NORTHROP

CIVIL

Flood Risk Assessment

for

25-27 Boyd Street, Tweed Heads 2291

for Homes NSW

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Acronyms

AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ALS	Airborne Laser Survey (LiDAR)
ARI	Average Recurrence Interval
ARR	Australian Rainfall and Runoff 2019
BoM	Bureau of Meteorology
DCP	Development Control Plan
DTM	Digital Elevation Model
FPL	Flood Planning Level
LGA	Local Government Area
LiDAR	Light Detection and Ranging (also see ALS)
m	Measure of length / height / distance (metres)
m AHD	Meters above Australian High Datum
m/s	Measure of velocity (metres per second)
m^3/s	Measure of flow rate (cubic metres per second)
PMF	Probable Maximum Flood
PMP	Probable Maximum Precipitation
TSC	Tweed Shire Council
TUFLOW	Two-dimensional hydraulic modelling software

Introduction

Northrop Consulting Engineers have been engaged by Homes NSW to prepare a Flood Risk Assessment for the proposed development at 25-27 Boyd Street, Tweed Heads, herein referred to as the subject site or the site.

This flood risk assessment aims to consider the existing flood risk, and likely changes to that risk due to the proposed development.

This assessment has been prepared with the consideration of the following guidelines and documents:

- Tweed Shire Council Property Flood Report contained within Appendix A.
- Tweed Valley Flood Study Update and Expansion (August WMA Water August 2024) and previous flood studies including Tweed Valley Flood Study Update 2009 and Tweed Byron Coastal Creeks Flood Study 2010 (BMT WBM).
- Industry Specific SEARs
- Flood risk management manual (NSW Government 2023).
- Architectural Drawings prepared by CKDS and dated the 28th May 2025.

This report has been prepared for the purpose of SSDA submission. A summary of compliance with the SEARs and report references are summarised below in Table 1.

Table 1 - SEARs Summary

Item	Requirement	Response
15	Identify any flood risk on-site having regard to adopted flood studies, the potential effects of climate change, and any relevant provisions of the NSW Flood Risk Management Manual. Where the development could alter flood behaviour, affect flood risk to the existing community or expose its users to flood risk, provide a flood impact and risk assessment (FIRA) prepared in accordance with the Flood Impact and Risk Assessment – Flood Risk Management Guide LU01. Detail design solutions and operational procedures to mitigate flood risk where required.	It was concluded that the proposed development will not create any significant adverse impacts to flood behaviour on the subject site and on the properties surrounding the subject site. Furthermore, flood risk in the developed case has been adequately managed through the selection of floor levels, implementation of flood protection measures and provision of offsite evacuation opportunities. A Flood Emergency Response Plan (FERP) has been prepared to manage the risk to life.

Methodology

This flood risk assessment has been undertaken using the following procedure:

- Review Council Property Flood Report.
- Desktop review of all available information including design plans and latest survey data.
- Assessment of existing and developed flood risk.

Subject Site and Proposed Development

Subject Site

The proposal encompasses the development of 25-27 Boyd Street, Tweed Heads (Lot 1 DP843470) herein known as the Site.

The site has a total lot area of 2,025m^2 and is currently cleared.

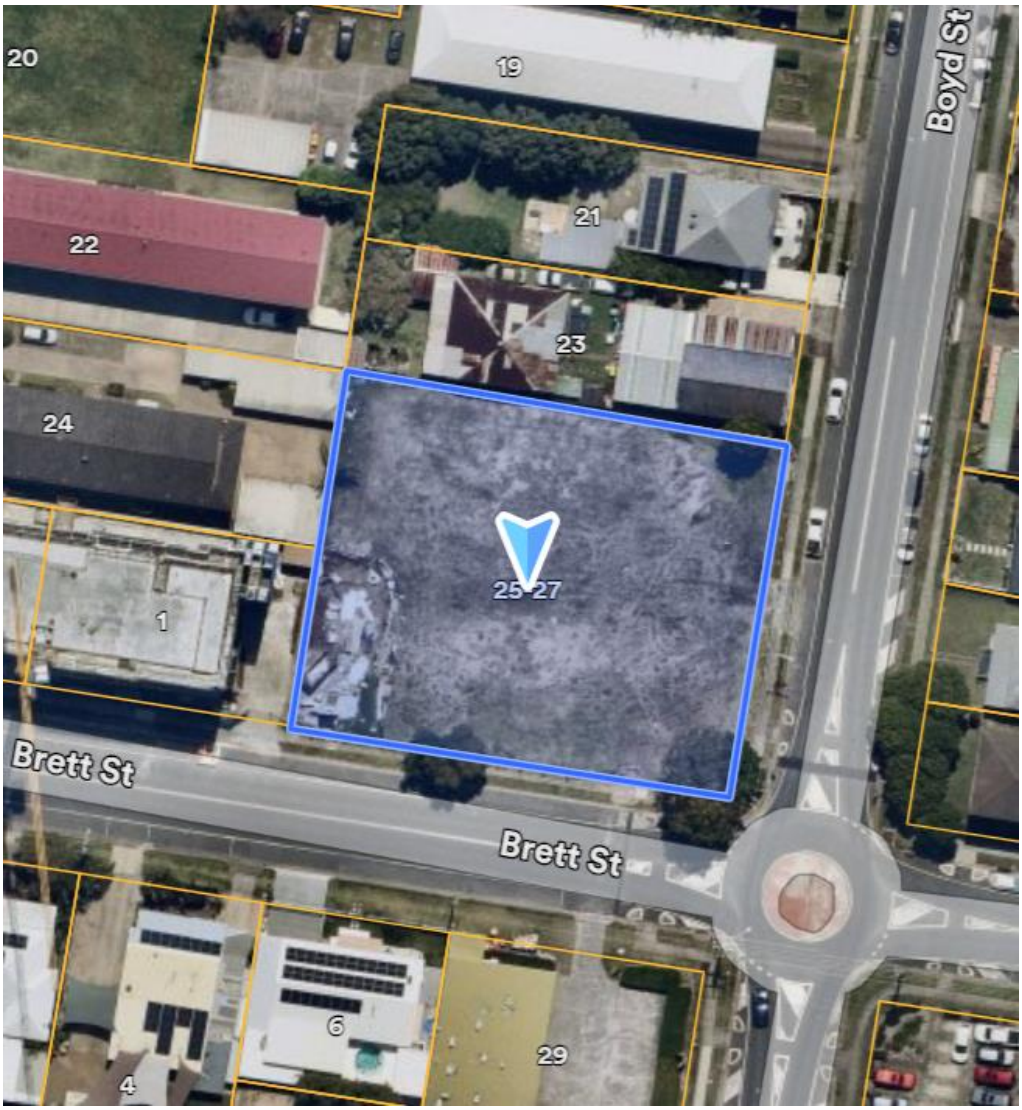

Figure 1 - Subject Site 25-27 Boyd St Tweed Heads (1/DP843470)

Source: Mecone Mosaic

The existing site frontages are presented in

Photo *1* to **Photo 4** below.

Photo 1 – Boyd St Street looking south (Google Maps 2022)

Photo 2 – Boyd Street looking north (Google Maps 2022)

Photo 3 – Brett Street looking west (Google Maps 2022)

Photo 4 – Brett Street east (Google Maps 2022)

Proposed Development

The development proposes the construction of a 13-storey residential building accommodating approximately 80 one and two-bedroom apartments and two new basement-level car parks. Proposed vehicle access is via Brett Street, with pedestrian access available from both street frontages.

Architectural plans describing the development are provided in Appendix B.

Flood Behaviour and Characteristics

Flood Behaviour

The site is subject to flood inundation in events rarer than the 1% AEP storm event (PMF flood), caused by regional flooding of Terranora Creek which is influenced by flooding of the Tweed River. It is not located in Council's flood planning area. Flood water approaches the site from the east and is expected to peak slowly after commencement of rain. Land to the west of the site is not flood affected in the PMF.

Flood Levels

Flood levels and flood planning levels for the site is presented below in Table 2.

Table 2 – Existing Flood Level

Design Flood Level (m AHD)	**0.2% AEP Level** (m AHD)	**PMF Level** (m AHD)	**FPL** (m AHD)	**Climate Change Habitable Floor Level** (m AHD)
2.6	2.9	5.7	3.1	3.5

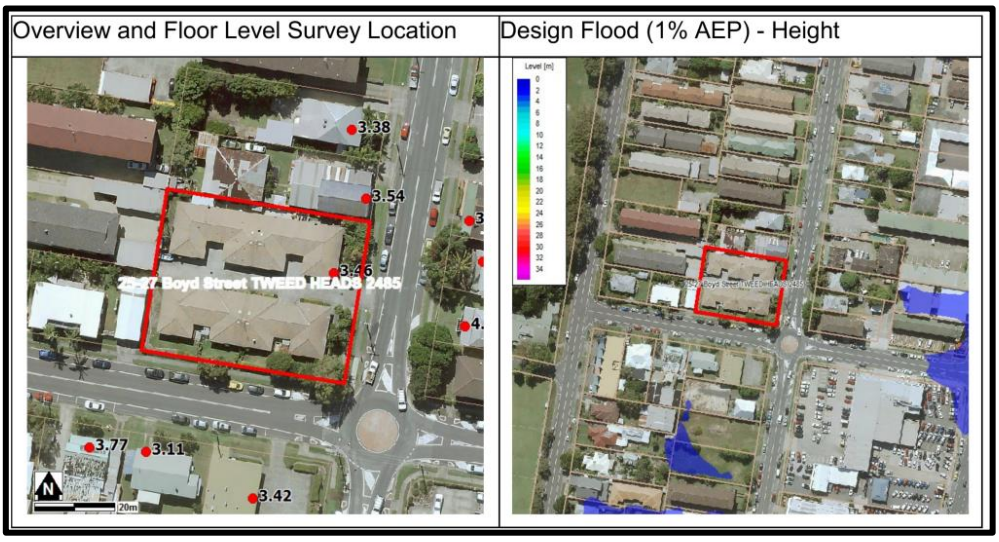

Figure 2- 1% AEP Flood Height and site locality (Tweed Council Property Flood Report, 17.09.20)

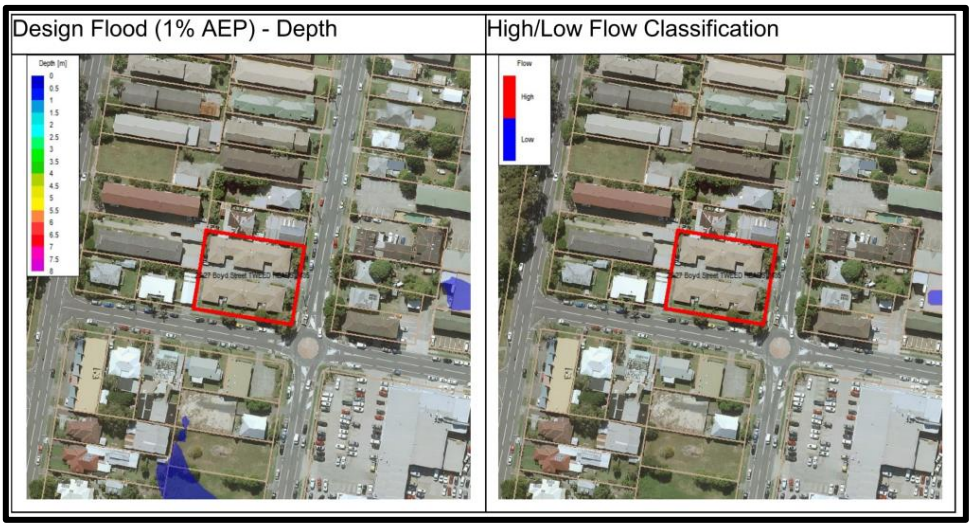

Figure 3 - 1% AEP Depth and Flow classification (Tweed Council Property Flood Report, 17.09.20)

Flood Risk Assessment

Flood Hazard

The flood hazard for the site has not been outlined in the Property Flood Report. However as noted above the site is not impacted in the 1% AEP flooding event, as such flood hazard is only applicable for events rarer than this (PMF only).

The existing and developed risks are described below.

Existing Risk

The following potential risks from the flood hazard were identified in the existing condition - presented below in Table 3.

Table 3 - Existing flood risk analysis

Item	Likelihood	Consequence	Risk Rating
Structural damage causing economic loss	Rare to very rare	Major	High
Loss of life	Extremely rare	Major	Low
Cancellation of services	Unlikely	Moderate	Moderate

Developed and Residual Risk

Mitigation measures proposed in the design, and potential mitigation measures that could be implemented during operation are presented below in Table 4.

Table 4 - Mitigation Measures

Item	Mitigation Measures
Structural damage causing economic loss	Structures on-site will consider the forces due to floodwater and debris impact using a robust construction typology which will reduce the likelihood and consequence of structural damage in the developed case. The floor level has been set 400mm above the FPL to reduce the risk to property.
Loss of life	The likelihood of loss of life has the potential to be reduced through implementation of a FERP. Principles of the emergency response measures are included in the Discussion and Compliance with Council LEP and DCP section of this report.
Cancellation of services	Cancellation of services is unlikely and may occur if rainfall is predicted to exceed the 1% AEP. Potential mitigation measures may include. • Redundancy in utilities required to continue operation such as power, telecommunications, potable water, and temporary sewer disposal. • Flood barriers to prevent water ingress in very rare to extreme events.

Following implementation of the proposed mitigation measures, the residual developed risk analysis is presented below in Table 5. A risk matrix showing the existing and residual risk comparison is presented in Table 6.

Table 5 – Developed residual risk analysis.

Item	Likelihood	Consequence	Risk Rating
Structural damage causing economic loss	Extremely rare	Moderate	Low
Loss of life	Extremely rare	Major	Low
Cancellation of services	Rare to very Rare	Moderate	Moderate

Table 6 - Risk matrix

Likelihood	AEP Range	Consequence				
	(%)	Insignificant	Minor	Moderate	Major	Catastrophic
Likely	>10					
Unlikely	1 to 10					
Rare to very rare	0.01 to 1			Cancellation of services (E + D)	Structural damage (E)	
Extremely rare	<0.01				Structural damage (D) Loss of life (E + D)	

Risk: Very low Low Medium High Extreme

Discussion and Compliance with Council LEP and DCP

Potential Flood Impacts

Council's flood mapping presents no flood affectation across the subject site in the 1% AEP event. The proposed development is therefore unlikely to have any flood impact in this event.

We do not believe the proposed development will result in a significant adverse impact on adjoining properties.

Basement Carpark Entry Protection

The proposed basement entry for the site is located on Brett Street. The proposed crest level is to be set at the FPL of 3.1m AHD.

Emergency Response Measures

The subject site is located within a large catchment area with the site being inundated in storm events larger than the 1% AEP. Flood free land is located to the west of the site in PMF events, albeit the land is isolated. Offsite evacuation is recommended as the most appropriate measure for storm events larger than the 1% AEP, to be undertaken in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan.

A FERP has been prepared outlining the following:

- Flood awareness and education.
- Available flood warning products from the BoM and SES.
- Flood preparedness measures including knowing your flood risk, overview of the evacuation route and appropriate point of refuge and list of essential items to have on-hand to facilitate off-site refuge.
- Flood response measures including when to seek refuge off-site once significant rainfall has begun.
- Undertaking appropriate inspections and checks once the event has passed.

An overview of the site's locality to flood free land can be seen in Figure 4 below.

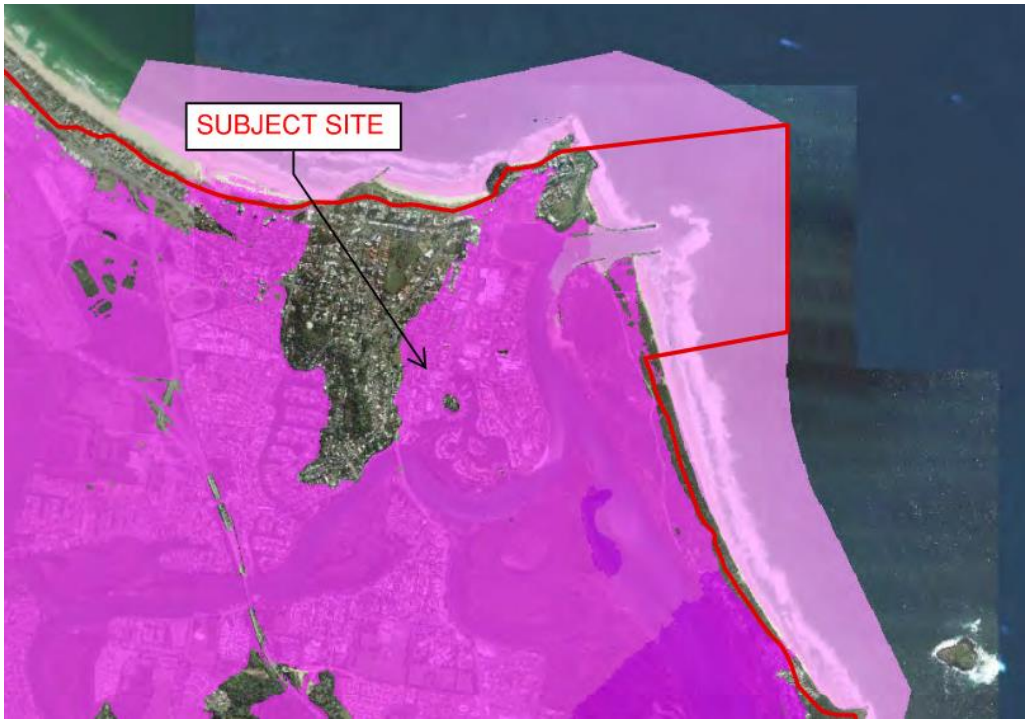

Figure 4. PMF Extent. (Figure P-35 Tweed Valley Flood Study August 2024)

Commentary with respect to the Tweed City Centre LEP 2012 are presented below in Table 7.

Table 7 – Tweed City Centre LEP 2012 Section 5.21 Compliance

Requirement	Comment
(1) The objectives of this clause are as follows	
(a) to minimise the flood risk to life and property associated with the use of land,	The site is not inundated up to and including the 1% AEP storm. The development incorporates measures to minimise risk to property with all floor levels being above the FPL and the basement access crest set at the FPL. Risk to life is managed via emergency response measures.
(b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,	The site is flood free in the 1% AEP storm therefore the development is compatible with the flood function of the land. Climate change has been considered in the development by raising the ground floor FFL to 3.5m AHD which is the minimum Climate Change Habitable Floor Level outlined in the TSC Property Flood Report.
(c) to avoid adverse or cumulative impacts on flood behaviour and the environment,	We do not believe the subject site will cause any adverse impact in the 1% AEP event as it is not inundated, and on-site detention has been provided to reduce peak flows from the developed site.
(d) to enable the safe occupation and efficient evacuation of people in the event of a flood.	For events rarer than 1% AEP flood free land is located within close proximity to the site

Requirement	Comment
	therefore off-site refuge is to be sought in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan. This is outlined in the FERP.
(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development	
(a) is compatible with the flood function and behaviour on the land, and	The site is flood free in the 1% AEP storm therefore the development is compatible with the flood function of the land.
(b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and	The site is flood free in the 1% AEP storm therefore is not expected to contribute to adverse impacts.
(c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and	The site is not inundated in a 1% event. For larger events flood free land is located within close proximity to the site therefore off-site refuge is to be sought in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan. This is outlined in the FERP.
(d) incorporates appropriate measures to manage risk to life in the event of a flood, and	Off-site refuge is to be provided on adjacent flood free land for events larger than the 1% AEP, in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan. This is outlined in the FERP.
(e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of riverbanks or watercourses.	The site is currently developed therefore has already been disturbed. We believe it is feasible to minimise impact on the environment using water quality and quantity management devices as detailed in the stormwater management report as well as temporary erosion and sediment control measures during construction. We therefore do not believe this development will contribute to erosion, siltation or destabilising of riparian vegetation and riverbanks.
(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters	
(a) the impact of the development on projected changes to flood behaviour as a result of climate change,	The Climate Change Design Flood Level of 3.0m AHD will locally inundate the southern and eastern parts of the existing site. The developed site will fill some of these areas however the south-eastern corner and north-western landscaped areas will still be below this level. We do not believe the development will have a significant impact on flood behaviour changes due to climate change.

Requirement	Comment
(b) the intended design and scale of buildings resulting from the development,	To be addresses by others.
(c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,	Off-site refuge is to be provided on adjacent flood free land for events larger than the 1% AEP, in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan. This is outlined in the FERP.
(d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.	This is not applicable to this development.

The development is not considered sensitive or hazardous development, however the site will require evacuation of people therefore Section 5.22. of Tweed City Centre LEP 2012 is applicable and is presented in Table 8 below.

Table 8 – Tweed City Centre LEP 2012 Section 5.22 Compliance

Requirement	Comment
(1) The objectives of this clause are as follows	
(a) to enable the safe occupation and evacuation of people subject to flooding,	In PMF events the site will require evacuation to flood free land in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan. This is outlined in the FERP.
(b) to ensure development on land is compatible with the land's flood behaviour in the event of a flood,	The site is flood free in the 1% AEP storm therefore the development is compatible with the flood function of the land.
(c) to avoid adverse or cumulative impacts on flood behaviour,	As determined above, the development is not expected to contribute to adverse or cumulative impacts.
(d) to protect the operational capacity of emergency response facilities and critical infrastructure during flood events,	The development is not expected to impact any emergency response facilities or critical infrastructure.
e) to avoid adverse effects of hazardous development on the environment during flood events.	The development is not categorised as hazardous therefore this is not applicable.
(3) Development consent must not be granted to development on land to which this clause applies unless the consent authority has considered whether the development	
(a) will affect the safe occupation and efficient evacuation of people in the event of a flood, and	Evacuation from the site is recommended in flood events rarer than 1% AEP to flood free land, in accordance with the SES Tweed Shire Local Flood Emergency Sub Plan. This is outlined in the FERP.

Requirement	Comment
(b) incorporates appropriate measures to manage risk to life in the event of a flood, and	A FERP has been proposed. We believe this adequately manages the risk to life.
(c) will adversely affect the environment in the event of a flood.	The site is currently developed therefore has already been disturbed. We believe it is feasible to minimise impact on the environment for flood events using water quality and quantity management devices as detailed in the stormwater management report as well as temporary erosion and sediment control measures during construction. Structures on-site will consider the forces due to floodwater and debris impact using a robust construction typology which will reduce the likelihood and consequence of structural damage in rare flood events in excess of 1% AEP event. We therefore do not believe this development will adversely affect the environment.

DCP Compliance

The Tweed Development Control Plan (DCP) compliance is considered in Table 9 below.

Table 9 - Tweed DCP compliance

Requirement	Comment
A3.3.2. Development Generally on Flood Liable Land	
Design Flood Levels Refer to A3.2.4 for design flood levels for this locality.	The proposed development incorporates the design flood levels into the design.
High Flow Areas Refer to A3.2.5 for development controls applicable to land in mapped high flow areas. The development controls in A3.2.5 take precedence over other controls in A3.3.	The site is not noted as being in a High Flow area in council's Property Flood Report.
Emergency Response Provisions Refer to A3.2.6 for development controls applicable to the provision of adequate emergency response for habitable development. The development controls in A3.2.6 take precedence over other controls in A3.3.	Refer to Emergency Response measures on page 14 above.
Filling All filling is to be graded so that it drains to the street or other approved permanent drainage system.	The site will primarily be occupied by a basement excavation and surrounding landscaped vegetation and hardstand that is managed by onsite controls and stormwater infrastructure that connects to Council infrastructure. As such we believe this is not applicable.
Building Materials All materials used below Council's adopted design flood level must not be susceptible to water damage.	Basement is protected from inundation via crest set at the FPL as such inundation is considered unlikely. The ground floor level has been set 400mm above the FPL.
Electrical Supply Subject to the requirements of Northern Rivers Electricity, all electrical wiring, power outlets, switches, etc., should, to the maximum extent possible, be located above the design flood level. All electrical wiring installed below the design flood level should be suitably treated to withstand continuous submergence in water.	All habitable floor levels are to be above the FPL, and the basement is protected from inundation via crest set at the FPL, as such flood inundation is unlikely.
Car Parking Car parking in the form of basement parking will not be approved below the design flood level unless it is protected against the inflow of water to a level of 500 mm above the design flood.	Basement crests have been set at the FPL of RL3.10m AHD in accordance with Councils requirement of 500mm above design flood level.

Requirement	Comment
Development The habitable areas of all residential buildings are to be at a level of not less than council's adopted minimum floor level for development. Areas for recreational purposes only may be approved below council's minimum floor level in flood fringe areas provided that furnishings therein are readily removable.	The Ground Level FFL of the development is set at RL3.5m AHD which is 400mm above the FPL.

Conclusions

A Flood Impact and Risk Assessment Report has been prepared for the proposed development at 25-27 Boyd Street, Tweed Heads NSW.

It was concluded that the proposed development will not create any significant adverse impacts to flood behaviour on the subject site and on the properties surrounding the subject site.

Furthermore, flood risk in the developed case has been adequately managed through the selection of flood levels, implementation of flood protection measures and provision of offsite evacuation opportunities.

We commend our findings for review.

Limitation Statement

Northrop Consulting Engineers Pty Ltd (Northrop) has been retained to prepare this report based on specific instructions, scope of work and purpose pursuant to a contract with its client. It has been prepared in accordance with the usual care and thoroughness of the consulting profession for the use by Homes NSW. The report is based on generally accepted practices and standards applicable to the scope of work at the time it was prepared. No other warranty, express or implied, is made as to the professional advice included in this report.

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Document Register

Rev	Status	Prepared	Approved	Date
A	For Review	TVK	KS	30.10.24
B	For Approval	TVK	KS	10.12.24
C	For Review	TVK	KS	03.06.25
D	For Approval	TVK	KS	23.06.25
E	Updates	TVK	KS	18.07.25

Appendix A – Property Flood Report

Property Flood Report

This Property Flood Report tells you what you need to know about this property and its flood risk. It shows house floor and flood levels and provides information on nearby levees and river gauges, if applicable. To understand the terms used, please see the Flood Terms and Definitions section at the end of this report.

Property Address: **25-27 Boyd Street TWEED HEADS 2485**

Lot/Section/Deposited Plan: 1//DP843470

Date Prepared: 17/09/2020

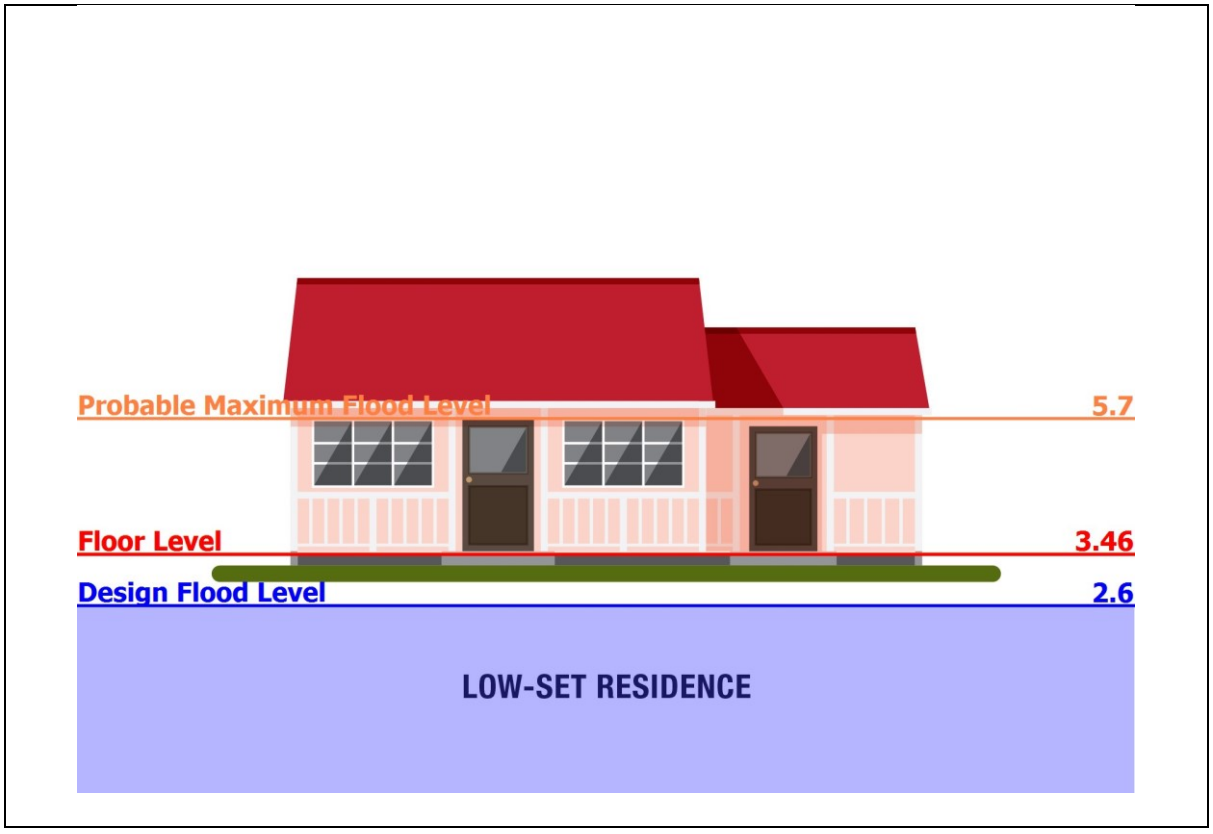


Figure 1: Flood and Floor Levels at 25-27 Boyd Street TWEED HEADS 2485

The house floor level provided above was taken in 2012 and is approximate only. If an accurate floor level is required this should be confirmed by a registered surveyor.

Be Prepared

Flood Warnings are issued by the Bureau of Meteorology (BoM). Warnings and real-time rainfall and river level information can be viewed on the BoM website (www.bom.gov.au).

NSW State Emergency Service (SES) distribute Flood Bulletins which add local consequences and safety information related to Flood Warnings. These products are distributed to community via local media and social media.

Planning now so that you know your risks and what to do if there is a flood can save your life, the lives of your family members, pets and others. It can also minimise damage to your property and possessions. The NSW State Emergency Service has tools available to assist you to prepare. Visit the SES website to start your Home Emergency Plan now.

Website: www.ses.nsw.gov.au

Flood & Storm Emergency: 132 500

Life Threatening Situations: 000

Tweed Shire Council have developed the Tweed Emergency Dashboard for all hazard emergency information. The purpose of this Emergency Dashboard is to provide Tweed residents with links, useful information and contacts in an emergency. Go to: https://emergency.tweed.nsw.gov.au/

Should you require any further information, please contact Council on (02) 6670 2400 or email us at tsc@tweed.nsw.gov.au

Technical Information

The below information is for those who are flood savvy or have a technical need to know more about Council's building development controls, such as surveyors, builders, certifiers, architects and engineers.

Property Address: **25-27 Boyd Street TWEED HEADS 2485**

Lot/Section/Deposited Plan: 1//DP843470

Property Levels

Description	Minimum (m AHD)	Maximum (m AHD)
Approximate Ground Level	2.8	3.6
Approximate Floor Level (2012)	3.460	

Planning Levels

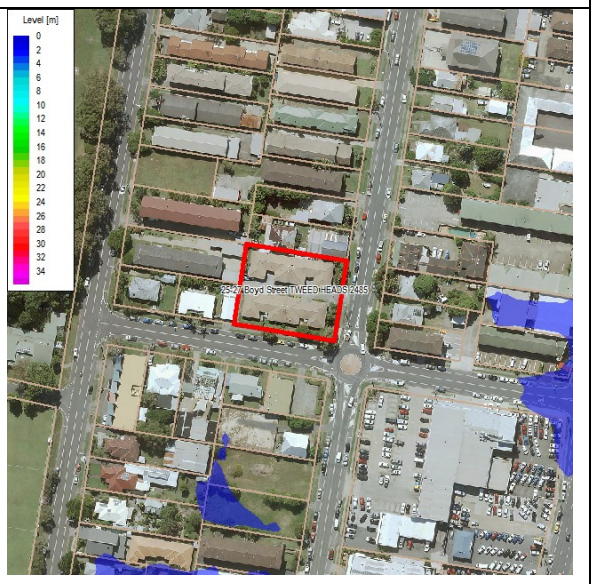
Planning Level	Level (m AHD)
Design Flood Level	2.6
Minimum Habitable Floor Level (Flood Planning Level)	3.1
Climate Change Design Flood Level*	3.0
Climate Change Habitable Floor Level*	3.5
High Flow Area	No
High Hazard Area	NA

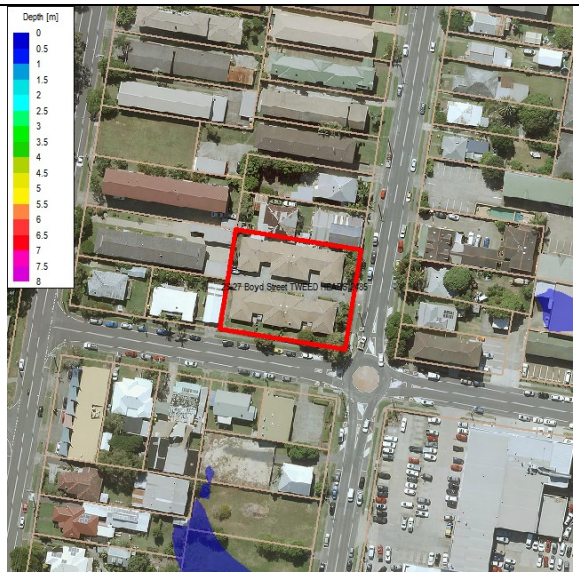
* Climate Change Levels are compulsory in new urban land release subdivision areas

Flooding Levels

Flood Event	Minimum Level (m AHD)	Maximum Level (m AHD)
20% AEP	N/A	N/A
5% AEP	N/A	N/A
1% AEP	N/A	N/A
Climate Change 2100 1% AEP	N/A	N/A
0.2% AEP	2.9	2.9
Probable Maximum Flood (PMF)	5.7	5.7

Mapping

Overview and Floor Level Survey Location	Design Flood (1% AEP) - Height
	

Design Flood (1% AEP) - Depth	High/Low Flow Classification
	

Detailed mapping data, including flood mapping, can be sourced at Council's open data hub: www.tweed.nsw.gov.au/Mapping

For more information on Tweed Shire Flood Planning controls see the Tweed Local Environment Plan and Development Control Plan Section A3 – Development of Flood Liable Land at www.tweed.nsw.gov.au/PlanningPolicies

Information Sources

- **Ground Levels:** 2014 Airborne Laser Survey (LiDAR)
- **Existing Floor Levels:** 2011 and 2012 Floor Level Survey (Tweed Shire Council)
- **Flooding Levels:** Tweed Valley Flood Study Update 2009 and Tweed Byron Coastal Creeks Flood Study 2010 (BMT WBM)

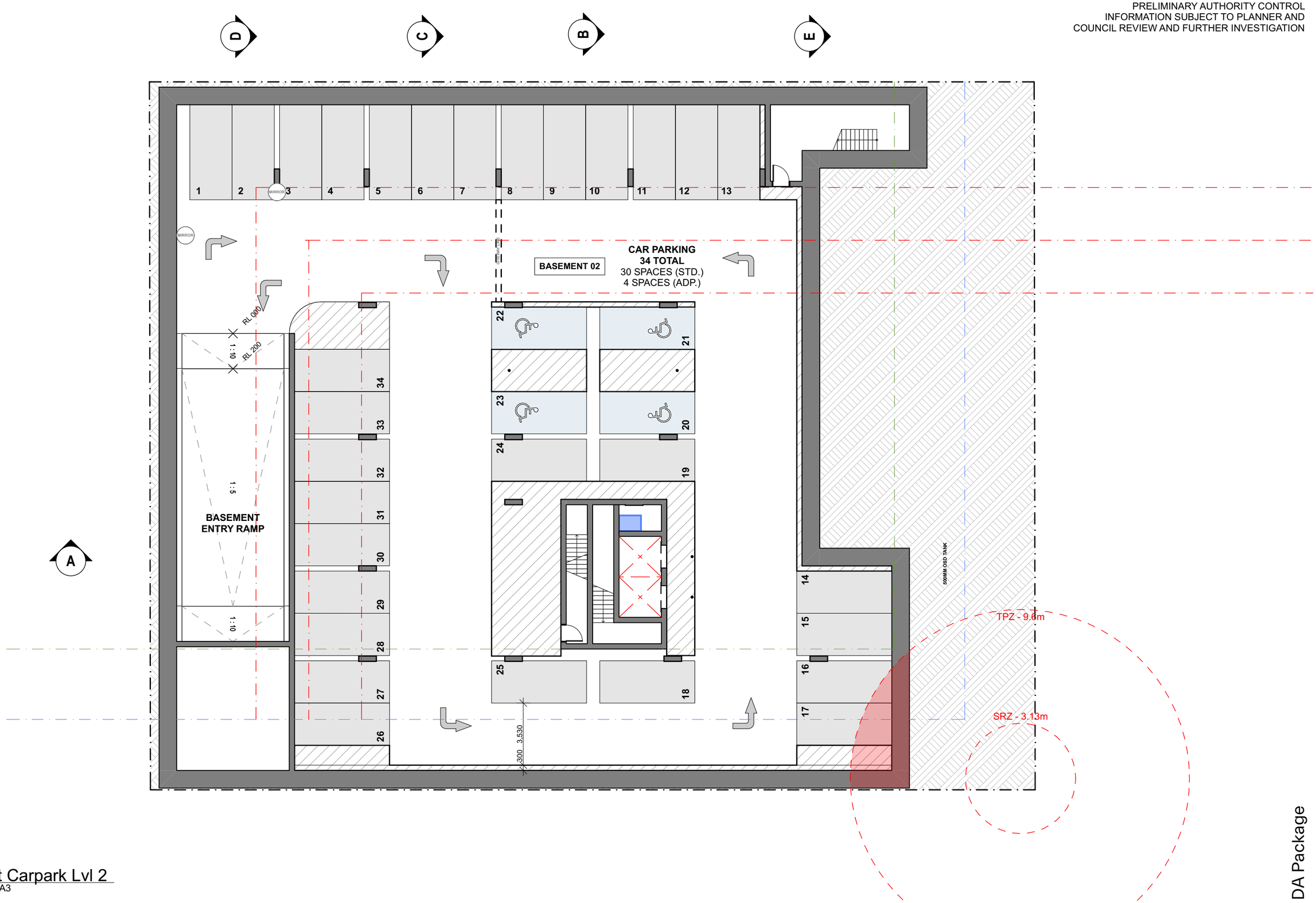
Flood Terms and Definitions

- **Annual Exceedance Probability (AEP):** The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.
- **Average Recurrence Interval (ARI):** Similar to AEP. The long-term average number of years between the occurrence of a flood as big as (or larger than) the selected event.
- **metres above Australian Height Datum (m AHD):** The reference level for defining ground levels in Australia. The level of 0.0m AHD is approximately mean sea level.
- **Maximum and Minimum Ground Level** – Highest and lowest ground levels on the property based on available ground level information. A Registered Surveyor can confirm exact ground levels.
- **Surveyed Floor Level** – Approximate floor levels of dwellings, usually taken from the street. These are generally the level of the front step of the habitable level of the building most visible from the street frontage
- **Design Flood Level (DFL)** – A hypothetical flood representing a specific likelihood of occurrence. In Tweed Shire, for residential property, the peak of the modelled 1% AEP (100 Year ARI) flood is the Design Flood Level
- **Minimum Habitable Floor Level** – The minimum level in metres AHD at which habitable areas of development (generally including bedrooms, living rooms, kitchen, study, family and rumpus rooms) must be constructed. In Tweed Shire, this is Design Flood Level plus 0.5m of freeboard. Also known as 'Flood Planning Level'
- **Climate Change Floor Level** – 2100 Climate Change Design Flood Level plus 0.5m of freeboard. Climate Change Design Flood Level is based on reasonable predictions of increased rainfall intensity and sea level rise. See the Tweed Valley Flood Study Update 2009 – Climate Change for more information.
- **Probable Maximum Flood.** An extreme flood deemed to be the largest flood that could conceivably occur at a specific location. It is generally not physically or economically possible to provide complete protection against this flood event, but should be considered for emergency response etc. The PMF defines the extent of flood prone land (i.e. the floodplain).

Disclaimer

Appendix B – Architectural Drawings

NOTE:
PRELIMINARY AUTHORITY CONTROL
INFORMATION SUBJECT TO PLANNER AND
COUNCIL REVIEW AND FURTHER INVESTIGATION



1 Basement Carpark Lvl 2
SCALE 1:200 @ A3

DA Package

CKDS
Architecture | Planning | Interiors

NEWCASTLE
Level 3 23 Watt St (P.O. Box 958)
Newcastle NSW 2300
P 02 4929 1843

CENTRAL COAST
1/28 Adelaide St (P.O. Box 4400)
East Gosford NSW 2250
P 02 4321 0503

www.ckds.com.au
E admin@ckds.com.au
ABN 12 129 231 269
Nominated Architects: Caine King NSW ARB 7974 / Stuart Campbell NSW ARB 7545

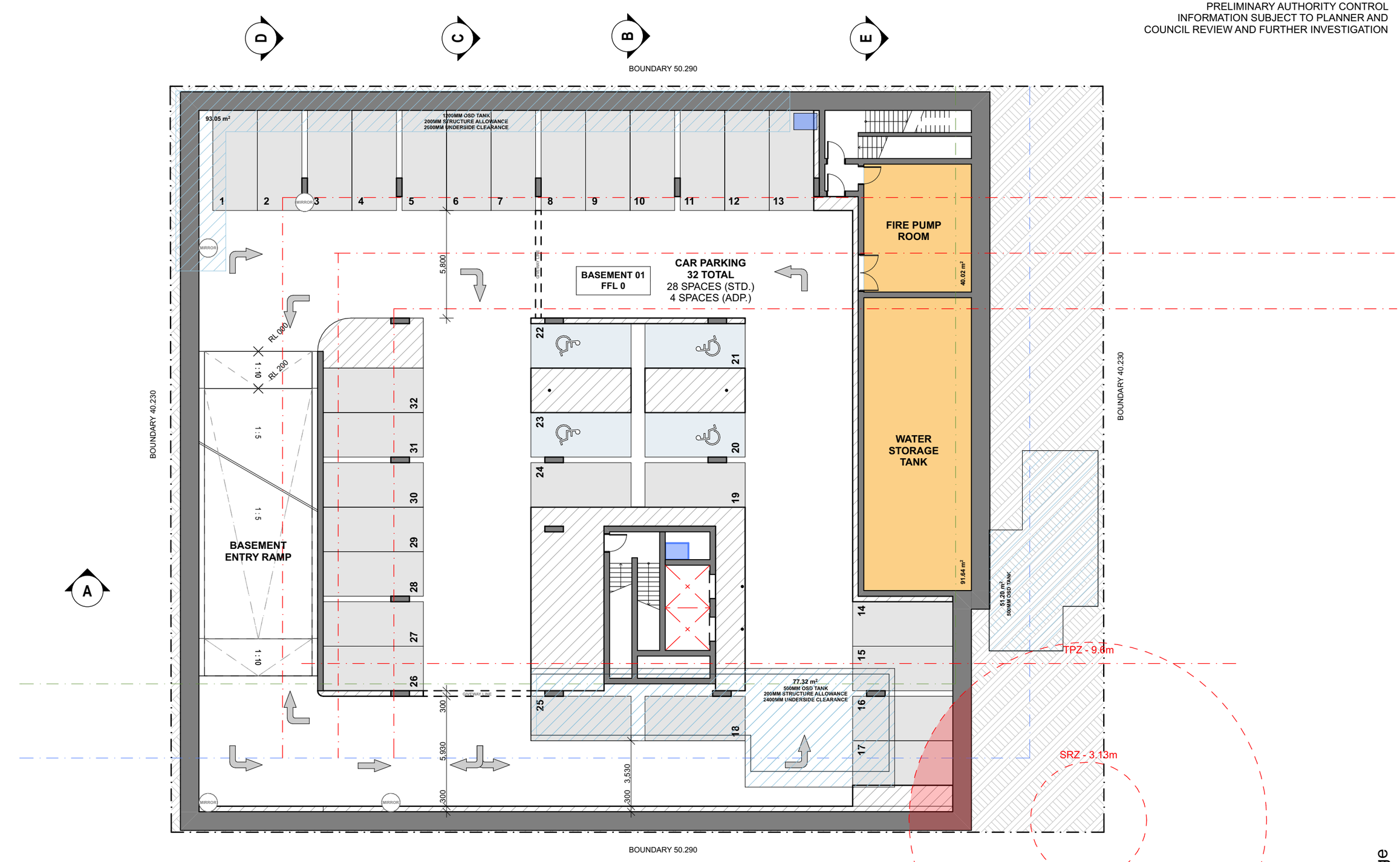
NSW GOVERNMENT
Homes NSW

North Point

Homes NSW - Tweed Heads
project # 22134
25–27 Boyd St,
Tweed Heads, NSW 2485

Basement Floor Plan Lvl 2
drawing # A-1101
issue R
AS SHOWN
21/11/2024

NOTE:
PRELIMINARY AUTHORITY CONTROL
INFORMATION SUBJECT TO PLANNER AND
COUNCIL REVIEW AND FURTHER INVESTIGATION



1 Basement Carpark
SCALE 1:200 @ A3

DA Package

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ABN 12 129 231 269
Nominated Architects: Caine King NSW ARB 7974 / Stuart Campbell NSW ARB 7545

NSW GOVERNMENT
Homes NSW

North Point

Homes NSW - Tweed Heads
project # 22134
25–27 Boyd St,
Tweed Heads, NSW 2485

Basement Floor Plan Lvl 1
drawing # A-1102
issue U
AS SHOWN
21/11/2024

NOTE:
PRELIMINARY AUTHORITY CONTROL INFORMATION SUBJECT TO PLANNER AND COUNCIL REVIEW AND FURTHER INVESTIGATION

50,290
9,110
35,350
5,830
6,000
BOUNDARY 50.290
BOUNDARY 40.230
40,230
10,110
6,000
3,000
19,510
3,000
4,610
7,610
2,951
1,550
2,000

6.0m SIDE SETBACK (HABITABLE) - ADG FIRST 4 FLOORS (12m)
9.0m SIDE SETBACK (HABITABLE) - ADG FLOORS 5-8 (12-25m)
12.0m SIDE SETBACK (HABITABLE) - ADG FLOORS 9+
8.0m SETBACK - DCP ABOVE FRONT SETBACK
4.0m SETBACK - DCP MIN. 15m TO 20m MAX.

90.34 m²
1200MM OSD TANK BELOW ALL ROOF AND BASEMENT RUNOFF
SCREEN RL.5,300
LANDSCAPED AREA REFER TO LANDSCAPE ARCHITECTS DOCUMENTATION FOR DETAILS
TOW. RL.4,900
TOW. RL.3,700
FFL 3,200
TOP OF SCREEN RL.5,100
BBQ STORE
20.10 m²
COMMUNAL OPEN SPACE
10.45 m²
GF02 TYP. A.2 56.01 m²
COMMUNITY ROOM
28x BIKE STORAGE
FFL 3,500
1 : 20
MAINTENANCE ACCESS
1 : 5
HIGHLIGHT GLAZING SILL HEIGHT 1800mm AFL
GF01 TYP. A.2 56.01 m²
18.08 m²
CARPARK EXHAUST
BULKY WASTE 18m²
WASTE ROOM 59.87 m²
660L
360L
240L
23.59 m²
BIN WASH AREA
1:50 MAX FALL
500MM DEEP OSD TANK BELOW ALL GROUNG PAVEMENT AND LANDSCAPING RUNOFF
GROUND FFL 3,500
MAINTENANCE ACCESS
FIRE STAIRS
8X VISITOR BIKE PARKING
TOW. RL.3,700
FFL 3,100
EX. RL 2,890
EX. RL 2,850
TOW. RL.4,000
14.03 m²
35.54 m²
GF03 TYP. E 89.13 m²
EX. RL 2,970
EX. RL 2,860
MSB
DPB / MP
F.I.P
MAILBOXES
HYD
PP
EX. RL 3,410
TPZ - 9.8m
SRZ - 3.13m
TPZ Area 290.41 m²
#5
EX. RL 2,790
KIOSK
5,600
2,480
3M CLEARANCE TO KIOSK
METERS / BOOSTER
EX. RL 2,900
EX. RL 2,850
HARDSTAND BIN ROADSIDE COLLECTION AREA
15,500
22,860
9,500
7,500
9.5m SERVICE VEHICLE
2.5M X 2M CLEAR VISIBILITY ZONE TO AS2890.1 REQUIREMENTS
EX. RL 3,070
EX. RL 2,910
SMH
TEL
FENCE 1,800MM
STREET
BOYD
DA Package

A
D
C
B
E

1 Ground
SCALE 1:200 @ A3

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NSW GOVERNMENT
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North Point

Homes NSW - Tweed Heads
project # 22134
25–27 Boyd St,
Tweed Heads, NSW 2485

Ground Floor Plan
drawing # A-1103
issue H
AS SHOWN
28/5/2025

Appendix C – Civil Drawings

HOMES NSW - TWEED HEADS

25-27 BOYD STREET, TWEED HEADS
CIVIL ENGINEERING PACKAGE

LOCALITY PLAN

IMAGE SOURCE : NEARMAPS

DRAWING LIST	
DWG No.	DRAWING TITLE
DA-C01.01	COVER SHEET, DRAWING LIST AND LOCALITY PLAN
DA-C02.01	EROSION AND SEDIMENT CONTROL PLAN
DA-C02.11	EROSION AND SEDIMENT CONTROL DETAILS
DA-C03.01	CUT AND FILL PLAN
DA-C04.01	CIVIL WORKS PLAN - GROUND FLOOR
DA-C04.11	CIVIL WORKS PLAN - BASEMENT LEVEL 1
DA-C04.12	CIVIL WORKS PLAN - BASEMENT LEVEL 2
DA-C09.01	CIVIL DETAILS

DRAWN: J. KNIGHT
DESIGNED: E. GEARING
JOB MANAGER: K. SINCLAIR
VERIFIER: K. SINCLAIR

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR DEVELOPMENT APPLICATION	JK	KS	EG	06.12.24
B	RE-ISSUED FOR SSDA APPROVAL	JK	KS	EG	29.05.25

CLIENT

NSW GOVERNMENT Homes NSW

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ARCHITECT

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PROJECT
HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE
CIVIL ENGINEERING PACKAGE

COVER SHEET, DRAWING LIST AND LOCALITY PLAN

JOB NUMBER **NL223052**

DRAWING NUMBER **DA-C01.01**

REVISION **B**

DRAWING SHEET SIZE = A1

Date : 29.05.2025 9:24 AM Plotted By : JOSH KNIGHT Found : O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\O - Drawings\CIVIL\03-CAD\DA\NL223052-DA-C01.01 COVER SHEET.dwg

LEGEND

- SITE BOUNDARY LINE
- SEDIMENT FENCE
- SANDBAG SEDIMENT FILTER
- DIVERSION DRAIN (CLEAN)
- DIVERSION DRAIN (DIRTY)
- STABILISED SITE ACCESS
- STOCKPILES
- GEOTEXTILE INLET FILTER
- EXTENT OF DISTURBANCE
- EXISTING CONTOURS (X.Xm INTERVAL)
- SEDIMENT TRAP
- TREE TO REMAIN

INDICATIVE EXTENT OF DISTURBANCE

BASEMENT EXCAVATION TO BE UTILISED AS A TEMPORARY SEDIMENT TRAP UNTIL SITE HAS BEEN STABILISED. PROVIDE SEDIMENT TRAP AT PROPOSED PUMP-OUT PIT LOCATION. DEWATERING AND MAINTENANCE TO BE UNDERTAKEN IN ACCORDANCE WITH 'THE BLUE BOOK'

PROVIDE DIVERSION SWALE TO DIRECT SEDIMENT-LADEN RUNOFF TO SEDIMENT TRAP

TEMPORARY CONTRACTORS VEHICULAR ACCESS POINT. PROVIDE A SHAKEDOWN CATTLE GRID OR STABILISED SITE ACCESS TO SD6-14 OF THE 'BLUE BOOK'.

INDICATIVE LOCATION OF STOCKPILE. EXACT LOCATION/S TO BE DETERMINED DURING CONSTRUCTION IN CONSULTATION WITH THE APPROPRIATE COUNCIL REPRESENTATIVE TO AVOID DAMAGING VEGETATION WHICH IS TO BE RETAINED.

INSTALL AND MAINTAIN SEDIMENT FENCE TO DOWNSTREAM SIDE OF DISTURBED WORKS.

PROVIDE GEOTEXTILE INLET FILTER (OR SIMILAR) AROUND ALL GRATED SURFACE INLET PITS (TYPICAL).

PROVIDE ON GRADE KERB INLET TRAP UPSTREAM OF ALL ON-GRADE KERB INLET PITS (TYPICAL).

DESIGNED: E. GEARING
DRAWN: J. KNIGHT
JOB MANAGER: K. SINCLAIR
VERIFIER: K. SINCLAIR

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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ARCHITECT

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SCALE 1:100 @ A1 (0 1 2 3 4 5m)

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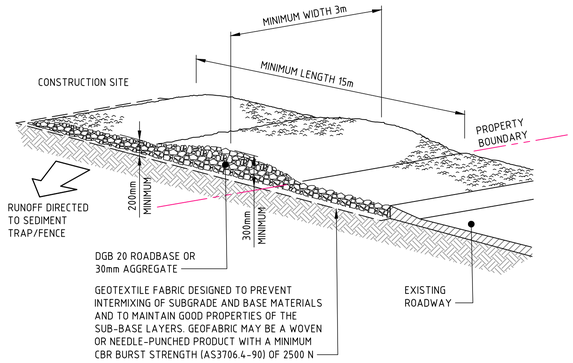
ABN 81 094 433 100

PROJECT
HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
EROSION AND SEDIMENT CONTROL PLAN

JOB NUMBER **NL223052**
DRAWING NUMBER **DA-C02.01**
REVISION **C**
DRAWING SHEET SIZE = A1

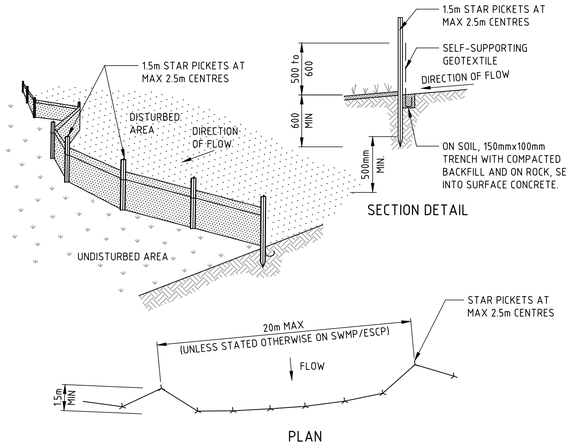
Date : 29.05.2025 9:24 AM Plotted By : JOSH KNIGHT Found : O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\O - Drawings\CIVIL\03-CAD\DA\NL223052DA-C02.01 ESC PLAN.dwg



CONSTRUCTION NOTES

1. STRIP THE TOPSOIL, LEVEL THE SITE AND COMPACT THE SUBGRADE.
2. COVER THE AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
3. CONSTRUCT A 200mm THICK PAD OVER THE GEOTEXTILE USING ROAD BASE OR 30mm 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. 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 150mm 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 150mm OVERLAP.
6. BACKFILL THE TRENCH OVER THE BASE OF THE FABRIC AND COMPACT IT THOROUGHLY OVER THE GEOTEXTILE.

SEDIMENT FENCE (SD 6-8)

CONSTRUCTION SEQUENCE

1. INSTALL SEDIMENT FENCING AND CUT DRAINS TO MEET THE REQUIREMENTS OF THE SEDIMENT AND EROSION CONTROL PLAN AND TWEED SHIRE COUNCIL'S REQUIREMENTS.
2. CONSTRUCT STABILISED SITE ACCESS.
3. REDIRECT CLEAN WATER AROUND THE CONSTRUCTION SITE.
4. INSTALL SEDIMENT CONTROL PROTECTION MEASURES AT NATURAL AND MAN-MADE DRAINAGE STRUCTURES. MAINTAIN UNTIL ALL THE DISTURBED AREAS ARE STABILISED.
5. CLEAR AND STRIP THE WORK AREAS. MINIMISE THE DAMAGE TO GRASS AND LOW GROUND COVER OF NON-DISTURBED AREAS.
6. ANY DISTURBED AREAS, OTHER THAN ROAD PAVEMENT AREAS, SHALL BE COVERED WITH SITE TOPSOIL AND SEEDED WITHIN 7 DAYS OF COMPLETION OF BULK LEVELS.
7. APPLY PERMANENT STABILISATION TO SITE (LANDSCAPING).

EROSION AND SEDIMENTATION CONTROL NOTES:

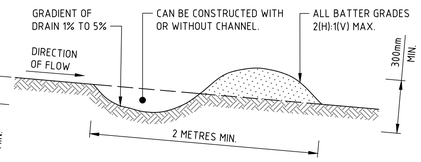
1. ALL EROSION AND SEDIMENTATION CONTROL MEASURES MUST BE APPROPRIATE FOR THE SEDIMENT TYPE(S) OF THE SOILS ON-SITE, IN ACCORDANCE WITH THE 'BLUE BOOK' (MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION. LANDCOM, 2004), OR OTHER CURRENT RECOGNISED INDUSTRY STANDARDS FOR EROSION AND SEDIMENT CONTROL FOR AUSTRALIAN CONDITIONS. THIS INCLUDES SEDIMENT TRAPS AND LINING OF CHANNELS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING A DETAILED WRITTEN RECORD OF ALL EROSION AND SEDIMENT CONTROLS ON-SITE DURING THE CONSTRUCTION PERIOD. THIS RECORD SHALL BE UPDATED ON A DAILY BASIS AND SHALL CONTAIN DETAILS ON THE CONDITION OF CONTROLS AND ANY/ALL MAINTENANCE, CLEANING AND BREACHES. THIS RECORD SHALL BE KEPT ON-SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE FOR INSPECTION BY THE PRINCIPAL CERTIFYING AUTHORITY AND THE SUPERINTENDENT DURING NORMAL WORKING HOURS.
3. INSTALL SEDIMENT PROTECTION FILTERS ON ALL NEW AND EXISTING STORMWATER INLET PITS IN ACCORDANCE WITH EITHER THE MESH AND GRAVEL INLET FILTER DETAIL SD6-11 OR THE GEOTEXTILE INLET FILTER DETAIL SD6-12 OF THE 'BLUE BOOK'.
4. ESTABLISH ALL REQUIRED SEDIMENT FENCES IN ACCORDANCE WITH DETAIL SD6-8 OF THE 'BLUE BOOK'.
5. INSTALL SEDIMENT FENCING, OR OTHER SEDIMENT CONTROL DEVICES, AROUND INDIVIDUAL BUILDING ZONES/AREAS AS REQUIRED AND AS DIRECTED BY THE SUPERINTENDENT OR APPROPRIATE COUNCIL OFFICER.
6. ALL TRENCHES INCLUDING ALL SERVICE TRENCHES AND SWALE EXCAVATION SHALL BE SIDE-CAST TO THE HIGH SIDE AND CLOSED AT THE END OF EACH DAYS WORK.
7. THE CONTRACTOR SHALL ENSURE THAT ALL VEGETATION (TREE, SHRUB AND GROUND COVER) WHICH IS TO BE RETAINED SHALL BE PROTECTED DURING THE DURATION OF CONSTRUCTION.
8. ALL VEGETATION TO BE REMOVED SHALL BE MULCHED ON-SITE AND SPREAD/STOCKPILED AS DIRECTED BY THE SUPERINTENDENT.
9. STRIP TOPSOIL IN AREAS DESIGNATED FOR STRIPPING AND STOCKPILE FOR RE-USE AS REQUIRED. ANY SURPLUS MATERIAL SHALL BE SPREAD ON-SITE AS DIRECTED BY THE SUPERINTENDENT OR REMOVED FROM SITE AND DISPOSED OF IN ACCORDANCE WITH EPA GUIDELINES.
10. CONSTRUCT AND MAINTAIN ALL MATERIAL STOCKPILES IN ACCORDANCE WITH DETAIL SD4-1 OF THE 'BLUE BOOK' (INCLUDING CUT-OFF SWALES TO THE HIGH SIDE AND SEDIMENT FENCES TO THE LOW SIDE).
11. ENSURE STOCKPILES DO NOT EXCEED 2.0m HIGH. PROVIDE WIND AND RAIN EROSION PROTECTION AS REQUIRED IN ACCORDANCE WITH THE 'BLUE BOOK'.
12. PROVIDE WATER TRUCKS OR SPRINKLER DEVICES DURING CONSTRUCTION AS REQUIRED TO SUPPRESS DUST.
13. ONCE CUT/FILL OPERATIONS HAVE BEEN FINALIZED ALL DISTURBED AREAS THAT ARE NOT BEING WORKED ON SHALL BE RE-VEGETATED AS SOON AS IS PRACTICAL.

SEDIMENT BASIN SIZING CALCULATION:

THE SITE IS LOCATED WITHIN THE KINGSCLIFF LANDSCAPE AND PRIMARILY CONSISTS OF AEOLIAN SAND (AS PER THE SITE SPECIFIC GEOTECHNICAL INVESTIGATION BY BARNSON REF: 39941-GR01_C), WHICH HAS THE FOLLOWING PROPERTIES (IN ACCORDANCE WITH TABLE C1 OF THE 'BLUE BOOK')

SITE PARAMETERS	
CONSTRAINT	VALUE
SEDIMENT TYPE	C
SOIL HYDROLOGY GROUP	A
K = SOIL ERODIBILITY (K-FACTOR)	0.009
R = RAINFALL EROSIVITY (R-FACTOR)	5250
S = 2 YEAR, 6 HOUR STORM INTENSITY	15.3
LS = SLOPE LENGTH / GRADIENT	0.18 (60m SLOPE @ 1% GRADE)
P = EROSION CONTROL PRACTICE (P-FACTOR)	1.3 (TYPICAL)
C = GROUND COVER (C-FACTOR)	1.0 (TYPICAL FOR STRIPPED SITE)
SOIL LOSS (RUSLE METHOD) (tonnes/ha/yr)	11
EROSION HAZARD (TABLE 4.2 BLUE BOOK)	VERY LOW

NOTE: THE AVERAGE SOIL LOSS FROM THE AREA OF DISTURBANCE IS LESS THAN 150M3 PER YEAR. BUILDING A SEDIMENT BASIN IS THEREFORE UNNECESSARY IN ACCORDANCE WITH THE BLUE BOOK SECTION 6.3.2 (D).

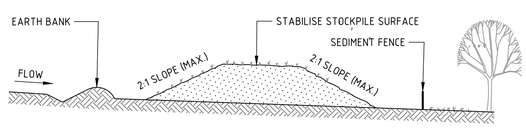


CONSTRUCTION NOTES

1. BUILD WITH GRADIENTS BETWEEN 1 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.

NOTE: ONLY TO BE USED AS TEMPORARY BANK
WHERE MAXIMUM UPSLOPE LENGTH IS 80 METRES.

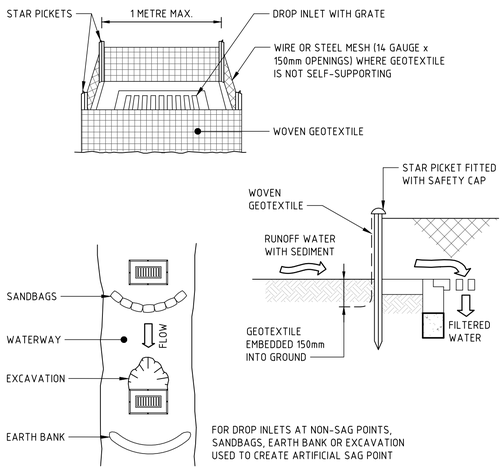
EARTH BANK - LOW FLOW (SD 5-5)



CONSTRUCTION NOTES

1. PLACE STOCKPILES MORE THAN 2m (PREFERABLY 5m) 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 2m 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 2m DOWNSLOPE.

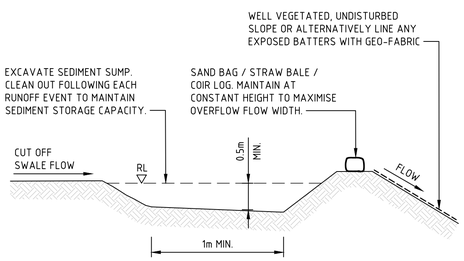
STOCKPILES (SD 4-1)



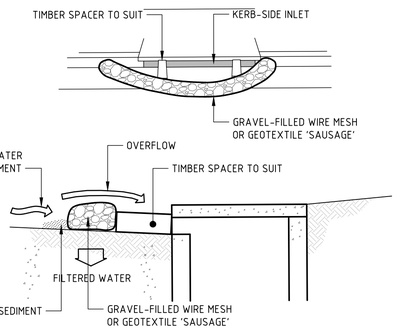
CONSTRUCTION NOTES

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)



SEDIMENT TRAP DETAIL



NOTE:THIS PRACTICE ONLY TO BE USED WHERE SPECIFIED IN 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 25mm TO 50mm GRAVEL.
3. FORM AN ELLIPTICAL CROSS-SECTION ABOUT 150mm HIGH x 400mm WIDE.
4. PLACE THE FILTER AT THE OPENING LEAVING AT LEAST A 100mm 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 THE MESH OR GEOTEXTILE PROVIDING THEY ARE PLACED SO THAT THEY FIRMLY ABUT EACH OTHER AND SEDIMENT-LADEN WATERS CANNOT PASS BETWEEN.

SANDBAG SEDIMENT FILTER (SD 6-11)

NOT FOR CONSTRUCTION

VERIFIER: K. SINCLAIR
JOB MANAGER: K. SINCLAIR
DESIGNED: E. GEARING
DRAWN: J. KNIGHT

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
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B	ISSUED FOR DEVELOPMENT APPLICATION	JK	KS	EG	06.12.24
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CLIENT: NSW GOVERNMENT Homes NSW

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ABN 81 094 433 100

PROJECT: HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE: CIVIL ENGINEERING PACKAGE
EROSION AND SEDIMENT CONTROL DETAILS

JOB NUMBER: NL223052
DRAWING NUMBER: DA-C02.11
REVISION: C
DRAWING SHEET SIZE = A1

Date : 29.05.2025 9:24 AM Plotted By : JOSH KNIGHT Found : O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\O - Drawings\CIVIL\03-CAD\DA\NL223052-DA-C02.01 ESC PLAN.dwg

LEGEND

- SITE BOUNDARY LINE
- EXTENT OF BASEMENT LEVEL 1
- EXTENT OF BASEMENT LEVEL 2
- -X.XX BULK EARTHWORKS DEPTH (CUT)
- X.XX BULK EARTHWORKS DEPTH (FILL)
- XX.XX EXISTING CONTOURS (X.Xm INTERVAL)

DEPTH OF CUT

	- 999m	TO	- 7.0m
	- 7.0m	TO	- 5.0m
	- 5.0m	TO	- 3.0m
	- 3.0m	TO	- 2.0m
	- 2.0m	TO	- 1.55m
	- 1.0m	TO	- 0.5m
	- 0.5m	TO	- 0.25m
	- 0.25m	TO	- 0.0m

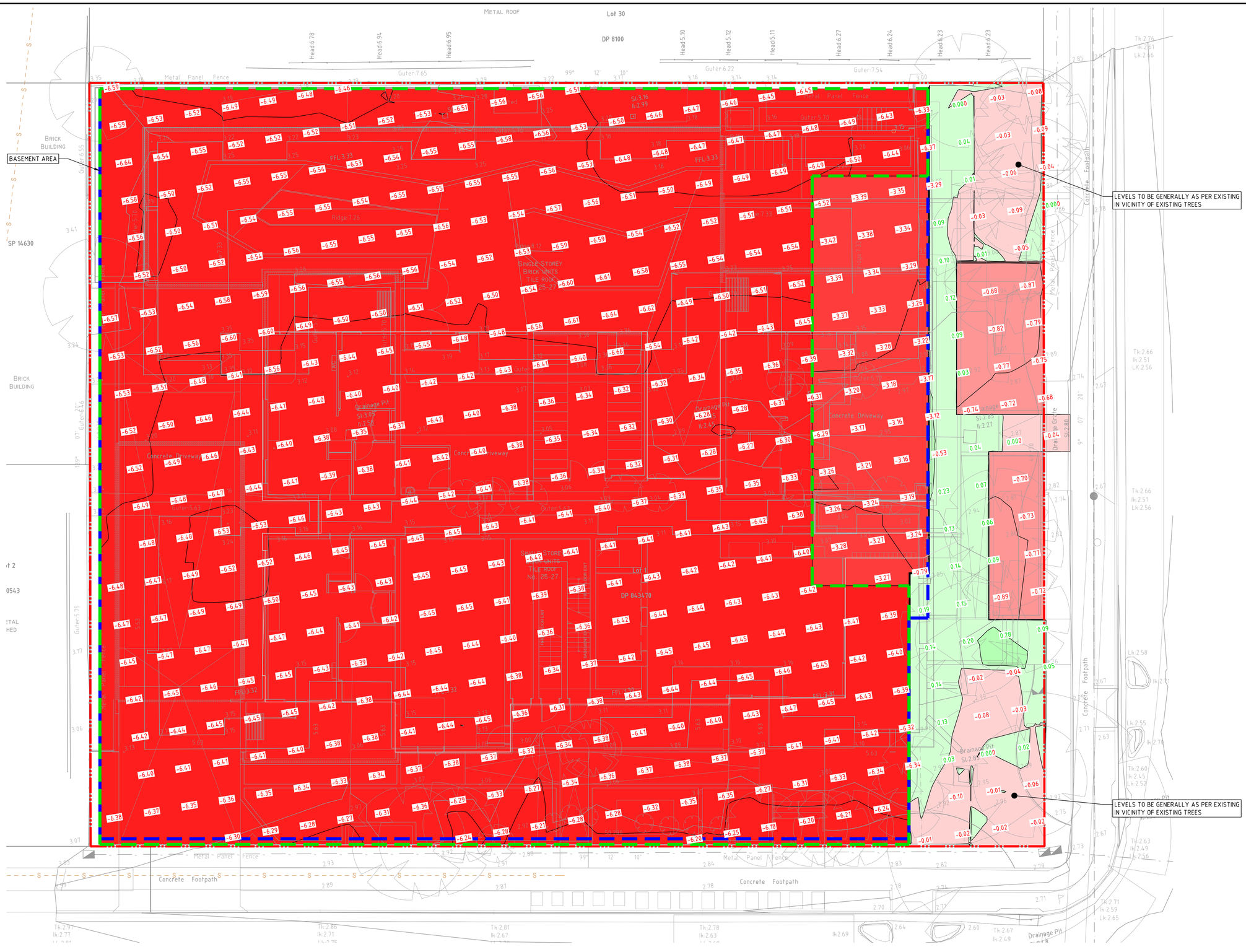
DEPTH OF FILL

	0.0m	TO	0.25m
	0.25m	TO	0.5m
	0.5m	TO	0.75m
	0.75m	TO	1.0m
	1.0m	TO	1.25m
	1.25m	TO	1.5m
	1.5m	TO	2.0m
	2.0m	TO	999m

NOTES

1. BULK EARTHWORKS LEVELS AND VOLUMES ARE BASED ON A COMPARISON OF THE DESIGN BULK EARTHWORKS SURFACE AND THE EXISTING SURFACE LEVEL AS SURVEYED WITH NO ALLOWANCE FOR TOPSOIL STRIPPING. THE FOLLOWING ALLOWANCES HAVE BEEN MADE TO GENERATE DESIGN BULK EARTHWORKS SURFACE;

   FINISHED DESIGN SURFACE MINUS 200mm:
2. NO ALLOWANCE HAS BEEN MADE FOR SELECT LAYERS OR UNSUITABLE MATERIAL.
3. NO ALLOWANCE HAS BEEN MADE FOR TEMPORARY SEDIMENT DAMS
4. NO ALLOWANCE HAS BEEN MADE FOR SERVICE TRENCHES, DRAINAGE TRENCHES, DRAINAGE INFRASTRUCTURE (PITS, CULVERTS, ETC) IN THE LEVELS OR VOLUMES PRESENTED ON THIS PLAN.
5. NO ALLOWANCE FOR ANY TEMPORARY BATTERS DURING WORKS.
6. NO BULKING FACTORS HAVE BEEN CONSIDERED/ALLOWED FOR.
7. APPROXIMATE BULK EARTHWORKS VOLUMES BASED ON THE NOTES ABOVE ARE AS FOLLOWS;
   - BULK CUT = 10,746m³
   - BULK FILL = 11,233m³
   - BULK CUT/FILL BALANCE = 10,734m³ (CUT)
9. ALL BULK EARTHWORKS TO BE UNDERTAKEN IN ACCORDANCE WITH SITE SPECIFIC GEOTECHNICAL REPORT AND BULK EARTHWORKS NOTES.



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REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR INFORMATION	JK	KS	KS	23.10.24
B	ISSUED FOR DEVELOPMENT APPLICATION	JK	KS	EG	06.12.24
C	RE-ISSUED FOR SSDA APPROVAL	JK	KS	EG	29.05.25

DESIGNED: E. GEARING
DRAWN: J. KNIGHT
JOB MANAGER: K. SINCLAIR
VERIFIER: K. SINCLAIR

CLIENT
NSW GOVERNMENT Homes NSW

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ARCHITECT
CKDS

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SCALE 1:100 @ A1 (0 1 2 3 4 5m)

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PROJECT
HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
CUT AND FILL PLAN

JOB NUMBER NL223052
DRAWING NUMBER DA-C03.01
REVISION C
DRAWING SHEET SIZE = A1

Date: 29.05.2025 9:24 AM Plotted By: JOSH KNIGHT Found: O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\O - Drawings\CIVIL\03-CAD\DA\NL223052-DA-C03.01 BULK.dwg

LEGEND

- SITE BOUNDARY LINE
- EXTENT OF BASEMENT BELOW
- XX.XX — EXISTING CONTOURS (0.25m INTERVALS)
- STORMWATER PIPE
- SW PIT — CL xx.xx / IL xx.xx — STORMWATER PIT AND TAG COVER LEVEL / INVERT LEVEL
- FF CL 2.86 — ATLAN FLOWFILTER. DETAILS TO BE PROVIDED AT CC STAGE
- OVERLAND FLOWPATH
- GTD CL xx.xx — GRATED TRENCH DRAIN AND TAG COVER LEVEL
- EXISTING KERB INLET PIT
- RETAINING/ PLANTER/ STRUCTURAL WALL. DETAILS TO BE PROVIDED AT CC STAGE
- OSD — ON-SITE DETENTION TANK
- • RL XX.XX — PROPOSED SPOT HEIGHT
- + eRL XX.XX — EXISTING SPOT HEIGHT
- • TW XX.XX — PROPOSED TOP OF WALL HEIGHT
- FALL — DIRECTION OF GRADE
- FFL XX.XX — PROPOSED FINISHED FLOOR LEVEL
- TREE TO REMAIN
- PROPOSED BUILDING FOOTPRINT TO ARCHITECTS DETAILS
- PROPOSED NON TRAFFICABLE CONCRETE PAVEMENT/ SLAB. REFER STRUCTURAL ENGINEERS DRAWINGS FOR DETAILS
- PROPOSED NON TRAFFICABLE PAVER. DETAILS TO BE PROVIDED AT CC STAGE
- PROPOSED TRAFFICABLE PAVEMENT/ SLAB. DETAILS TO BE PROVIDED AT CC STAGE
- PROPOSED LANDSCAPING BY OTHERS
- PROPOSED DRIVEWAY CROSSOVER IN ACCORDANCE WITH COUNCIL DETAILS
- PROPOSED PAVEMENT BY OTHERS

NOTE
ALL EXISTING INTERNAL STORMWATER TO BE DEMOLISHED

OSD TANK 1 TO PROVIDE MINIMUM 80KL OSD STORAGE VOLUME WITH MINIMUM SURFACE AREA OF 90m². INVERT OF OSD STORAGE TO BE AT RL 2.80 AHD, ASSUMED SOFFIT AT RL 4.00 AHD. MINIMUM 5KL OF RAINWATER REUSE VOLUME TO BE PROVIDED IN BASE OF TANK AT INVERT RL 2.60 AHD IN ACCORDANCE WITH BASIX REQUIREMENTS. GRATED LID TO BE PROVIDED AS HIGH LEVEL OVERFLOW AT RL 4.50

FINAL PIPE LAYOUT TO BE COORDINATED AT DETAILED DESIGN TO ENSURE ADEQUATE HEAD CLEARANCE IN BASEMENT

CONNECT COMMUNAL OPEN SPACE LANDSCAPE AREA'S SUBSOIL DRAINAGE TO PROPOSED OSD BASIN 3. DETAILS TO BE PROVIDED AT CC STAGE

PROVIDE LOW SECTION OF WALL TO ALLOW OVERFLOW POINT

DENOTES INDICATIVE TANK OVERFLOW PATH

EXISTING TREES TO BE RETAINED AND PROTECTED THROUGHOUT CONSTRUCTION

CONNECT COMMUNAL OPEN SPACE LANDSCAPE AREA'S SUBSOIL DRAINAGE TO PROPOSED OSD BASIN 3. DETAILS TO BE PROVIDED AT CC STAGE

EXISTING TREES TO BE RETAINED AND PROTECTED THROUGHOUT CONSTRUCTION

REDUNDANT DRIVEWAY CROSSOVER TO BE REMOVED

BELOW GROUND STORAGE BASIN 3 TO PROVIDE MINIMUM 20KL OSD STORAGE VOLUME WITH MINIMUM SURFACE AREA OF 50m². INVERT OF BASIN TO BE AT RL 2.35m AHD WITH EFFECTIVE OSD STORAGE FROM RL 2.55 AHD AND TOP WATER LEVEL 2.94

PROVIDE SPLITTER PIT TO DIVERT LOW FLOWS TO THE ATLAN FLOWFILTER DEVICE AND HIGH FLOWS TO DOWNSTREAM DISCHARGE CONTROL PIT

PROVIDE ATLAN FLOWFILTER PROPRIETARY DEVICE OFF-LINE WITH MINIMUM 250mm FALL THROUGH DEVICE. DETAILS TO BE PROVIDED AT CC STAGE

PROVIDE END OF LINE DISCHARGE CONTROL PIT TO FURTHER THROTTLE FLOWS FROM DETENTION STORAGES TO ACHIEVE MAXIMUM PERMISSIBLE SITE DISCHARGE IN ACCORDANCE WITH COUNCIL REQUIREMENTS. DETAILS TO BE BE PROVIDED AT CC STAGE AND IN ACCORDANCE WITH COUNCIL DETAILS

SITE TO DISCHARGE TO EXISTING KERB INLET PIT LOCATED IN BOYD STREET PER EXISTING CONDITIONS

MAINTAIN EXISTING STORMWATER POINT OF CONNECTION

EXISTING TREES TO BE RETAINED AND PROTECTED THROUGHOUT CONSTRUCTION

MAINTAIN EXISTING LEVELS ALONG WESTERN BOUNDARY

ACCESS RAMP TO HAVE CREST AT MINIMUM 300mm ABOVE 1% AEP FLOOD LEVEL (RL 3.10)

DRIVEWAY CROSSOVER IN ACCORDANCE WITH TWEED SHIRE COUNCIL'S STANDARDS

OSD TANK 2 TO PROVIDE MINIMUM 15KL OSD STORAGE VOLUME WITH MINIMUM SURFACE AREA OF 30m². INVERT OF OSD STORAGE TO BE AT RL 2.60 AHD, ASSUMED SOFFIT AT RL 3.20 AHD. GRATED LIDS TO BE PROVIDED IN PAVEMENT ABOVE TO BE PROVIDED AS HIGH LEVEL OVERFLOW AT RL 3.40

GTDS TO BE LOCATED OVER TANK AND ALLOW RUNOFF TO DISCHARGE TO OSD STORAGE

PROVIDE ATLAN PROPRIETARY PIT INSERT TO GRATED INLET PIT

NOT FOR CONSTRUCTION

VERIFIER: K. SINCLAIR
JOB MANAGER: K. SINCLAIR
DESIGNED: E. GEARING
DRAWN: J. KNIGHT

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
A	ISSUED FOR INFORMATION	JK	KS	KS	10.10.24
B	ISSUED FOR INFORMATION	RG	KS	KS	30.10.24
C	ISSUED FOR DEVELOPMENT APPLICATION	JK	KS	EG	06.12.24
D	RE-ISSUED FOR SSDA APPROVAL	JK	KS	EG	29.05.25

CLIENT: NSW GOVERNMENT Homes NSW

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ARCHITECT: CKDS

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ABN 81 094 433 100

PROJECT: HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

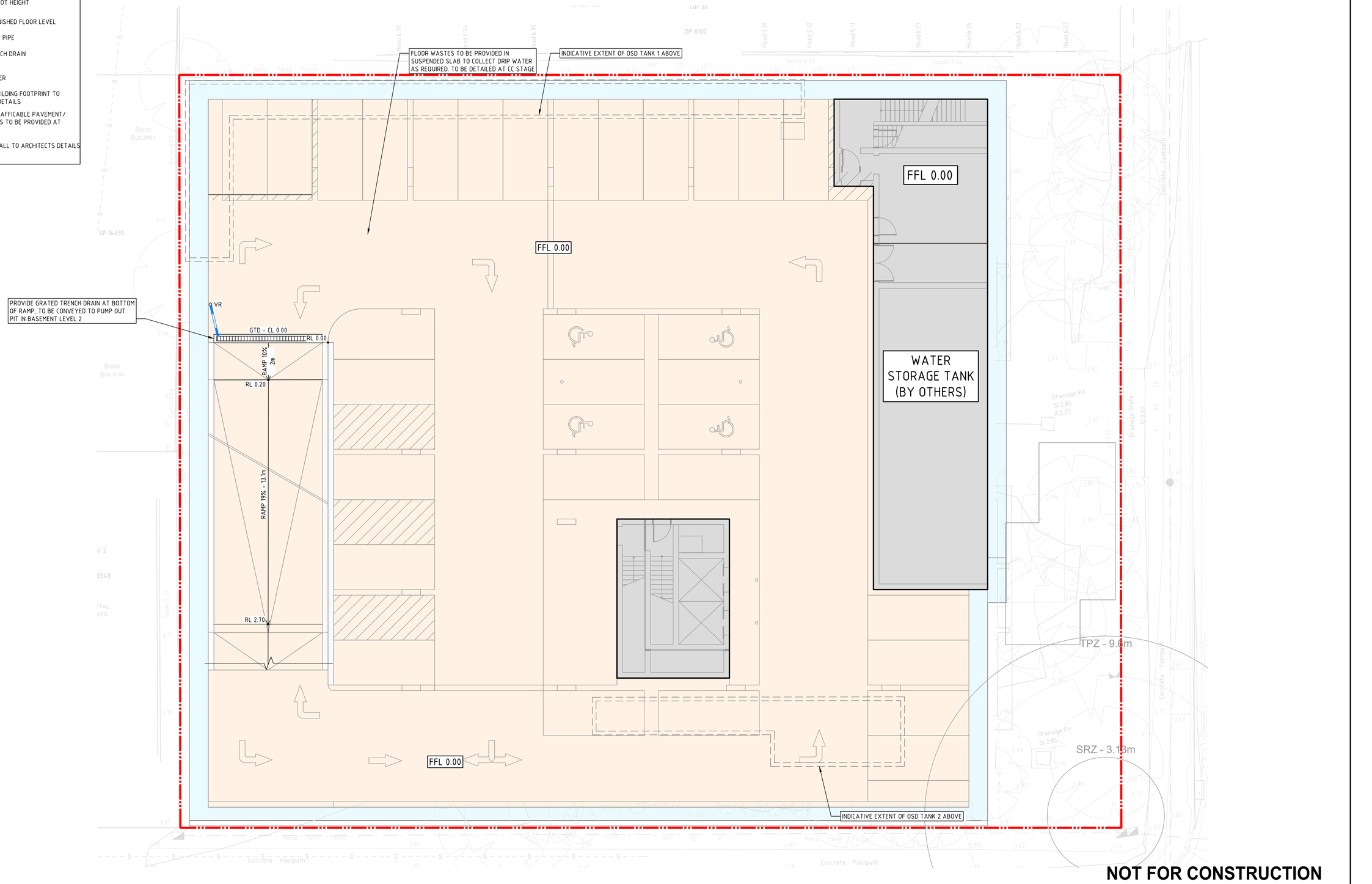
DRAWING TITLE: CIVIL ENGINEERING PACKAGE
CIVIL WORKS PLAN - GROUND FLOOR

JOB NUMBER: NL223052
DRAWING NUMBER: DA-C04.01
REVISION: D
DRAWING SHEET SIZE = A1

Date : 29.05.2025 9:24 AM Plotted By : JOSH KNIGHT Found : O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\O - Drawings\CIVIL\03-CAD\DA\NL223052-DA-C04 01 CIV PLAN GRD.dwg

LEGEND

- SITE BOUNDARY LINE
- RL XX.XX — PROPOSED SPOT HEIGHT
- FFL XX.XX — PROPOSED FINISHED FLOOR LEVEL
- STORMWATER PIPE
- GTD – CL 0.00 — GRATED TRENCH DRAIN
- VR — VERTICAL RISER
- PROPOSED BUILDING FOOTPRINT TO ARCHITECTS DETAILS
- PROPOSED TRAFFICABLE PAVEMENT/ SLAB. DETAILS TO BE PROVIDED AT CC STAGE
- PERIMETER WALL TO ARCHITECTS DETAILS



DRAWN: J. KNIGHT
DESIGNED: E. GEARING
JOB MANAGER: K. SINCLAIR
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PROJECT
HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
CIVIL WORKS PLAN - BASEMENT LEVEL 1

JOB NUMBER **NL223052**

DRAWING NUMBER **DA-C04.11** REVISION **C**

DRAWING SHEET SIZE = A1

Date : 29.05.2025 9:24 AM Plotted By : JOSH KNIGHT Found : O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\0 - Drawings\CIVIL\03-CAD\DA\NL223052DA-C04.11 CIV PLAN BASE 1.dwg

LEGEND

- SITE BOUNDARY LINE
- STORMWATER PIPE
- RM —— RM — PROPOSED RISING MAIN
- SW PIT CL xx.xx IL xx.xx — STORMWATER PIT AND TAG COVER LEVEL / INVERT LEVEL
- PUMP OUT PIT. DETAILS TO BE PROVIDED AT CC STAGE
- RL XX.XX — PROPOSED SPOT HEIGHT
- FALL — DIRECTION OF GRADE
- R — RIDGE IN FINISHED PAVEMENT LEVEL
- FFL XX.XX — PROPOSED FINISHED FLOOR LEVEL
- PROPOSED BUILDING FOOTPRINT TO ARCHITECTS DETAILS
- PROPOSED TRAFFICABLE PAVEMENT/ SLAB. DETAILS TO BE PROVIDED AT CC STAGE
- PERIMETER WALL TO ARCHITECTS DETAILS

PUMP OUT PIT TO COLLECT RUNOFF FROM BASEMENT AND DRIVEWAY CATCHMENT.
MINIMUM 1.32m³ SEDIMENT/OIL SUMP STORAGE TO BE PROVIDED IN BASE OF PIT TO TREAT BASEMENT RUNOFF IN ACCORDANCE WITH COUNCIL REQUIREMENTS.
FINAL SIZE AND DETAILS TO BE CONFIRMED AT CC STAGE

RISING MAIN FROM PUMP OUT TO CONNECT DIRECTLY TO PROPOSED SUSPENDED OSD TANK 1 ABOVE LEVEL 1 WITH NON-RETURN VALVE AT OUTLET. DETAILS TO BE PROVIDED AT CC STAGE

VERTICAL RISER FROM BASEMENT LEVEL 1 TO BE CONVEYED TO PUMP OUT PIT

FFL -3.10

PUMP OUT PIT
CL -3.30

SW PIT
CL -3.25

RAMP MAX 10% - 2m

RAMP MAX 20% - 13.5m

RAMP MAX 10% - 2m

TPZ - 9.6m

SRZ - 3.13m

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VERIFIER: K. SINCLAIR
JOB MANAGER: K. SINCLAIR
DESIGNED: E. GEARING
DRAWN: J. KNIGHT

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PROJECT
HOMES NSW - TWEED HEADS
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE
CIVIL ENGINEERING PACKAGE
CIVIL WORKS PLAN - BASEMENT LEVEL 2

JOB NUMBER
NL223052

DRAWING NUMBER
DA-C04.12

REVISION
B

DRAWING SHEET SIZE = A1

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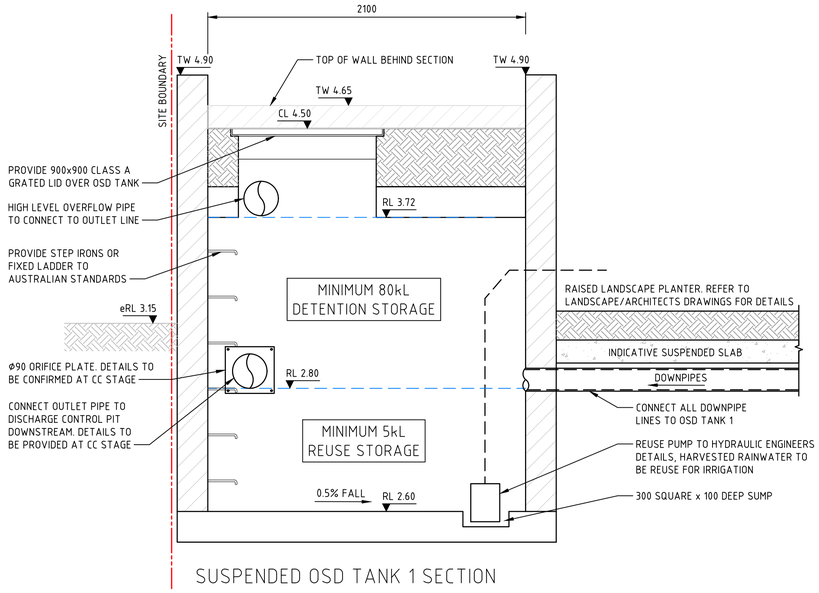
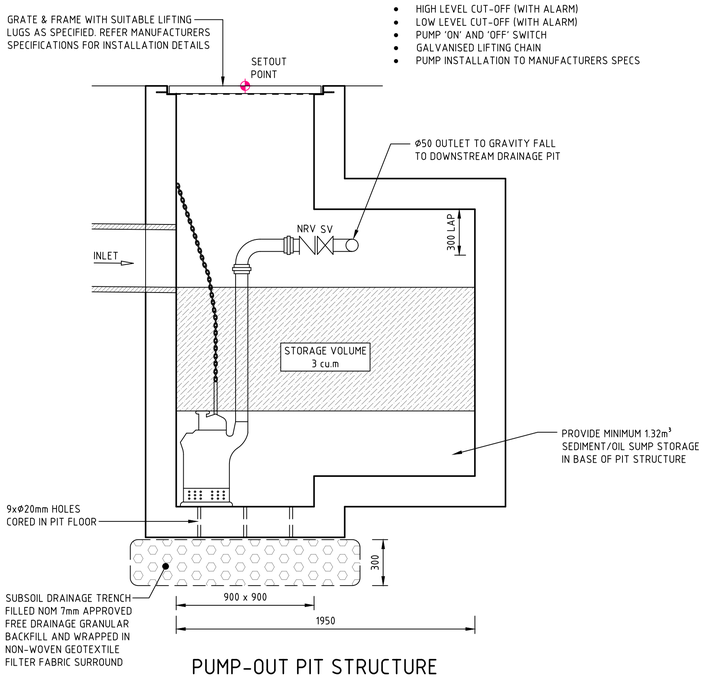


SUSPENDED OSD TANK 1 SECTION

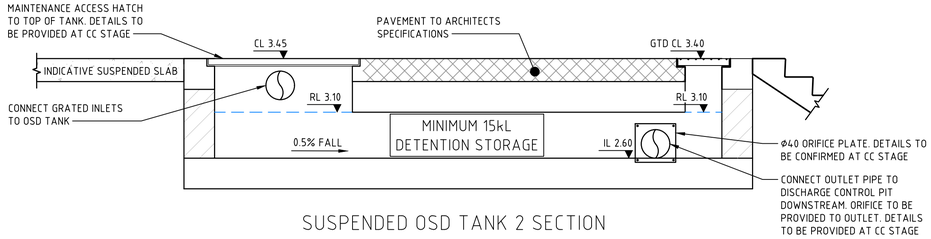
SECTION A SCALE 1:20 C04.01

PUMP-OUT PIT STRUCTURE

- STORAGE VOLUME = MINIMUM 3m³ (TBC AT DETAILED DESIGN)
- DUAL SUBMERSIBLE DE-WATERING PUMPS
- CONNECT TO MAINS POWER
- PUMP DUTY 5 L/s
- HIGH LEVEL CUT-OFF (WITH ALARM)
- LOW LEVEL CUT-OFF (WITH ALARM)
- PUMP 'ON' AND 'OFF' SWITCH
- GALVANISED LIFTING CHAIN
- PUMP INSTALLATION TO MANUFACTURERS SPECS

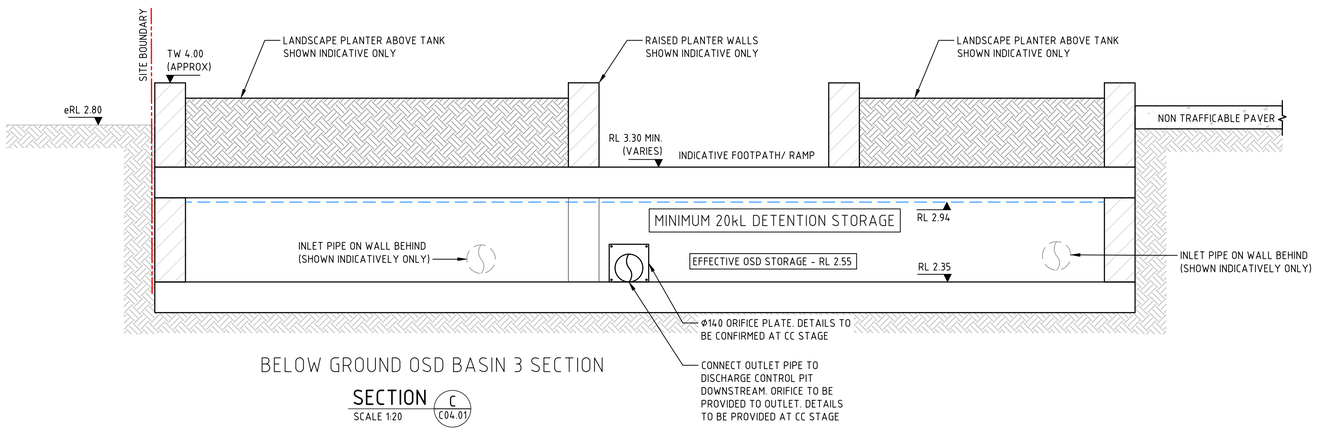


PUMP-OUT PIT STRUCTURE



SUSPENDED OSD TANK 2 SECTION

SECTION B SCALE 1:20 C04.01



BELOW GROUND OSD BASIN 3 SECTION

SECTION C SCALE 1:20 C04.01

DRAWN: J. KNIGHT
DESIGNED: E. GEARING
JOB MANAGER: K. SINCLAIR
VERIFIER: K. SINCLAIR

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PROJECT: **HOMES NSW - TWEED HEADS**
25-27 BOYD STREET, TWEED HEADS

DRAWING TITLE: **CIVIL ENGINEERING PACKAGE**

CIVIL DETAILS

JOB NUMBER: **NL223052**

DRAWING NUMBER: **DA-C09.01**

REVISION: **D**

DRAWING SHEET SIZE = A1

Date: 29.05.2025 9:24 AM Plotted By: JOSH KNIGHT Found: O:\5 Pre-July 24 Projects\Newcastle\YEAR 2022 Jobs\NL223052 - 25-27 Boyd Street, Tweed Heads\O - Drawings\CIVIL\03-CAD\DA\NL223052-DA-C09.01 DETAILS.dwg