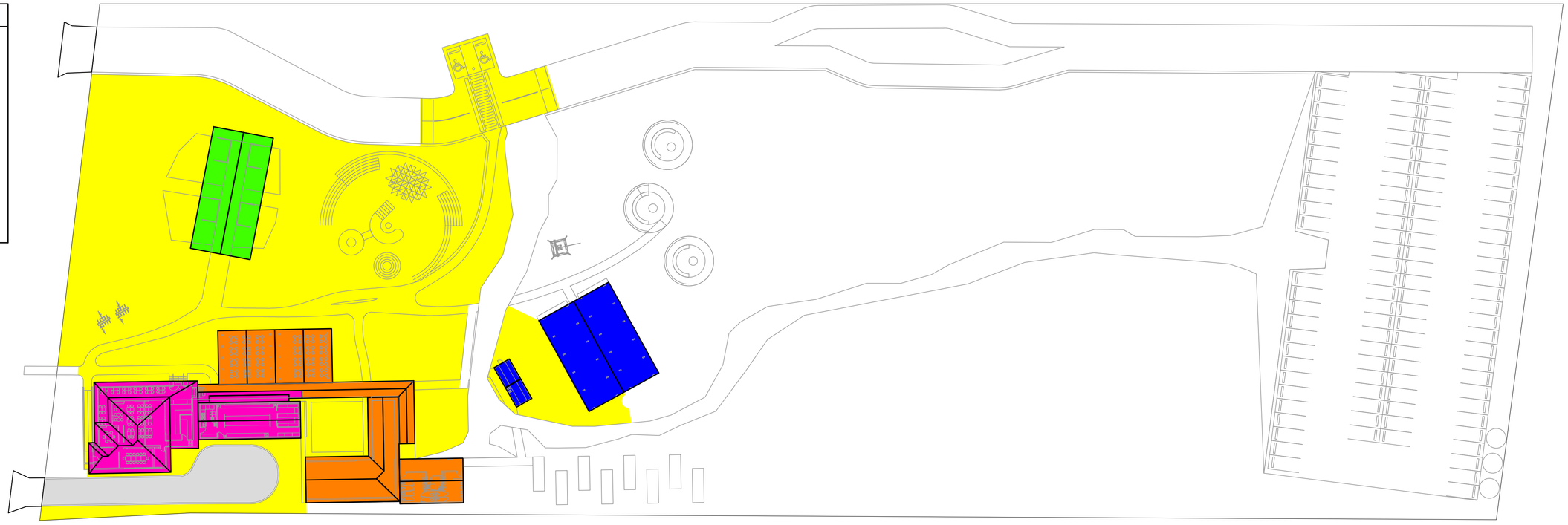
- AREA DRAINING TO OSD 1 = 232.0m^2
- AREA DRAINING TO OSD 2 = 427.5m^2
- AREA DRAINING TO OSD 3 = 565.4m^2
- AREA DRAINING TO OSD 4 = 280.3m^2
- AREA BYPASSING OSD = 21,610.6m^2



OSD CATCHMENT PLAN
SCALE 1:400

WSUD CATCHMENT LEGEND

- ROOF AREA DRAINING TO RWT 1 THEN TO WSUD = 232.0m^2
- ROOF AREA DRAINING TO RWT 2 THEN TO WSUD = 427.5m^2
- ROOF AREA DRAINING TO RWT 3 THEN TO WSUD = 565.4m^2
- ROOF AREA DRAINING TO RWT 4 THEN TO WSUD = 280.3m^2
- GROUND AREA DRAINING TO WSUD = xxx.xm^2
- ROAD AREA DRAINING TO THE WSUD = xxx.xm^2



WSUD CATCHMENT PLAN
SCALE 1:400

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PENRITH CITY COUNCIL

Scale @ A1
0 10 20 30 m
SCALE 1:500 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

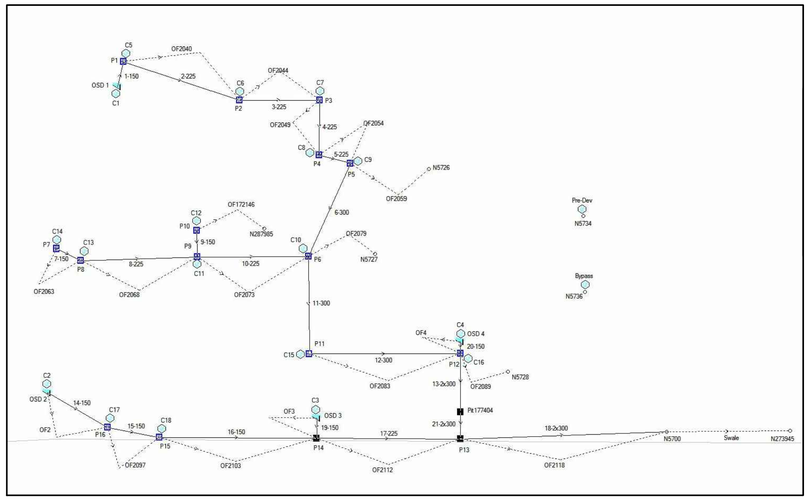
Drawing Title
OSD & WSUD DETAILS
& CALCULATIONS SHEETS
SHEET 1 OF 5

Project No. 19039
Dwg. No. 104
Rev A

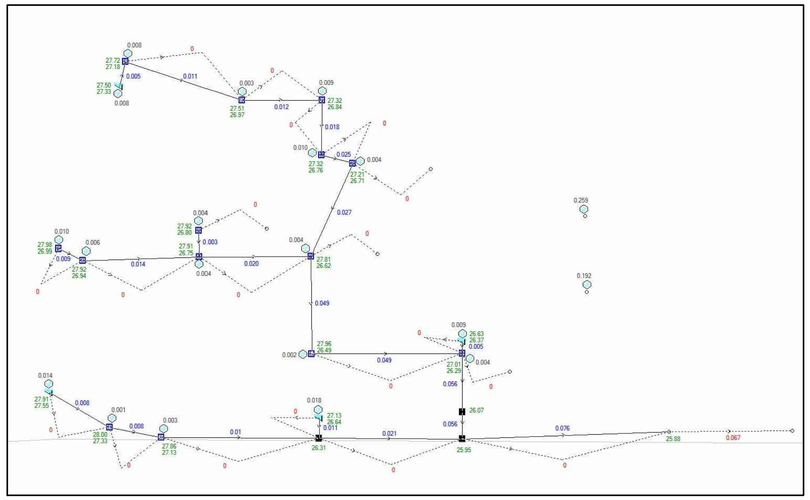
Document Set ID: 8966987
Version: 1, Version Date: 17/12/2019

ON-SITE DETENTION PERFORMANCE SUMMARY

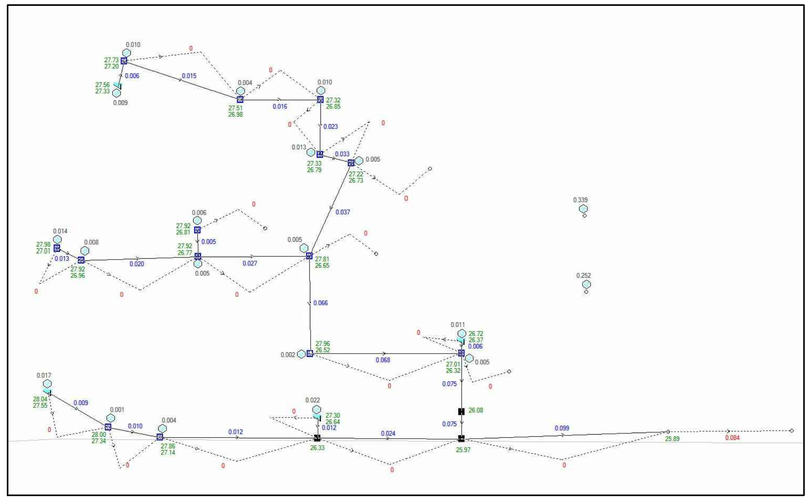
STORM EVENT	PRE-DEVELOPMENT		POST-DEVELOPMENT													
	DISCHARGE (l/s)	DOWNSTREAM WATER LEVEL (m AHD)	ORIFICE 1 DISCHARGE (l/s)	ORIFICE 2 DISCHARGE (l/s)	ORIFICE 3 DISCHARGE (l/s)	ORIFICE 4 DISCHARGE (l/s)	BYPASS FLOWS (l/s)	TOTAL SITE DISCHARGE (l/s)	VOLUME 1 (m^3)	VOLUME 2 (m^3)	VOLUME 3 (m^3)	VOLUME 4 (m^3)	TWL 1 (m AHD)	TWL 2 (m AHD)	TWL 3 (m AHD)	TWL 4 (m AHD)
Q_5	259	26.20	5	8	11	5	230	259	1.51	3.24	4.21	2.17	29.626	29.654	28.932	28.853
Q_{10}	339	26.25	6	9	12	6	303	336	1.98	4.21	5.51	2.82	29.688	29.778	29.096	28.938
Q_{20}	434	26.35	6	11	14	7	391	429	2.46	5.23	6.86	3.50	29.750	29.908	29.267	29.027
Q_{50}	559	26.40	7	12	16	8	508	551	3.09	6.69	8.83	4.53	29.832	30.094	29.516	29.162
Q_{100}	654	26.50	8	13	17	9	597	644	3.66	7.92	10.44	5.32	29.906	30.252	29.720	29.265



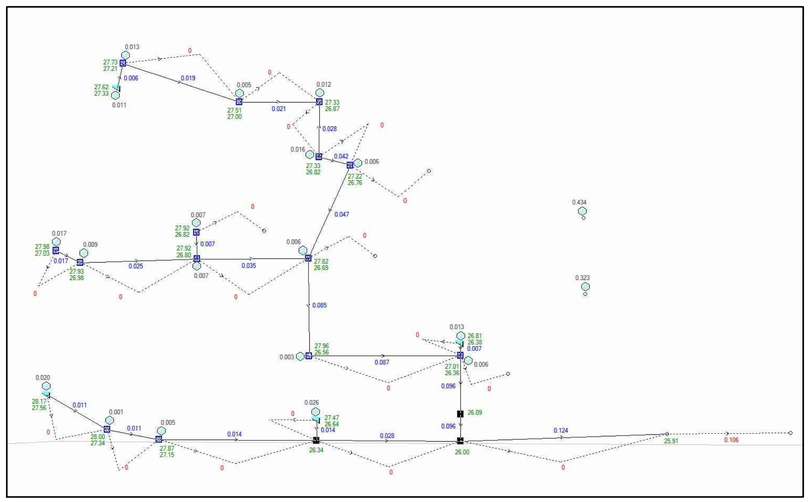
DRAINS WITHOUT RESULTS
N.T.S.



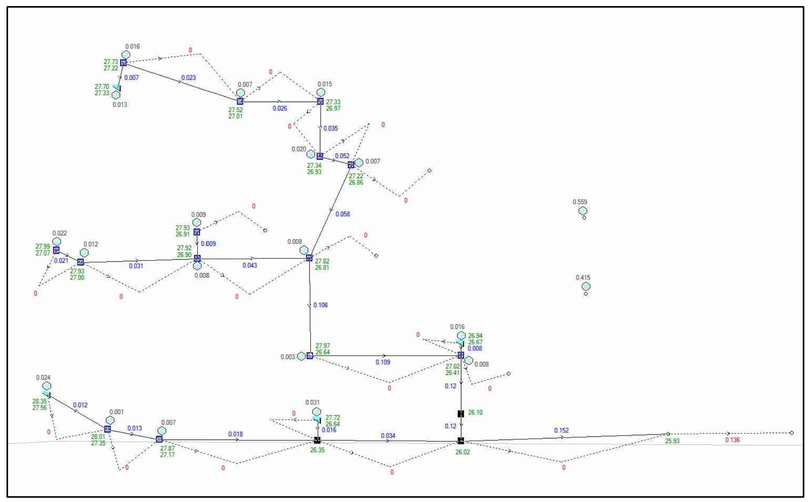
DRAINS RESULTS 5yr
N.T.S.



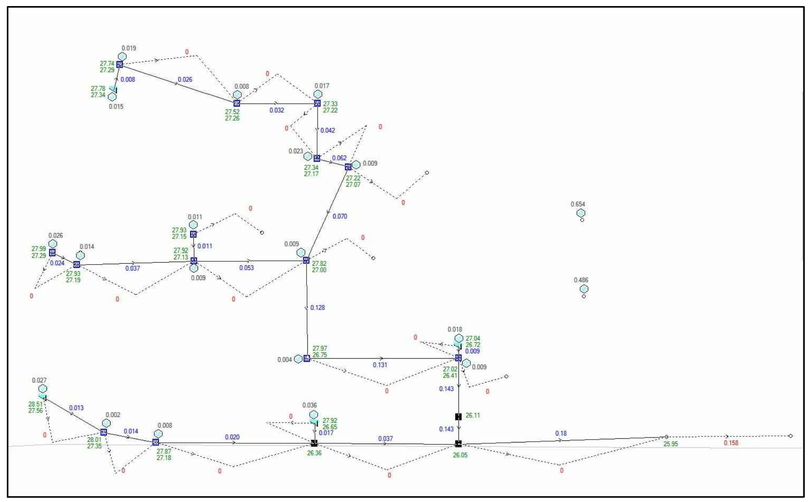
DRAINS RESULTS 10yr
N.T.S.



DRAINS RESULTS 20yr
N.T.S.



DRAINS RESULTS 50yr
N.T.S.



DRAINS RESULTS 100yr
N.T.S.

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Client
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PENRITH CITY COUNCIL

Scale @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
OSD & WSUD DETAILS
& CALCULATIONS SHEETS
SHEET 2 OF 5

Project No. 19039
Dwg. No. 105
Rev A

Document Set ID: 8966987
Version: 1, Version Date: 17/12/2019

ON-SITE DETENTION NOTES

1. THESE PLANS SHALL BE READ IN CONJUNCTION WITH APPROVED ARCHITECTURAL, LANDSCAPE, STRUCTURAL, HYDRAULIC, & OTHER SERVICES DRAWINGS & SPECIFICATIONS. IF THERE EXISTS AND DISCREPANCIES BETWEEN THE DRAWINGS, THE BUILDER SHALL REPORT THE DISCREPANCIES TO THE ENGINEER PRIOR TO COMMENCEMENT OF ANY WORKS.
2. THE OSD BASIN / TANK IS TO BE BUILT TO THE CORRECT LEVELS & SIZE AS PER THIS DESIGN. ANY VARIATIONS ARE TO BE DONE UNDER CONSULTATION FROM OUR OFFICE ONLY. ANY AMENDMENTS WITHOUT OUR APPROVAL WOULD RESULT IN ADDITIONAL FEES FOR REDESIGN AT OC STAGE OR IF A SOLUTION CANNOT BE FOUND, RECONSTRUCTION IS REQUIRED UNDER THE CONTRACTOR'S EXPENSES.

OSD 1 DESIGN PARAMETERS

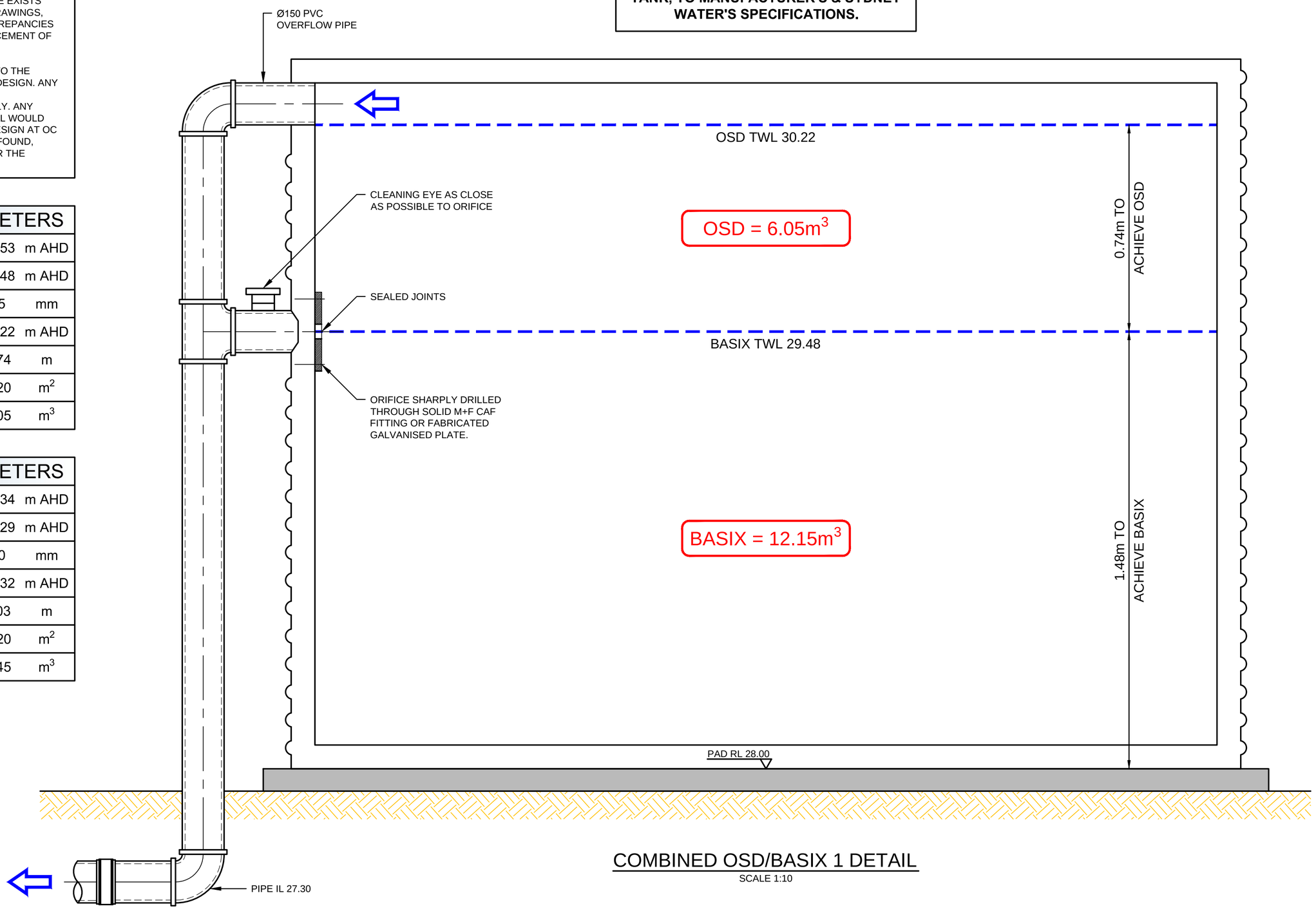
ORIFICE INVERT LEVEL	29.53	m AHD
ORIFICE CENTERLINE	29.48	m AHD
ORIFICE DIAMETER	75	mm
DESIGN TOP WATER LEVEL	30.22	m AHD
HEAD TO ORIFICE	0.74	m
BASE AREA	8.20	m^2
VOLUME PROVIDED	6.05	m^3

OSD 2 DESIGN PARAMETERS

ORIFICE INVERT LEVEL	29.34	m AHD
ORIFICE CENTERLINE	29.29	m AHD
ORIFICE DIAMETER	80	mm
DESIGN TOP WATER LEVEL	30.32	m AHD
HEAD TO ORIFICE	1.03	m
BASE AREA	8.20	m^2
VOLUME PROVIDED	8.45	m^3

COMBINED TANK 1

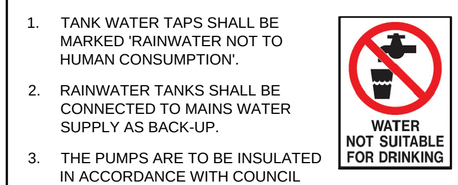
12.15m³ FOR BASIX & EFFECTIVE 6.05m³ FOR OSD. USE 18.2m³ ROUND RAINWATER TANK, TO MANUFACTURER'S & SYDNEY WATER'S SPECIFICATIONS.



COMBINED OSD/BASIX 1 DETAIL
SCALE 1:10

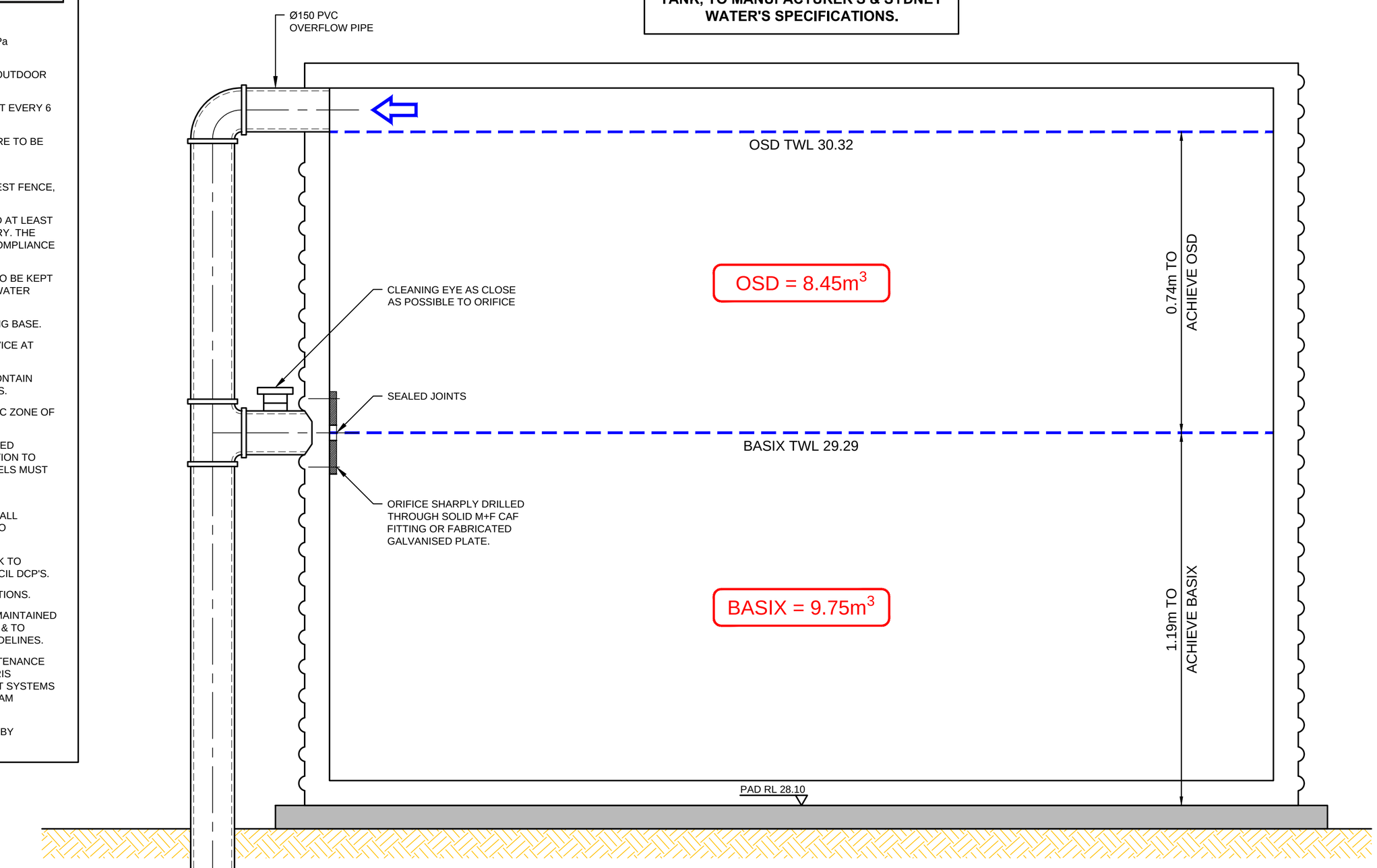
STORAGE TANK NOTES

1. TANK WATER TAPS SHALL BE MARKED 'RAINWATER NOT TO HUMAN CONSUMPTION'.
2. RAINWATER TANKS SHALL BE CONNECTED TO MAINS WATER SUPPLY AS BACK-UP.
3. THE PUMPS ARE TO BE INSULATED IN ACCORDANCE WITH COUNCIL POLICY.
4. PUMPS SHALL PROVIDE MINIMUM 150 kPa PRESSURE.
5. EACH TANK TO BE CONNECTED TO AN OUTDOOR TAP FOR IRRIGATION USE.
6. RAINWATER TANKS TO BE CLEANED OUT EVERY 6 MONTHS.
7. WATER TANK & ASSOCIATED STRUCTURE TO BE THE SAME COLOUR, OR A COLOUR COMPLEMENTARY TO THE DWELLING.
8. TOP TANK TO BE BELOW TOP OF NEAREST FENCE, OR 1.8m WHICHEVER IS LESS.
9. THE WATER TANK SHOULD BE LOCATED AT LEAST 450mm FROM ANY PROPERTY BOUNDARY. THE CLIENT IS RESPONSIBLE TO ENSURE COMPLIANCE WITH THIS IN THE INSTALLED STATE.
10. PLUMBING FROM THE WATER TANK IS TO BE KEPT SEPARATED FROM THE RETICULATED WATER SUPPLY SYSTEM.
11. TANK TO BE BUILT ON SELF-SUPPORTING BASE.
12. PROVIDE BACK-FLOW PREVENTION DEVICE AT MAINS WATER METER.
13. ROOF DRAINING TO TANK MUST NOT CONTAIN LEAD, TAR BASED PAINTS OR ASBESTOS.
14. WATER TO BE DRAWN FROM ANAEROBIC ZONE OF TANK.
15. TANK DETAILS SHOWN ARE A SUGGESTED CONFIGURATION ONLY. ANY MODIFICATION TO TANK VOLUME OR INLET & OUTLET LEVELS MUST BE APPROVED BY ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.
16. ALL JOINTS TO BE SOLVENT WELDED & ALL EXPOSED PIPE WORK TO BE PAINTED TO WITHSTAND EXTERNAL ELEMENTS.
17. FIRST FLUSH WATER DIVERTER AT TANK TO COMPLY WITH SYDNEY WATER & COUNCIL DCP'S.
18. PUMPS TO MANUFACTURER SPECIFICATIONS.
19. RAINWATER TANK TO BE INSTALLED & MAINTAINED TO MANUFACTURER'S SPECIFICATIONS & TO COMPLY WITH ALL SYDNEY WATER GUIDELINES.
20. CLIENT TO BE RESPONSIBLE FOR MAINTENANCE SYSTEM OF CHARGED PIPELINES. DEBRIS ACCUMULATION SIGNIFICANTLY AFFECT SYSTEMS PERFORMANCE. MAINTENANCE PROGRAM ESSENTIAL.
21. STRUCTURAL DETAILS FOR TANK BASE BY MANUFACTURERS OR OTHERS.



COMBINED TANK 2

9.75m³ FOR BASIX & EFFECTIVE 8.45m³ FOR OSD. USE 18.2m³ ROUND RAINWATER TANK, TO MANUFACTURER'S & SYDNEY WATER'S SPECIFICATIONS.



COMBINED OSD/BASIX 2 DETAIL
SCALE 1:10

0 200 400 600mm
SCALE 1:10 @ A1

NOT FOR CONSTRUCTION - DA APPROVAL ONLY

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Issue	Description	Date	Design	Check
A	ISSUE FOR DEVELOPMENT APPLICATION	09/12/2019	MBR	KE

Project: 44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title: OSD & WSUD DETAILS & CALCULATIONS SHEETS
SHEET 3 OF 5

Project No. 19039
Dwg. No. 106
Rev A

ON-SITE DETENTION NOTES

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OSD 3 DESIGN PARAMETERS

ORIFICE INVERT LEVEL	28.50	m AHD
ORIFICE CENTERLINE	28.45	m AHD
ORIFICE DIAMETER	85	mm
DESIGN TOP WATER LEVEL	29.82	m AHD
HEAD TO ORIFICE	1.37	m
BASE AREA	8.20	m^2
VOLUME PROVIDED	11.20	m^3

OSD 4 DESIGN PARAMETERS

ORIFICE INVERT LEVEL	28.67	m AHD
ORIFICE CENTERLINE	28.62	m AHD
ORIFICE DIAMETER	70	mm
DESIGN TOP WATER LEVEL	29.32	m AHD
HEAD TO ORIFICE	0.70	m
BASE AREA	8.20	m^2
VOLUME PROVIDED	5.75	m^3

STORAGE TANK NOTES

1. TANK WATER TAPS SHALL BE MARKED 'RAINWATER NOT TO HUMAN CONSUMPTION'.
2. RAINWATER TANKS SHALL BE CONNECTED TO MAINS WATER SUPPLY AS BACK-UP.
3. THE PUMPS ARE TO BE INSULATED IN ACCORDANCE WITH COUNCIL POLICY.
4. PUMPS SHALL PROVIDE MINIMUM 150 kPa PRESSURE.
5. EACH TANK TO BE CONNECTED TO AN OUTDOOR TAP FOR IRRIGATION USE.
6. RAINWATER TANKS TO BE CLEANED OUT EVERY 6 MONTHS.
7. WATER TANK & ASSOCIATED STRUCTURE TO BE THE SAME COLOUR, OR A COLOUR COMPLEMENTARY TO THE DWELLING.
8. TOP TANK TO BE BELOW TOP OF NEAREST FENCE, OR 1.8m WHICHEVER IS LESS.
9. THE WATER TANK SHOULD BE LOCATED AT LEAST 450mm FROM ANY PROPERTY BOUNDARY. THE CLIENT IS RESPONSIBLE TO ENSURE COMPLIANCE WITH THIS IN THE INSTALLED STATE.
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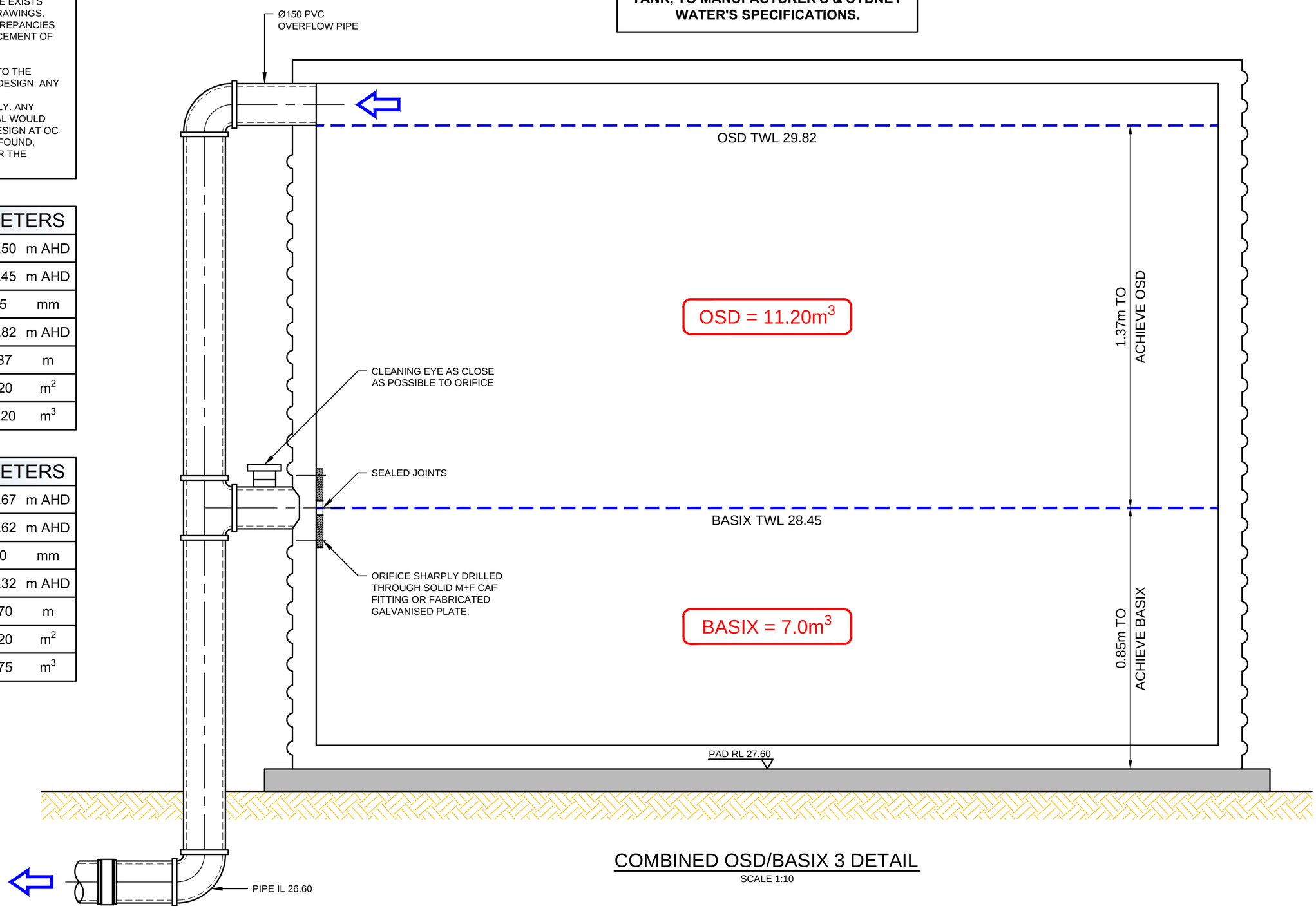
21. STRUCTURAL DETAILS FOR TANK BASE BY MANUFACTURERS OR OTHERS.

WATER NOT SUITABLE FOR DRINKING

COMBINED TANK 3

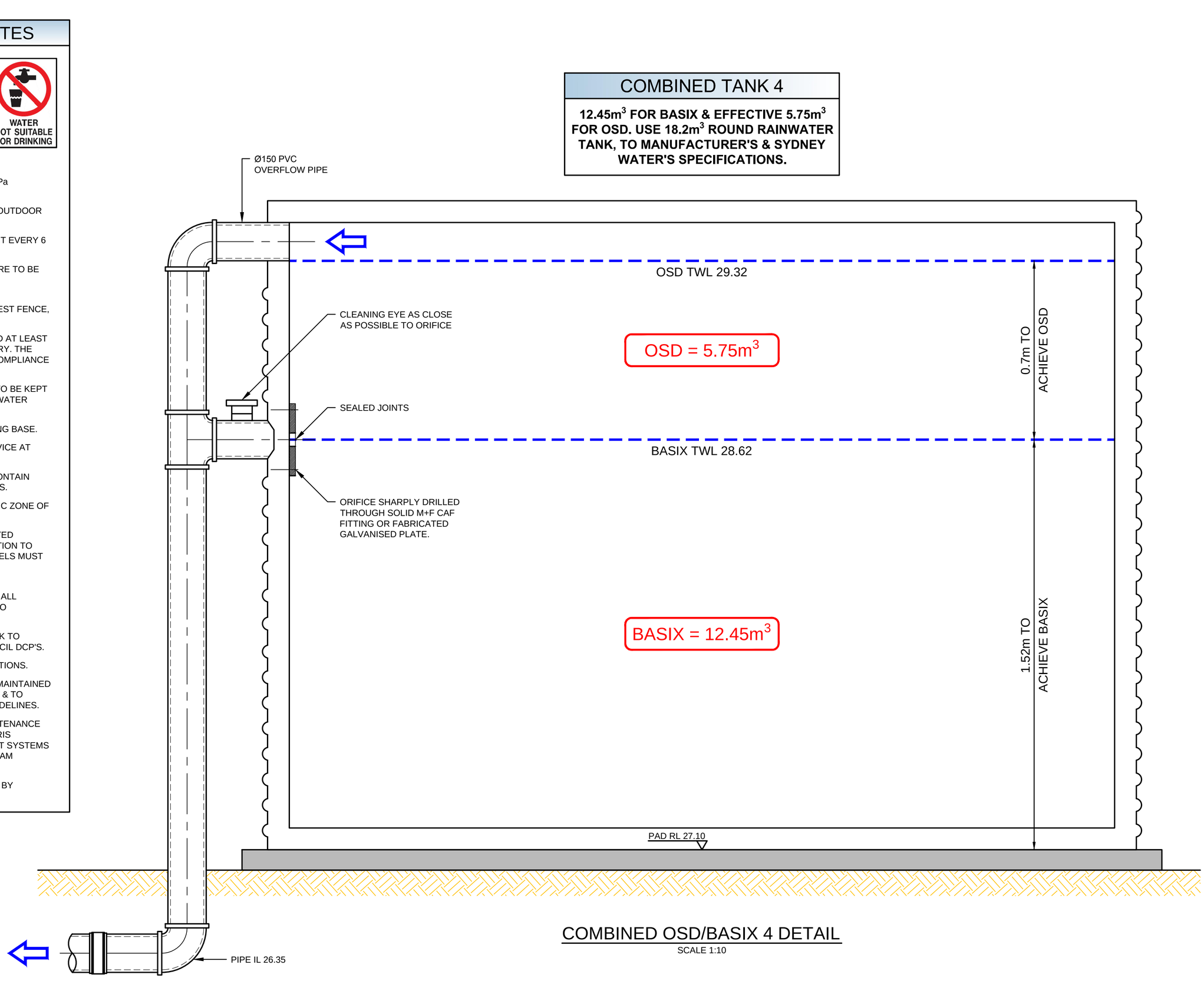
7.0m^3 FOR BASIX & EFFECTIVE 11.2m^3 FOR OSD. USE 18.2m^3 ROUND RAINWATER TANK, TO MANUFACTURER'S & SYDNEY WATER'S SPECIFICATIONS.



COMBINED OSD/BASIX 3 DETAIL
SCALE 1:10

COMBINED TANK 4

12.45m^3 FOR BASIX & EFFECTIVE 5.75m^3 FOR OSD. USE 18.2m^3 ROUND RAINWATER TANK, TO MANUFACTURER'S & SYDNEY WATER'S SPECIFICATIONS.



COMBINED OSD/BASIX 4 DETAIL
SCALE 1:10

0 200 400 600mm
SCALE 1:10 @ A1

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Project: 44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title: OSD & WSUD DETAILS & CALCULATIONS SHEETS
SHEET 4 OF 5

Project No. 19039
Dwg. No. 107
Rev A

ON-SITE DETENTION NOTES

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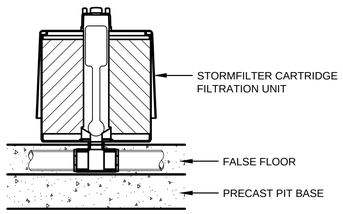
OCEAN PROTECT NOTES

1. PRECAST STRUCTURE SUPPLIED WITH CORE HOLES TO SUIT OUTER DIAMETER OF NOMINATED PIPE SIZE / MATERIAL.
2. IF THE PEAK FLOW RATE, AS DETERMINED BY THE SITE CIVIL ENGINEER, EXCEEDS THE PEAK HYDRAULIC CAPACITY OF THE PRODUCT, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.
3. PRECAST STRUCTURE SHALL MEET W80 WHEEL LOAD RATING ASSUMING A MAXIMUM EARTH COVER OF 2.0m & A GROUND WATER ELEVATION AT OR BELOW THE OUTLET PIPE INVERT ELEVATION. CERTIFYING ENGINEER TO CONFIRM ACTUAL GROUNDWATER ELEVATION. PRECAST STRUCTURE SHALL BE IN ACCORDANCE WITH AS3600.
4. ALL WATER QUALITY TREATMENT DEVICES REQUIRE PERIODIC MAINTENANCE AS OUTLINED IN THE O&M GUIDELINES.
5. SITE SPECIFIC PRODUCTION DRAWING WILL BE PROVIDED ON PLACEMENT OF ORDER.
6. ANY BACKFILL DEPTH, SUB-BASE, & OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS & SHALL BE SPECIFIED BY SITE CIVIL ENGINEER.
7. CONTRACTOR TO PROVIDE ALL EQUIPMENT WITH SUFFICIENT LIFTING & REACH CAPACITY TO LIFT & SET THE STORMFILTER STRUCTURE (LIFTING DETAIL PROVIDED SEPARATELY).
8. CONTRACTOR TO APPLY SEALANT TO ALL JOINTS & TO PROVIDE, INSTALL & GROUT INLET & OUTLET PIPES.



SYSTEM HYDRAULIC DROP CARTRIDGE FLOW RATE
N.T.S.

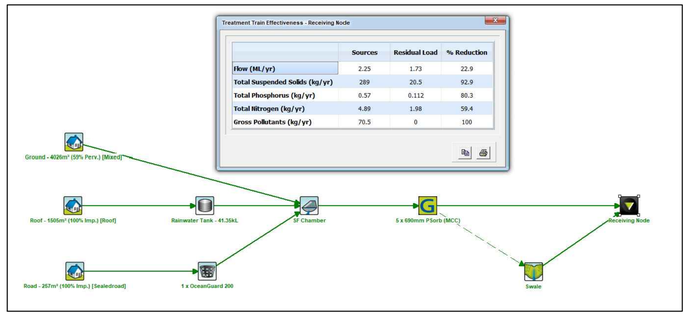
CONFINED SPACE DANGER SIGN

1. A CONFINED SPACE DANGER SIGN SHALL BE POSITIONED IN A LOCATION AT ALL ACCESS POINTS, SUCH THAT IT IS CLEARLY VISIBLE TO PERSONS PROPOSING TO ENTER THE BELOW GROUND TANK/S CONFINED SPACE.
2. MINIMUM DIMENSIONS OF THE SIGN - 300mm x 450mm (LARGE ENTRIES, SUCH AS DOORS) -250mm x 180mm (SMALL ENTRIES SUCH AS GRATES & MANHOLES).
3. THE SIGN SHALL BE MANUFACTURED FROM COLOUR BONDED ALUMINUM OR POLYPROPYLENE.
4. SIGN SHALL BE AFFIXED USING SCREWS AT EACH CORNER OF THE SIGN.
5. COLOURS:
   "DANGER" & BACKGROUND = WHITE
   ELLIPTICAL AREA = RED
   RECTANGLE CONTAINING ELLIPSE = BLACK
   BORDER AND OTHER LETTERING = BLACK

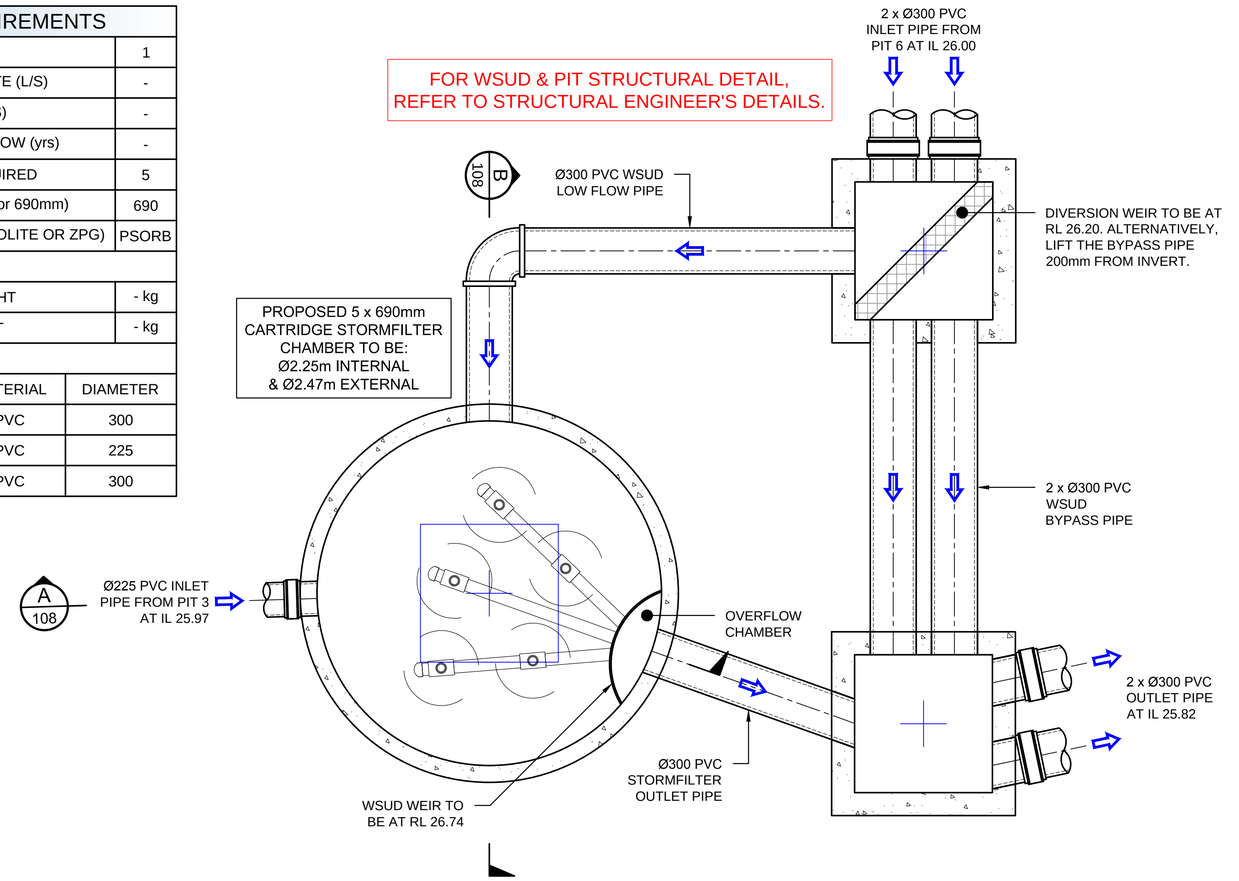
WSUD DATA REQUIREMENTS

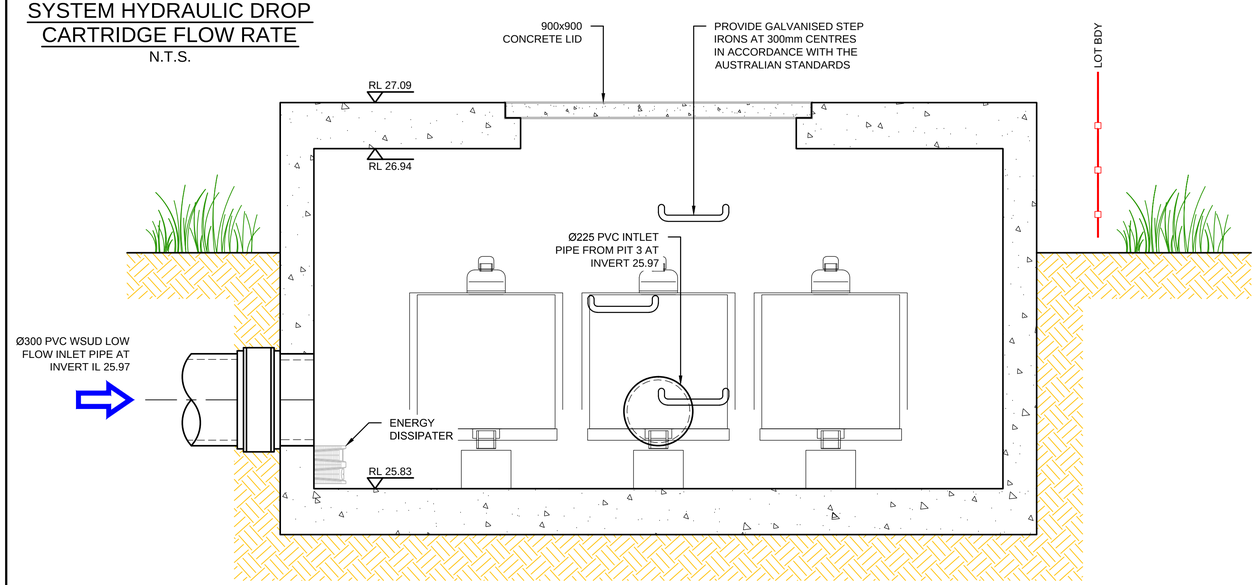
STRUCTURE ID	1
WATER QUALITY FLOW RATE (L/S)	-
PEAK FLOW RATE (L/S)	-
RETURN PERIOD OF PEAK FLOW (yrs)	-
No OF CARTRIDGES REQUIRED	5
CARTRIDGE HEIGHT (310, 460 or 690mm)	690
MEDIA TYPE (PERLITE, PERLITE/ZEOLITE OR ZPG)	PSORB
PRECAST VAULT WEIGHT	- kg
PRECAST LID WEIGHT	- kg

PIPE DATA	INVERT IL	MATERIAL	DIAMETER
INLET PIPE 1	25.97	PVC	300
INLET PIPE 2	25.97	PVC	225
OUTLET PIPE	25.83	PVC	300



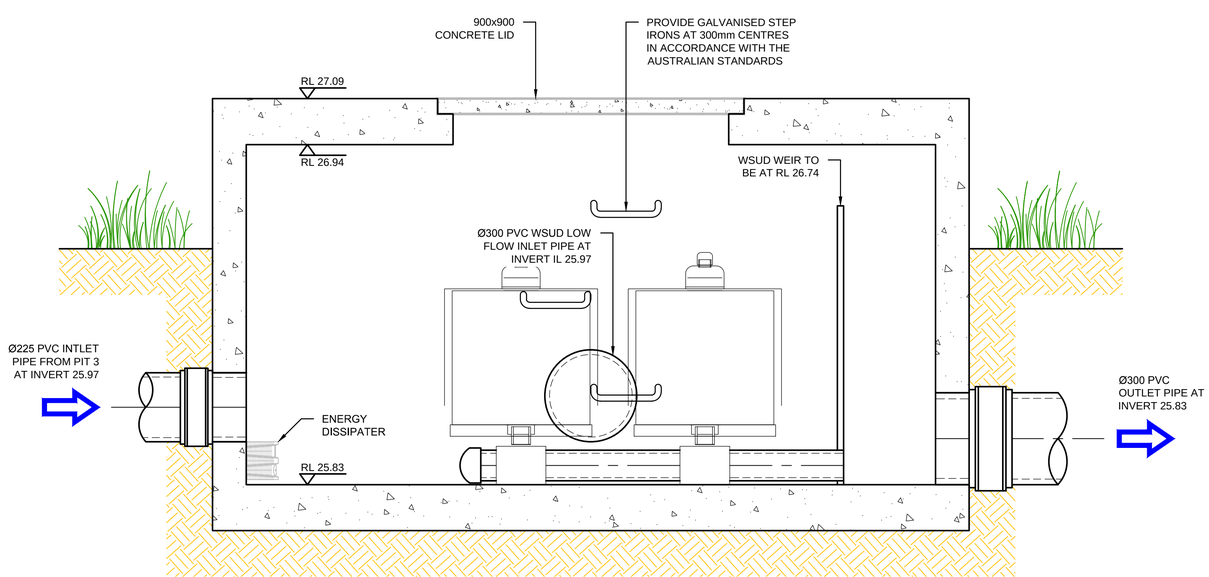
WSUD RESULTS
N.T.S.





FOR WSUD TANK STRUCTURAL DETAIL, REFER TO STRUCTURAL ENGINEER'S DETAILS.

SECTION B
WSUD STORMFILTER MANHOLE DETAIL
SCALE 1:10



SECTION A
WSUD STORMFILTER MANHOLE DETAIL
SCALE 1:10

NOT FOR CONSTRUCTION - DA APPROVAL ONLY

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ABN: 61 625 079 923
ACN: 625 079 923

ALL PLANS MUST BE PRINTED IN COLOUR & READ PRIOR TO CONSTRUCTION

Issue	Description	Date	Design	Check
A	ISSUE FOR DEVELOPMENT APPLICATION	09/12/2019	MBR	KE

Architect
Killing Matt Woods
1/160 Rochford Street,
Erskineville NSW 2043
EMAIL : solid@killingmattwoods.com
PHONE : 0421 848 462

Client
MKD Cafe Pty Ltd

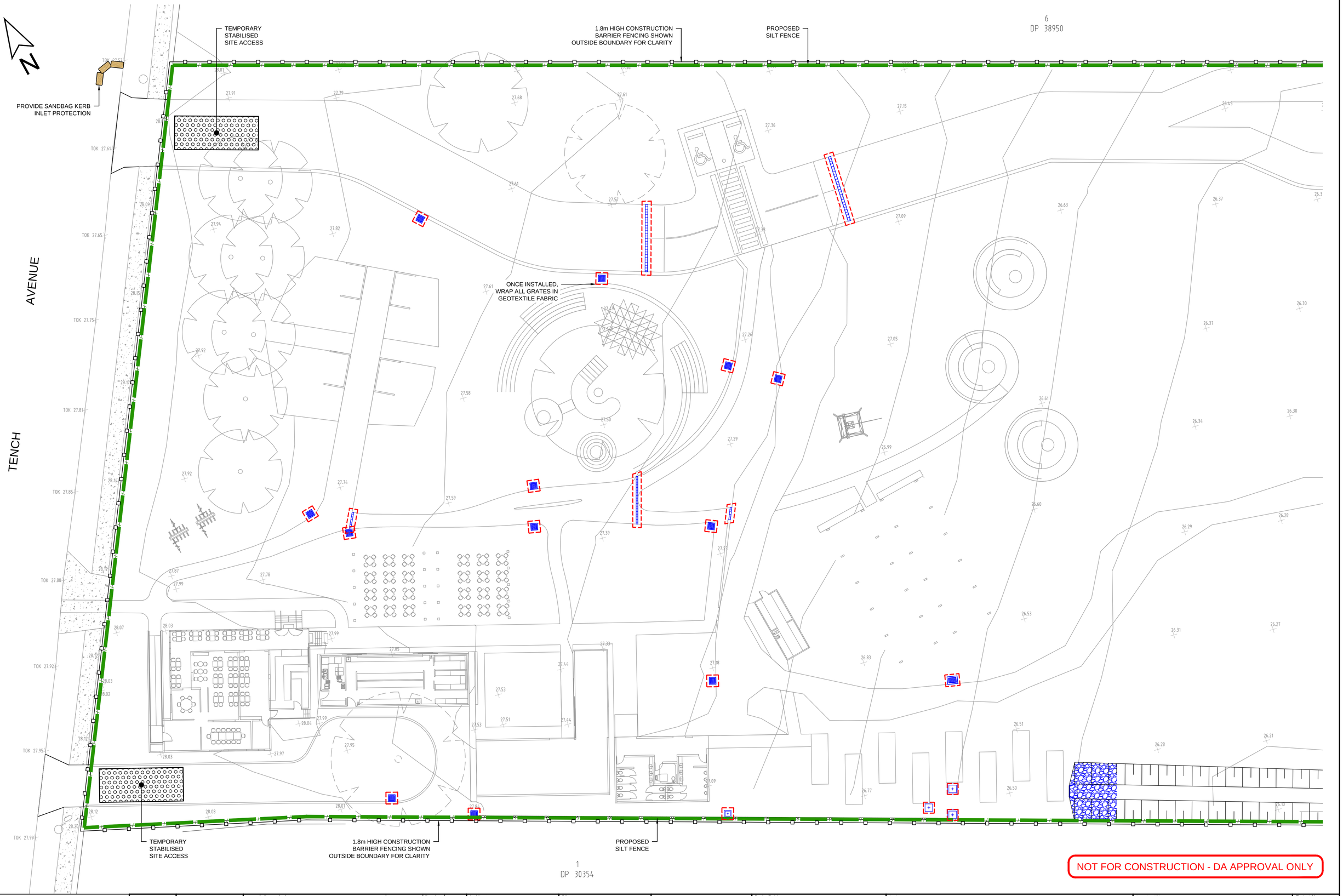
PENRITH CITY COUNCIL

Scale @ A1
0 200 400 600mm
SCALE 1:10 @ A1
0 0.2 0.4 0.6 0.8 1.0 1.2m
SCALE 1:25 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
OSD & WSUD DETAILS
& CALCULATIONS SHEETS
SHEET 5 OF 5

Project No. 19039
Dwg. No. 108
Rev A



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Erskineville NSW 2043
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PHONE : 0421 848 462

Client
MKD Cafe Pty Ltd

PENRITH CITY COUNCIL

Scale @ A1
0 4 8 12 m
SCALE 1:200 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
SEDIMENT & EROSION
CONTROL PLAN
SHEET 1 OF 2

Project No. 19039
Dwg. No. 109
Rev A

1.8m HIGH CONSTRUCTION BARRIER FENCING SHOWN OUTSIDE BOUNDARY FOR CLARITY

PROPOSED SILT FENCE

N

LEGEND

- EXISTING SEWER MAIN (FROM RECORDS) — S
- EXISTING CONTOUR — 26.45
- EXISTING SURFACE LEVEL — NS 26.45
- SILT FENCE
- STABILISED SITE ACCESS
- 1.8 HIGH CONSTRUCTION BARRIER FENCING
- TREES TO BE RETAINED
- TREES TO BE REMOVED
- INLET PROTECTION

1.8m HIGH CONSTRUCTION BARRIER FENCING SHOWN OUTSIDE BOUNDARY FOR CLARITY

PROPOSED SILT FENCE

NOT FOR CONSTRUCTION - DA APPROVAL ONLY

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Client
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PENRITH CITY COUNCIL

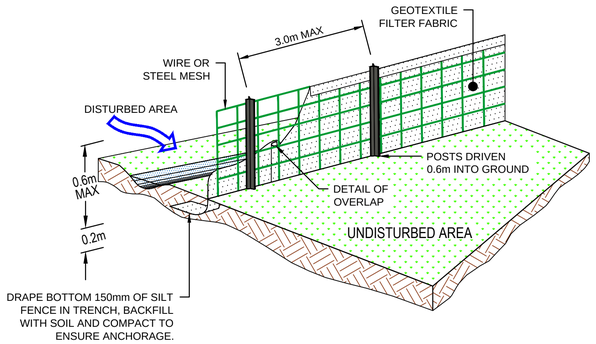
Scale @ A1
0 4 8 12 m
SCALE 1:200 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
SEDIMENT & EROSION CONTROL PLAN
SHEET 2 OF 2

Project No. 19039
Dwg. No. 110
Rev A

Document Set ID: 8966987
Version: 1, Version Date: 17/12/2019

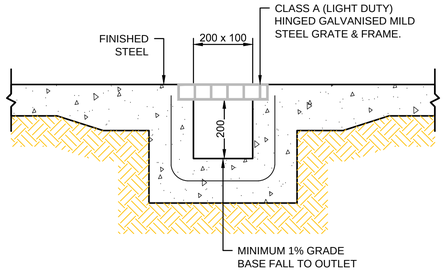


SILT FENCE DETAIL

N.T.S

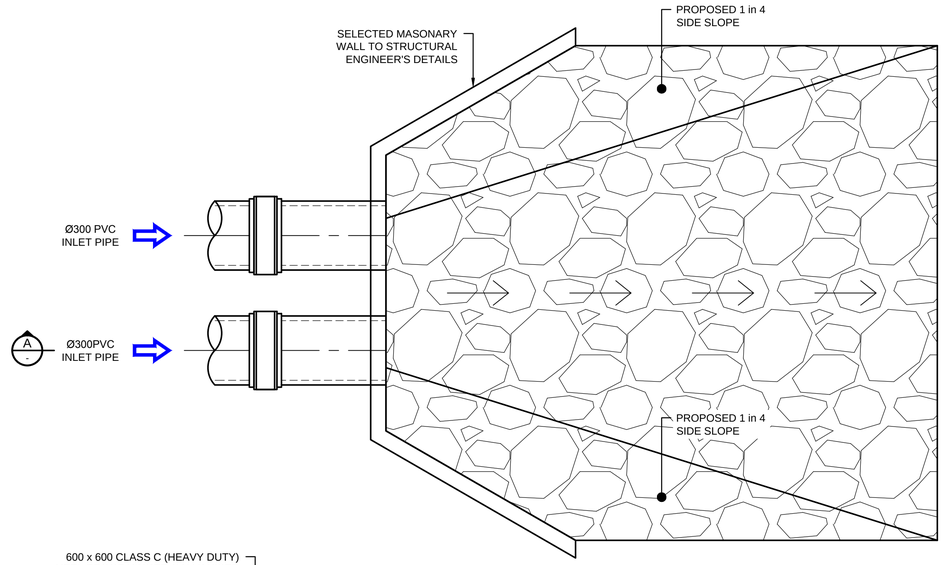
SILT FENCE NOTES

1. FILTER CLOTH TO BE FASTENED SECURELY TO POSTS WITH GALVANISED WIRE TIES, STAPLES OR ATTACHMENT BELTS.
2. POSTS SHOULD NOT BE SPACED MORE THAN 3.0m APART.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER, THEY SHALL BE OVERLAPPED BY 150mm & FOLDED.
4. FOR EXTRA STRENGTH TO SILT FENCE, WOVEN WIRE (14mm GAUGE, 150mm MESH SPACING) TO BE FASTENED SECURELY BETWEEN FILTER CLOTH & POSTS BY WIRE TIES OR STAPLES.
5. INSPECTIONS SHALL BE PROVIDED ON A REGULAR BASIS, ESPECIALLY AFTER RAINFALL & EXCESSIVE SILT DEPOSITS REMOVED WHEN "BULGES" DEVELOP IN SILT FENCE.
6. SEDIMENT FENCES SHALL BE CONSTRUCTED WITH SEDIMENT TRAPS & EMERGENCY SPILLWAYS AT SPACING NO GREATER THAN 40m ON FLAT TERRAIN DECREASING TO 20m SPACING ON STEEP TERRAIN.



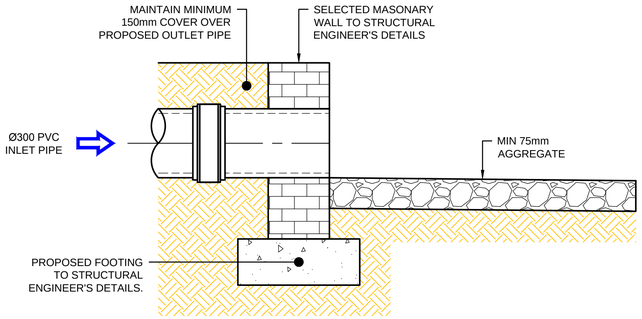
GRATED TRENCH DRAIN DETAIL

SCALE 1:20



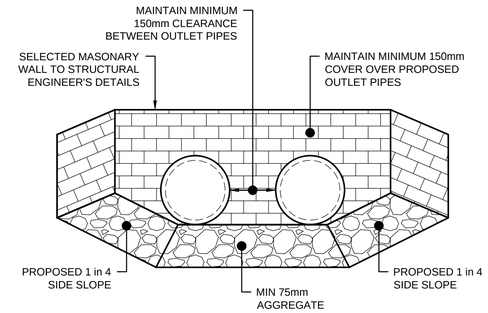
HEADWALL PLAN VIEW

SCALE 1:10



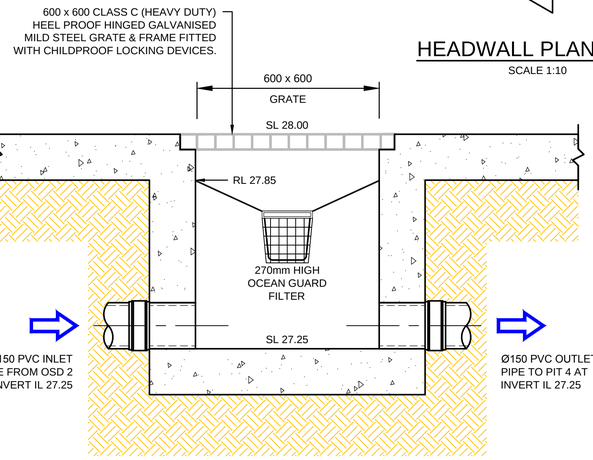
HEADWALL SECTION A

SCALE 1:10



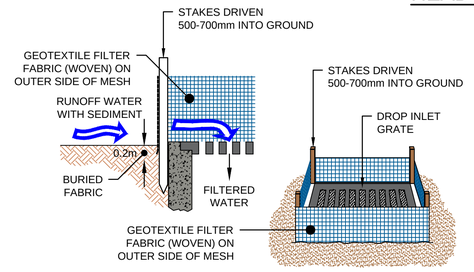
HEADWALL FRONT VIEW

SCALE 1:10



PIT 5
DROP PIPE OCEAN GUARD CONFIGURATION SECTION

SCALE 1:10

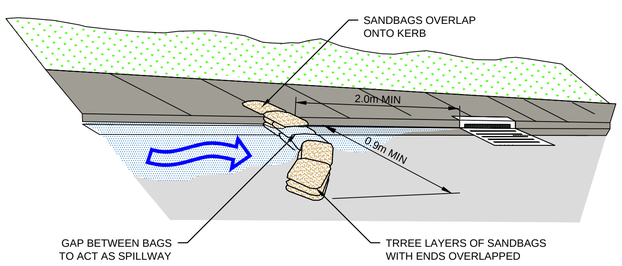


FIELD INLET SEDIMENT TRAP

N.T.S.

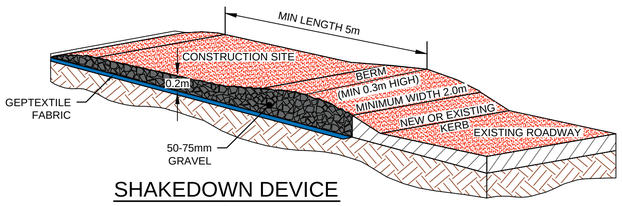
CONSTRUCTION NOTES

1. SUBGRADE FILL TO BE COMPACTED TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL.
2. ENSURE THAT CONCRETE OR RIPRAP USED FOR ENERGY DISSIPATER OR OUTLET PROTECTION CONFORMS TO THE GRADING LIMITS SPECIFIED ON THE SWMP/ESCF.
3. ENSURE THAT THE GEOTEXTILE DOES NOT SUSTAIN SERIOUS DAMAGE BY PREPARING A SMOOTH, EVEN FOUNDATION.
4. REPAIR MINOR DAMAGE TO THE GEOTEXTILE BEFORE SPREADING ANY AGGREGATE, FOR REPAIRS PATCH ONE PIECE OF FABRIC OVER THE DAMAGE MAKING SURE THAT ALL JOINTS & PIECES OVERLAP MORE THAN 300mm.



KERB INLET PROTECTION - ON GRADE GULLY PIT

N.T.S.

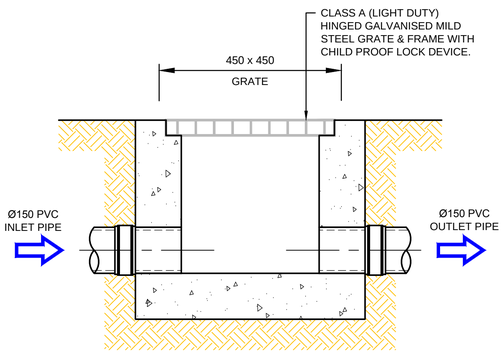


SHAKEDOWN DEVICE

N.T.S.

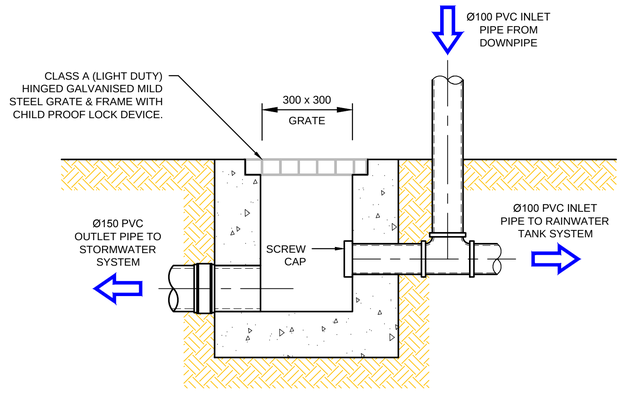
MAINTENANCE NOTES:

THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND & REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.



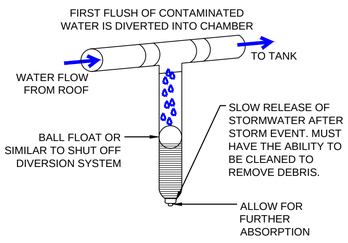
TYPICAL GRATED INLET PIT DETAIL

SCALE 1:10



CLEANING EYE DETAIL

SCALE 1:10



FIRST FLUSH WATER DIVERTER DETAIL

N.T.S.

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Erskineville NSW 2043
EMAIL : solid@killingmattwoods.com
PHONE : 0421 848 462

Client
MKD Cafe Pty Ltd

PENRITH CITY COUNCIL

Scale @ A1
0 200 400 600mm
SCALE 1:10 @ A1
0 400 800 1200 mm
SCALE 1:20 @ A1

Project
44-50 TENCH AVENUE, JAMISONTOWN
PROPOSED MUD MAP: THE ORANGE GROVE
STORMWATER CONCEPT PLAN
DEVELOPMENT APPLICATION

Drawing Title
MISCELLANEOUS
DETAILS SHEET

Project No. 19039
Dwg. No. 113
Rev A

Document Set ID: 8966987
Version: 1, Version Date: 17/12/2019

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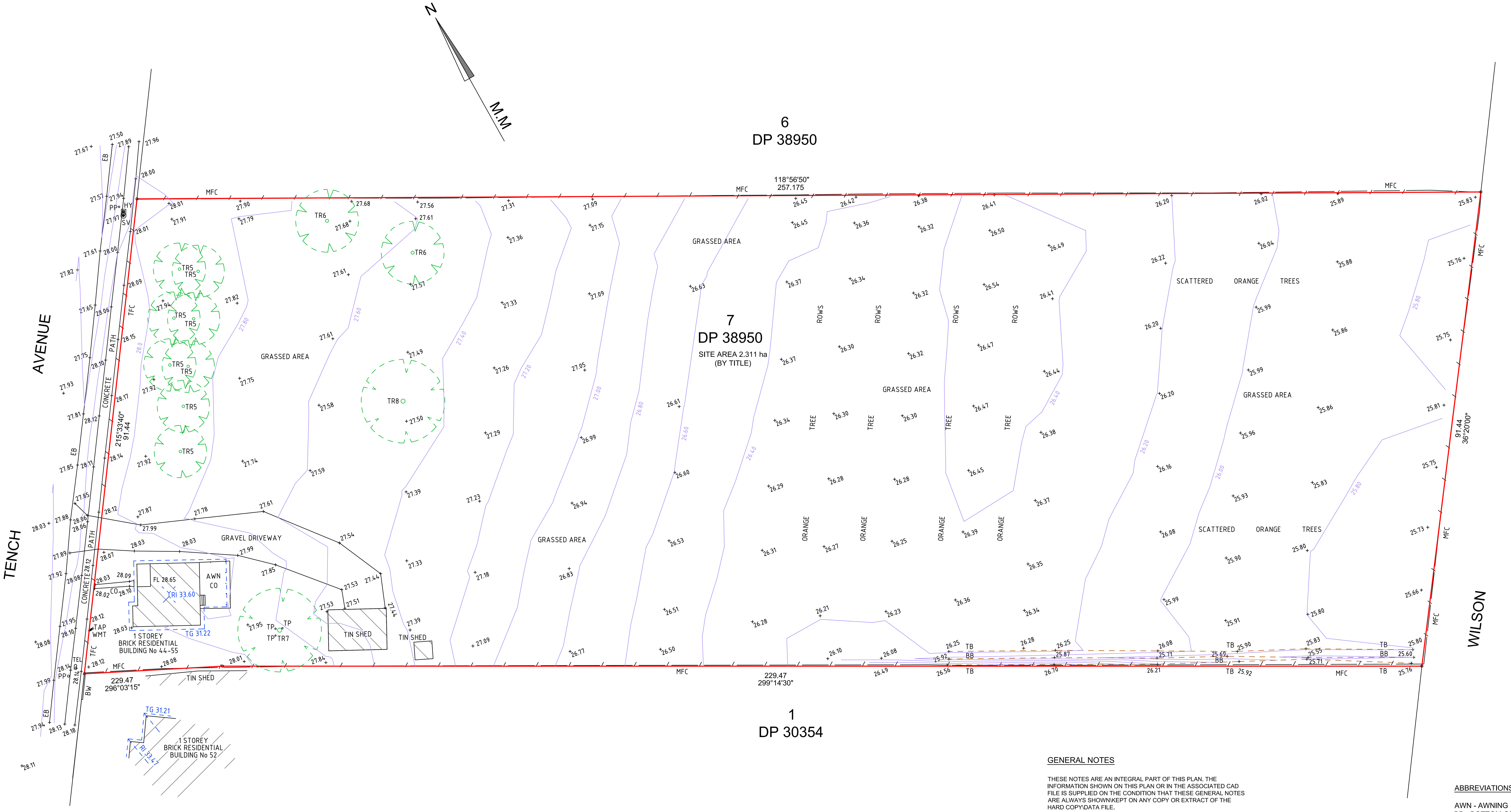
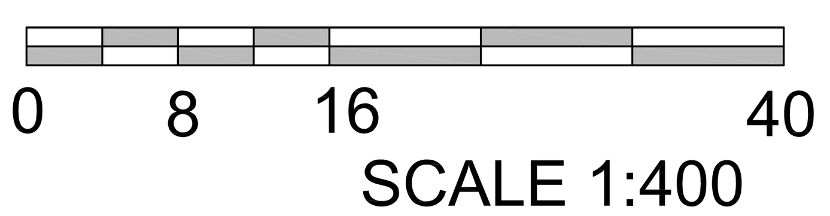
Appendix D

Survey Plan Prepared by WumaraGroup





GENERAL NOTES

THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN. THE INFORMATION SHOWN ON THIS PLAN OR IN THE ASSOCIATED CAD FILE IS SUPPLIED ON THE CONDITION THAT THESE GENERAL NOTES ARE ALWAYS SHOWN\KEPT ON ANY COPY OR EXTRACT OF THE HARD COPY\DATA FILE.

SURVEY HAS BEEN UNDERTAKEN IN A MANNER SUFFICIENT TO IDENTIFY BOUNDARIES.
BOUNDARY LOCATION & DIMENSIONS HAVE BEEN IDENTIFIED FROM SURVEY MEASUREMENTS & PLANS OBTAINED FROM NSW LAND REGISTRY SERVICES.

ANY CONSTRUCTION OR WORKS RELYING ON CRITICAL SETBACKS FROM BOUNDARIES WILL REQUIRE ADDITIONAL BOUNDARY SURVEY & PLACEMENT OF BOUNDARY/SETOUT MARKS PRIOR TO COMMENCEMENT OF ANY WORKS.
WUMARA GROUP WILL NOT BE HELD RESPONSIBLE FOR ANY ISSUES RESULTING FROM NON COMPLIANCE WITH THIS ADVICE.

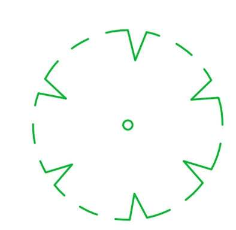
NO EASEMENTS BURDENING THE SUBJECT LAND ARE NOTED ON THE SUBJECT CERTIFICATE OF TITLES AS AT 16-07-2019.

THE RECORDS OF THE SERVICE AUTHORITIES HAVE NOT BEEN INVESTIGATED. ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN SHOWN

LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (AHD) THE ORIGIN OF WHICH IS SSM 101898 RL 28.592 AHD (SOURCE: NSW SPATIAL SERVICES).

ABBREVIATIONS

AWN - AWNING
BB - BOTTOM OF BANK
BW - BRICK WALL
CO - CONCRETE
EB - EDGE OF BITUMEN
FL - FLOOR LEVEL
GP - GRATED PIT
HY - HYDRANT
MFC - METAL WIRED FENCE
PP - POWER POLE
RI - ROOF RIDGE
SV - STOP VALVE
TB - TOP OF BANK
TEL - TELECOMMUNICATION PIT
TFC - TIMBER FENCE
TG - TOP OF GUTTER
TP - TIMBER POST
WMT - WATER METER



TR3 : TREE APPROX. 0.3Ø TRUNK 6 SPREAD & HEIGHT
TR5 : TREE APPROX. 0.5Ø TRUNK 10 SPREAD & HEIGHT
TR6 : TREE APPROX. 0.6Ø TRUNK 12 SPREAD & HEIGHT
TR8 : TREE APPROX. 0.8Ø TRUNK 16 SPREAD & HEIGHT

WumaraGroup
A: 13 Woodville Street, Glenbrook, NSW, 2773
E: info@wumaragroup.com.au P: 0430 172127

DATE	REV	COMMENTS

PLAN PREPARED FOR:

MKT CAFE PTY LTD

DATUM : A.H.D	SCALE : 1:400 @ A1	DATE : 16-07-2019
ORIGIN OF LEVELS : SSM 101898	LOCALITY : JAMISONTOWN	SURVEY : DF DB
CONTOUR INTERVAL : 0.2m	LGA : PENRITH	DRAWN : DF
SHEET No. 1 OF 1	REF : 130719A	CHECKED : DM

DESCRIPTION:

PLAN SHOWING SELECT FEATURES & LEVELS

LOT 7 IN DP 38950
BEING No. 44-50 TRENCH AVENUE, JAMISONTOWN, NSW

Document Set ID: 8966987
Version: 1, Version Date: 17/12/2019