

PLEASE QUOTE

Your Ref:

Our Ref: SB:CF 2859476, 3030618

Enquiries: S Byster-Bowles

80 Wilson Street, Burnie Tasmania  
PO Box 973, Burnie TAS 7320

ABN: 29 846 979 690  
Phone: (03) 6430 5700  
Email: burnie@burnie.tas.gov.au  
Web: www.burnie.tas.gov.au

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## NOTICE OF APPLICATION FOR LAND USE PERMIT

(Section 57(3) Land Use Planning and Approvals Act 1993)

### *Advice to Adjoining Land Owner or Occupier*

|                                |  |
|--------------------------------|--|
| <b>Application No: -</b>       | <b>DA 2024/69</b>  |
| <b>Development Site: -</b>     | <b>Alma Place Reserve, Ocean View Lane and 281 Bass Highway OCEAN VISTA CT 152645/2, CT 197329/1 and CT 159557/1</b> |
| <b>Proposal: -</b>             | <b>Installation of new stormwater pipes</b>  |
| <b>Discretionary Matter: -</b> | <b>Reliant on performance criteria for grant of a permit - clauses C15.6.1 (P1.1 &amp; P1.2 &amp; P1.3)</b>          |

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Notice of the above application is served on you as an adjoining land owner or occupier.

The application may be viewed at -

**Burnie City Council Customer Services Counter  
Ground Floor, City Offices,  
80 Wilson Street, Burnie**

Between the hours of 8.30 am - 5.00 pm Monday to Friday inclusive (excluding public holidays) or on Council's website at [www.burnie.tas.gov.au/permits](http://www.burnie.tas.gov.au/permits)

You are entitled to make representation in writing on any aspect of the proposal addressed to: -

**General Manager,  
Burnie City Council,  
PO Box 973, Burnie 7320**

or [burnie@burnie.tas.gov.au](mailto:burnie@burnie.tas.gov.au) by no later than 5.00 pm on **16 September 2024**. Council must have regard to any written representation received during the exhibition period when considering its decision on the application.

All persons who make representation will be notified within seven (7) days of the Council's decision. Any persons who made representation and is not satisfied with the Council decision may, under Section 61(5) of the *Land Use Planning and Approvals Act 1993*, lodge an appeal against that decision within fourteen (14) days of the date of that notice to: -

**The Tasmanian Civil and Administrative Tribunal,  
GPO Box 1311,  
HOBART TAS 7001.**

Should you have any enquiries regarding this development proposal, please do not hesitate to contact on (03) 6430 5700.

S Byster-Bowles

**MANAGER DEVELOPMENT SERVICES**

Date of Notice: - **31 August 2024**

**Land Use Planning and Approvals Act 1993**

**Tasmanian Planning Scheme**

**PERMIT APPLICATION**

*Office use only*

Application No \_\_\_\_\_

Date Received \_\_\_\_\_

Permit Pathway - *Permitted/Discretionary*

**Use or Development Site:**

**Street Address**

1. Alma Place Reserve - Alma Place, Ocean Vista
2. Ocean View Lane - Road Reserve
3. 281 Bass Highway, Ocean Vista

**Certificate of  
Title Reference**

1. 152645/2
2. 197329/1
3. 159557/1

**Applicant**

**First Name**

Burnie City Council

**Second  
Name**

**Surname**

**Owner** (note – if more than one owner, all names must be indicated)

**First  
Name**

Burnie City Council owns Alma Place Reserve and is the  
Road Authority for Ocean View Lane

Jodi

**Second  
Name**

Marie

**Surname**

Watts

## Instruction for making a permit application

### a) *Use or development?*

The application must provide a full description of the proposed use and/or development and of the manner in which the use and/or development is to operate.

“Use” is the purpose or manner for which land is utilised. “Development” is any site works (including any change in natural condition or topography of land and the clearing or conversion of vegetation), and the construction, alteration, or removal of buildings, structures and signs, required in order to prepare a site for use or to change existing conditions within a site. Subdivision is development.

Clause 6.2 Tasmanian Planning Scheme provides the use classes by which all use or development must be described. Development must be categorised by reference to the use class it is to serve.

### b) *Required Information*

Adequate statements, plans and specifications must be included within the permit application to address and demonstrate compliance with all applicable requirements of the planning scheme, including any site analysis, impact report and recommendation, and advice, consent or determination required from a State agency or utility entity.

The application must clearly identify the documents relied upon for determination.

Section 51(1AC) *Land Use Planning and Approvals Act 1993* provides that a permit application is not valid unless it includes all of the information required by a planning scheme. Clause 6.1 Tasmanian Planning Scheme prescribes the minimum information that is necessary in order to complete a valid permit application.

S54 *Land Use Planning and Approvals Act 1993* provides that the planning authority may require the applicant to supply further information before it considers a permit application. If the planning authority requires further information to more particularly address one or more of the applicable requirements of the Tasmanian Planning Scheme, the statutory period for determination of a permit application does not run until that information is answered to the satisfaction of the planning authority

### c) *Applicable Provisions and Standards*

The permit application must be assessed against the applicable provisions and standards of the Tasmanian Planning Scheme. The application is to identify by reference the clauses it relies upon to demonstrate compliance. (eg *clause 8.4.3 (A1 – A4, and P5)*)

### d) *Discretionary Permits*

If a permit is discretionary the permit application must be notified for a period of 14 days to allow opportunity for any interested person to consider the proposed use and/or development and to provide comment on the discretionary matter.

If a permit application relies on performance criteria to satisfy an applicable standard or is discretionary under another provision of the interim planning scheme, the permit is discretionary only with respect to that standard.

The Council must have regard to all representations received during the notification period on a discretionary matter when determining whether to grant or refuse a permit.

### e) *If the applicant is not the landowner*

If the applicant is not the owner of the land in the use or development site, the applicant is required to notify all of the owners either prior to or within 7 days from the date of making the permit application.

The permit application must identify all of the landowners; and the applicant must sign the application form to acknowledge the obligation to advise such landowners that the permit application has been made.

If the site includes land owned or administered by the Burnie City Council or by a State government agency, the consent in writing from the Council or the Minister responsible for Crown land must be provided at the time of making the application.

### f) *Applicant declaration*

It is an offence for a person to do any act that is contrary to a compliance requirement created under the section 63 *Land Use Planning and Approvals Act 1993*. The applicant is required to complete a declaration that the information given in the permit application is true and correct.

### g) *Payment of Fees*

The Council is not required to take any action on the permit application until all the relevant fees have been paid.

**Permit Information**

(NB If insufficient space, please attach separate document)

**Proposed Use:**

Use Class Utilities

**Documents included with the permit application to describe the Use**

Proposed stormwater work

**Proposed Development**

Use class to which the development applies Utilities

**Documents included with the permit application to describe the Development**

Figure 1 Detailed Plan  
Landslide Risk Assessment by Tasman Geotechnics  
Supporting Planning Statement

**Provisions and Standards relied upon for grant of a Permit**

C15.0 Landslip Hazard Code

Clause C15.6.1 - Building and works within a landslip hazard area - P1.1 and P1.2

Previous planning permit granted for proposed works which was not substantially commenced and subsequently lapsed (DA 2021/90)

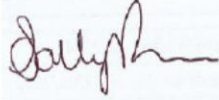


**Notification of Landowner/s**

**If land is not in applicant's ownership**

I, Sally Pearce of Burnie City Council, declare that the owner/each of the owners of the land has been notified of the intention to make this permit application.

Signature of Applicant



Date 30 July 2024

**If the permit application involves land owned or administered by the BURNIE CITY COUNCIL**

Burnie City Council consents to the making of this permit application.

General Manager (Signature)



Date 30 July 2024

**If the permit application involves land owned or administered by the CROWN**

I, the Minister responsible for the land, consent to the making of this permit application.

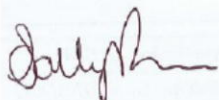
Minister (Signature)

Date

**Applicant Declaration**

I, Sally Pearce of Burnie City Council declare that the information I have given in this permit application to be true and correct to the best of my knowledge.

Signature of Applicant



Date 30 July 2024

PLEASE QUOTE

Your Ref:

Our Ref:

Enquiries: S Pearce

80 Wilson Street, Burnie Tasmania  
PO Box 973, Burnie TAS 7320

ABN: 29 846 979 690

Phone: (03) 6430 5700

Email: [burnie@burnie.tas.gov.au](mailto:burnie@burnie.tas.gov.au)

Web: [www.burnie.tas.gov.au](http://www.burnie.tas.gov.au)

We value your feedback on our service.  
Tell us about it at [www.burnie.net/feedback](http://www.burnie.net/feedback)



30 July 2024

Sally Pearce  
Burnie City Council  
PO Box 973  
BURNIE TAS 7320

Dear Sally

**LAND USE PERMIT APPLICATION: ALMA PLACE RESERVE AND OCEAN VIEW LANE**

As General Manager of Burnie City Council, I provide permission to the making of the above application in accordance with section 52 (1B) (b), of the *Land Use Planning and Approvals Act 1993*.

Yours sincerely

A handwritten signature in black ink, appearing to read "S Overland", is positioned below the text "Yours sincerely".

Simon Overland APM  
**GENERAL MANAGER**

Enc. Signed Permit Application

SEARCH OF TORRENS TITLE

|                  |                              |
|------------------|------------------------------|
| VOLUME<br>152645 | FOLIO<br>2                   |
| EDITION<br>1     | DATE OF ISSUE<br>24-Apr-2008 |

SEARCH DATE : 17-Jul-2024

SEARCH TIME : 02.46 PM

DESCRIPTION OF LAND

City of BURNIE  
 Lot 2 on Sealed Plan 152645  
 Derivation : Part of the Emu Bay block, 50,000 Acres Gtd. to  
 The Van Diemens Land Company  
 Prior CT 241157/1

SCHEDULE 1

A269638 BURNIE CITY COUNCIL

SCHEDULE 2

Reservations and conditions in the Crown Grant if any  
 EXCEPTING AND RESERVING` to the Van Diemens Land Company the  
 rights to construct roads and bridges and drains and  
 other powers more fully set forth in Certificate of  
 Title Vol 464 Fol 193 and Vol 696 Fol 79  
 SP152645 EASEMENTS in Schedule of Easements  
 A269638 FENCING PROVISION in Transfer

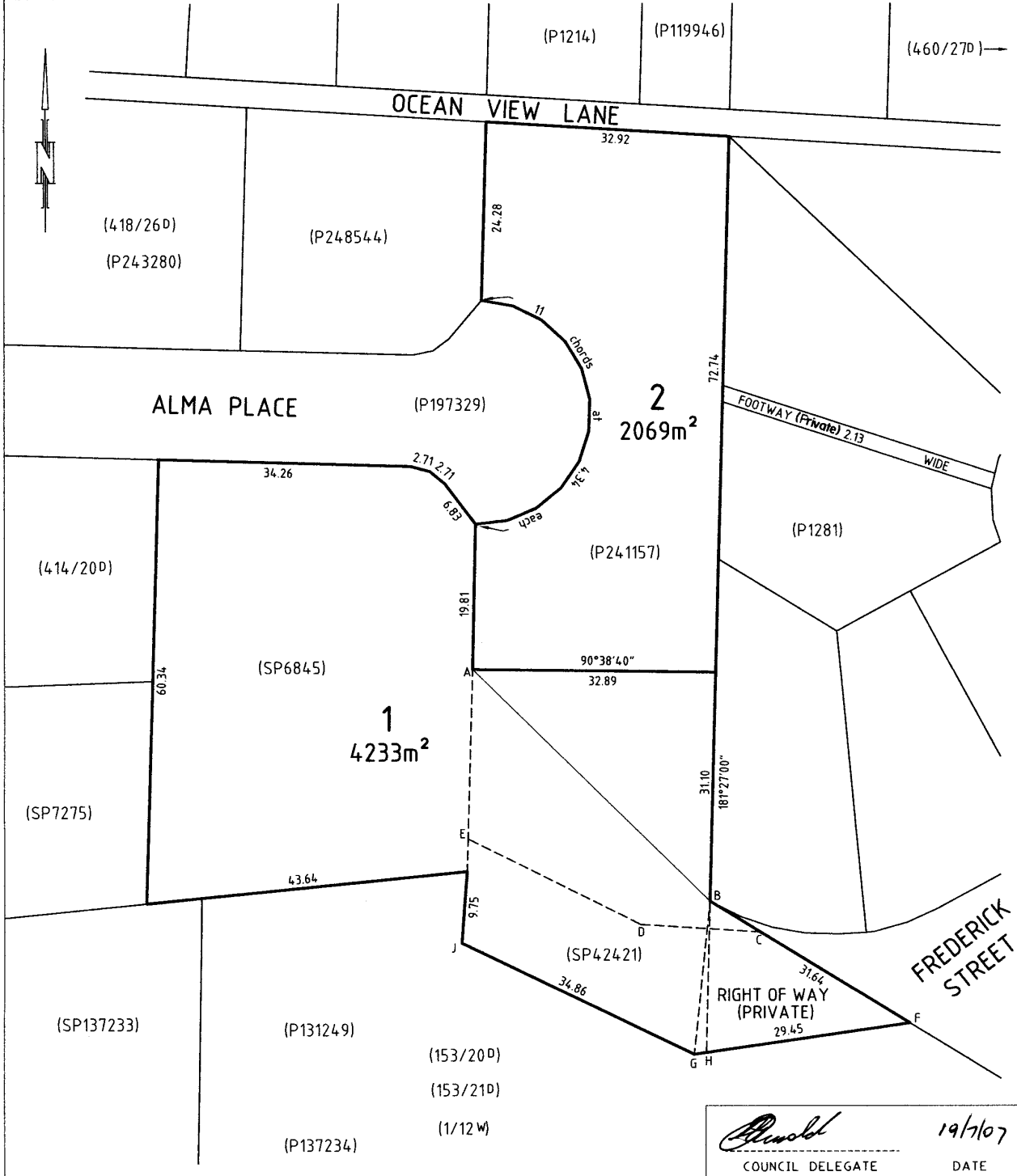
UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

|   |                                   |   |
|---|-----------------------------------|---|
| OWNER<br>Burnie City Council & Hanorah Josephine Stubbs                                 | <b>PLAN OF SURVEY</b>             | REGISTERED NUMBER<br><b>SP152645</b>  |
| FOLIO REFERENCE<br>C.T.241157/1<br>C.T.42421/3  |                                   | BY SURVEYOR<br>Brian John Rollins of<br>PEACOCK, DARCEY & ANDERSON PTY LTD<br>REGISTERED LAND SURVEYORS<br>6 QUEEN STREET, BURNIE |
| GRANTEE<br>Part of the Emu Bay Block, 50,000 Acres Gtd. to The Van Diemens Land Company | LOCATION<br><b>CITY OF BURNIE</b> | <i>Mica Hawa</i><br>Recorder of Titles  |
| SCALE 1: 500  | LENGTHS IN METRES                 | SURVEYORS REF.<br>13998   |

|   |                           |                              |   |
|---|---------------------------|------------------------------|---|
| MAPSHEET MUNICIPAL CODE No (4045-31,32) 103 | LAST UPI No 4201383 FCQ45 | LAST PLAN No P241157 SP42421 | ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN |
|---|---------------------------|------------------------------|---|

LOT 1 IS COMPILED FROM C.T.42421/3 & THIS SURVEY  
LOT 2 IS COMPILED FROM C.T.241157/1 & THIS SURVEY



*Stubbs* 19/7/07  
COUNCIL DELEGATE DATE

|  |  |
|--|--|
| <p align="center"><b>SCHEDULE OF EASEMENTS</b></p> <p><b>NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS &amp; MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.</b></p> | <p align="center">Registered Number</p> <p align="center" style="font-size: 2em;"><b>SP 152645</b></p> |
|--|--|

PAGE 1 OF 1 PAGE/S

EASEMENTS AND PROFITS

Each lot on the plan is together with:-

- (1) such rights of drainage over the drainage easements shown on the plan (if any) as may be necessary to drain the stormwater and other surplus water from such lot; and
- (2) any easements or profits a prendre described hereunder.

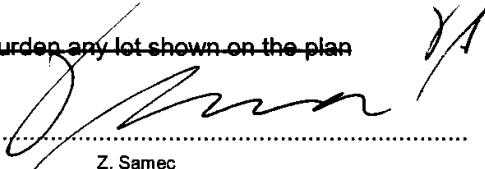
Each lot on the plan is subject to:-

- (1) such rights of drainage over the drainage easements shown on the plan (if any) as passing through such lot as may be necessary to drain the stormwater and other surplus water from any other lot on the plan; and
- (2) any easements or profits a prendre described hereunder.

The direction of the flow of water through the drainage easements shown on the plan is indicated by arrows.

~~No easements or profits a prendre are created to benefit or burden any lot shown on the plan~~

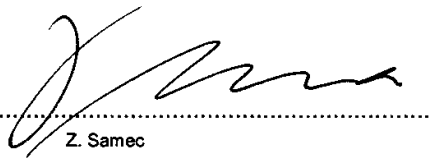
Signed by **ZENIA SAMEC** the solicitor for the Burnie City Council being the registered proprietor of the land comprised in Folio of the Register Volume 241157 Folio 1

  
 .....  
 Z. Samec

Witness signature:

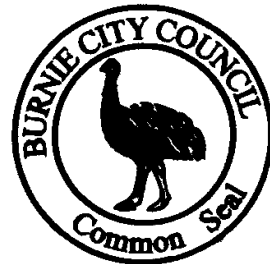
Witness name:(print in full) *Dianne Margaret Ollington*  
 Address: **Law Clerk**  
**14 Ogden Street, Burnie 7320**  
 Occupation:

Signed by **ZENIA SAMEC** the solicitor for the Burnie City Council being the registered proprietor of the land comprised in Folio of the Register Volume 42421 Folio 3

  
 .....  
 Z. Samec

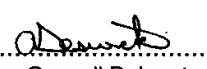
Witness signature:

Witness name:(print in full) *Dianne Margaret Ollington*  
 Address: **Law Clerk**  
**14 Ogden Street, Burnie 7320**  
 Occupation:



g:\staff\sam\_auncc\cns - client folders\burnie city council sale to stubbs - 60985\bec - stubbs - soc.dot

(USE ANNEXURE PAGES FOR CONTINUATION)

|  |  |
|--|--|
| <p>SUBDIVIDER: Burnie City Council &amp; Hanorah Josephine Stubbs</p> <p>FOLIO REF: 241157/1 &amp; 42421/3</p> <p>SOLICITOR &amp; REFERENCE: S. Samec, Crisp Hudson &amp; Mann 60985</p> | <p>PLAN SEALED BY: Burnie City Council</p> <p>DATE: <u>14 SEPTEMBER 2007</u></p> <p align="right"> <br/>       .....<br/>       Council Delegate     </p> |
| <p><b>NOTE: The Council Delegate must sign the Certificate for the purposes of identification.</b></p>   |  |



SEARCH OF TORRENS TITLE

|                  |                              |
|------------------|------------------------------|
| VOLUME<br>197329 | FOLIO<br>1                   |
| EDITION<br>1     | DATE OF ISSUE<br>28-Aug-1995 |

SEARCH DATE : 17-Jul-2024

SEARCH TIME : 02.47 PM

DESCRIPTION OF LAND

City of BURNIE  
 Lot 1 on Plan 197329  
 Derivation : Part of 50,000 Acres Gtd to The Van Diemens Land  
 Company  
 Prior CT 3251/42

SCHEDULE 1

A363612 BURNIE CITY COUNCIL

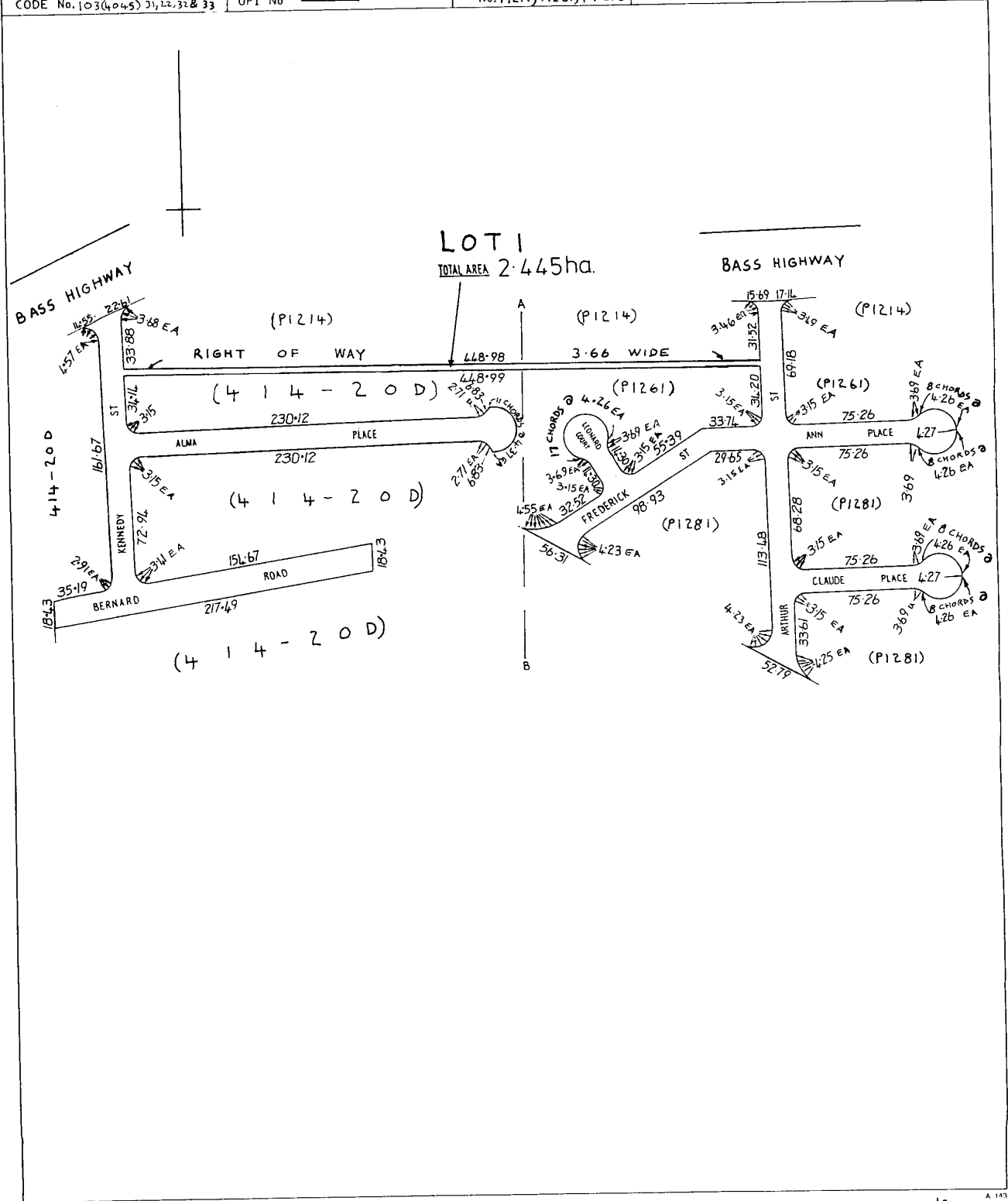
SCHEDULE 2

Reservations and conditions in the Crown Grant if any  
 EXCEPTING & RESERVING unto The Van Diemens Land Company and  
 its successors the rights to make roads bridges and  
 drains and other rights and powers more fully set out  
 in Certificates of Title Vol. 464 Fol. 193 and Vol.  
 696 Fol. 79 relating to that part of the said land  
 within described situate to the west of the line  
 marked A.B. on Plan No. 197329

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

|  |   |                                      |  |
|--|---|--------------------------------------|--|
| OWNER<br><br>FOLIO REFERENCE C.T. 3251-42<br><br>GRANTEE | <b>PLAN OF TITLE</b><br>LOCATION CITY OF BURNIE   |                                      | Registered Number<br><b>P197329</b>                                |
|  | FIRST SURVEY PLAN No. P1214, P1281, 414-20 D<br>COMPILED BY L.T.O<br><br>SCALE 1: 2500                      LENGTHS IN METRES |                                      | APPROVED <b>20 OCT 1997</b><br><i>M. ...</i><br>Recorder of Titles |
| MAPSHEET MUNICIPAL CODE No. 103(4045) 31, 22, 32 & 33    | LAST UPI No. _____  | LAST PLAN No. P1214, P1281, 414-20 D | ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN    |



AC A 143



SEARCH OF TORRENS TITLE

|                  |                              |
|------------------|------------------------------|
| VOLUME<br>159557 | FOLIO<br>1                   |
| EDITION<br>5     | DATE OF ISSUE<br>15-Aug-2023 |

SEARCH DATE : 17-Jul-2024

SEARCH TIME : 02.48 PM

DESCRIPTION OF LAND

City of BURNIE  
 Lot 1 on Plan 159557  
 Derivation : Portion of 50000 Acres Gtd to the Van Diemens  
 Land Company  
 Prior CTs 59177/15 and 119946/1

SCHEDULE 1

N131335 TRANSFER to JODI MARIE WATTS Registered 15-Aug-2023  
 at 12.01 PM

SCHEDULE 2

Reservations and conditions in the Crown Grant if any  
 CONVEYANCE Made Subject to Exceptions And Reservations  
 (appurtenant to the land marked WADX on P159557) in  
 favour of The V.D.L. Co. as more fully set out in  
 Certificate of Title Volume 464 Folio 193 and Volume  
 696 Folio 79.

BENEFITING EASEMENT: (appurtenant to the land marked AUVD on P.  
 159557) a right of carriageway over the Right of Way  
 3.66 wide on P.159557

P59177 BENEFITING EASEMENT: (appurtenant to the land marked  
 WADX on P.159557) a right of carriageway over the  
 Right of Way 3.66 wide and over that portion of  
 Kennedy Street marked JKFE and Arthur Street marked  
 LMHG on P.159557

EXCEPTING AND RESERVING The Van Diemens Land Company  
 (appurtenant to the land marked ABCD on P.157557) the  
 rights to construct roads bridges and drains and  
 other powers more fully set forth in Certificates of  
 Title Volume 464 Folio 193 and Volume 696 Folio 79

C947012 BURDENING EASEMENT: a pipeline easement and sewerage  
 easement in favour or the Burnie City Council over  
 the land marked AUVD on P.159557

Registered  
 24-May-2010 at 12.01 PM

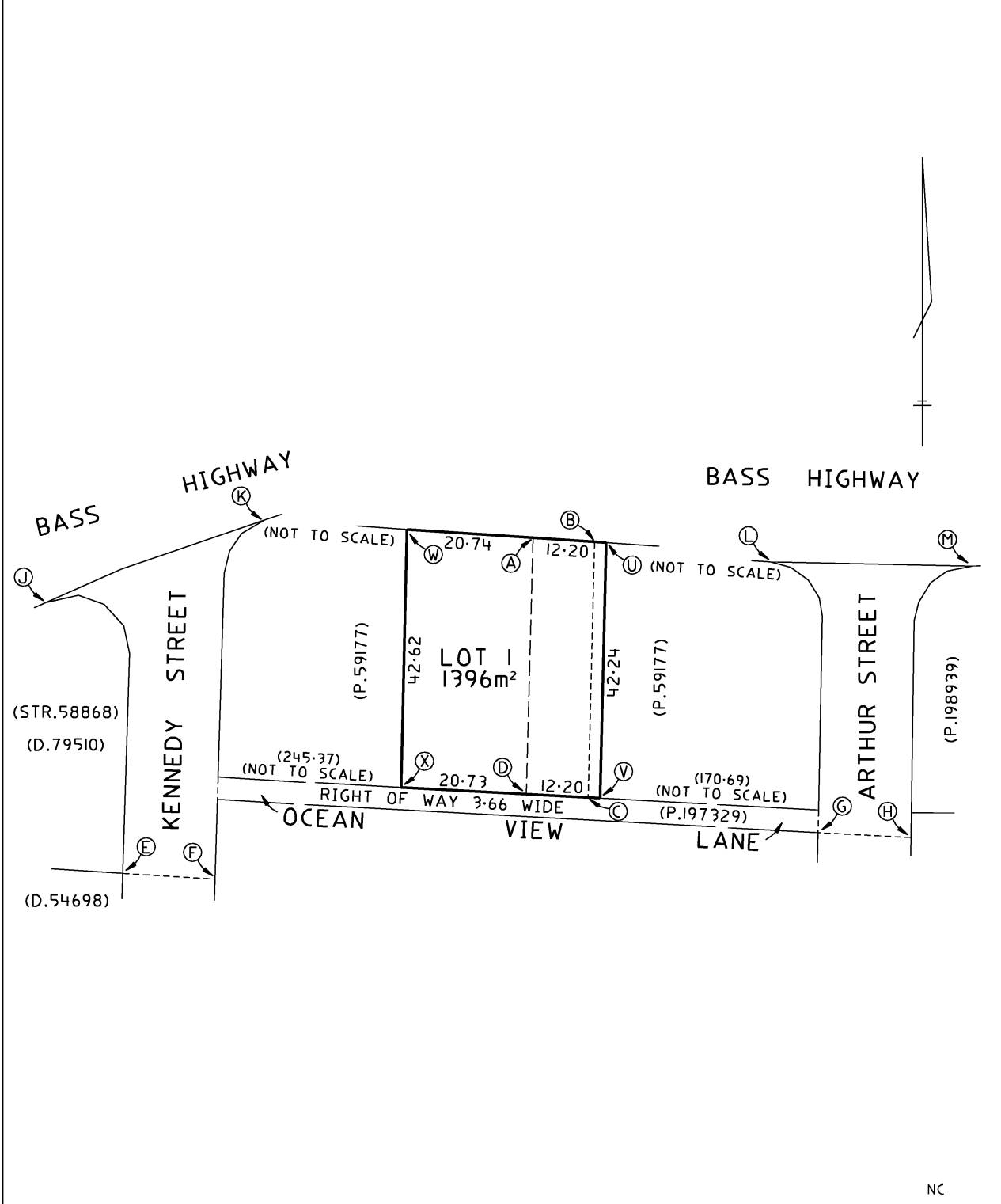
A129490 FENCING CONDITION in Transfer

- B929619 PROCLAMATION under Section 52A of the Roads and Jetties Act 1935 Registered 29-Mar-1996 at noon
- C967469 AGREEMENT pursuant to Section 71 of the Land Use Planning and Approvals Act 1993 (as relates to the land within described formerly comprised in Folio of the Register Vol. 119946 Fol. 1) Registered 24-May-2010 at 12.02 PM
- C967470 ADHESION ORDER under Section 110 of the Local Government (Building and Miscellaneous Provisions) Act 1993 Registered 24-May-2010 at 12.03 PM
- E354111 MORTGAGE to Commonwealth Bank of Australia Registered 15-Aug-2023 at 12.02 PM

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

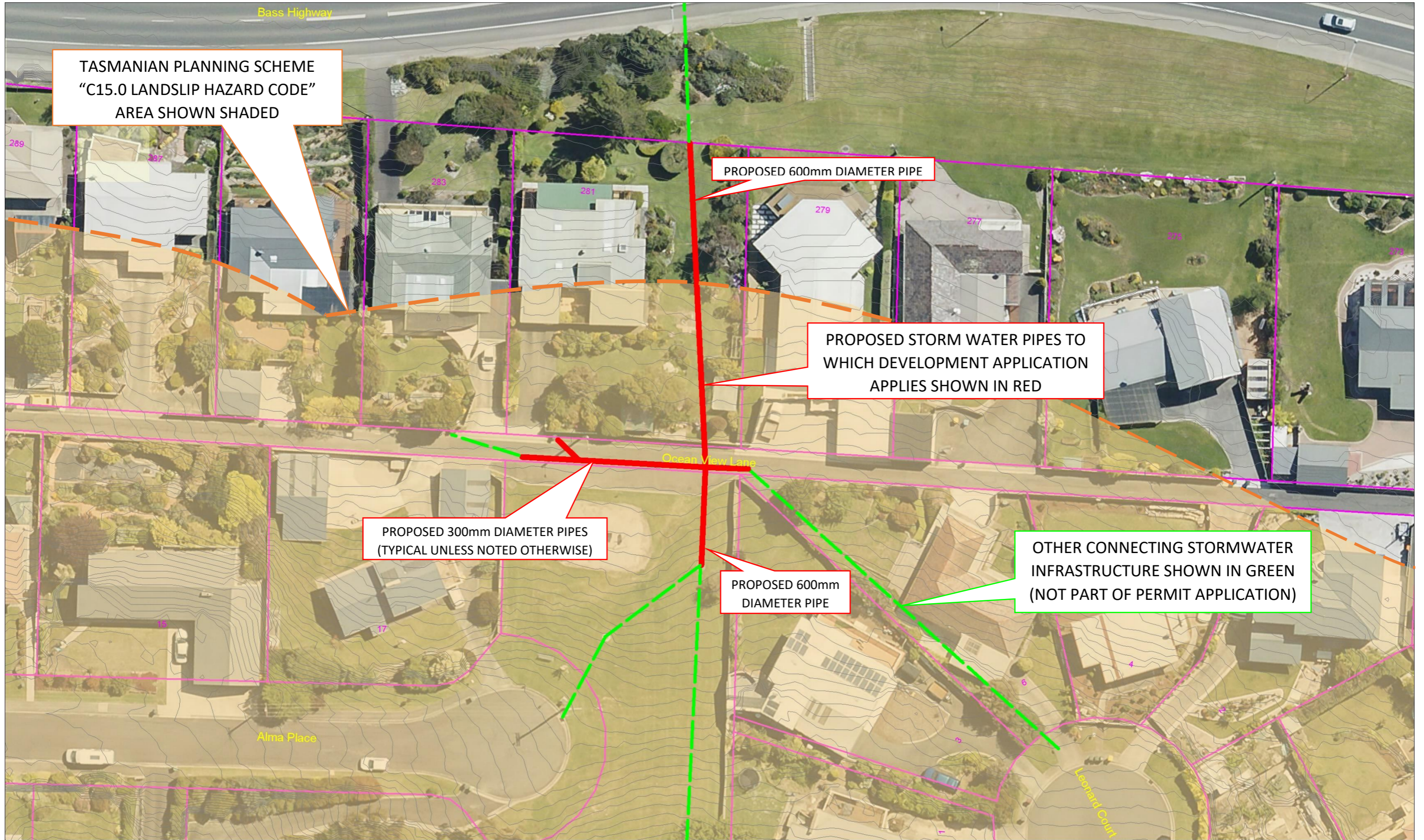
|   |                                 |  |  |   |
|---|---------------------------------|--|--|---|
| OWNER<br><br>FOLIO REFERENCE CT.119946/1<br>CT.59177/15<br><br>GRANTEE<br>PART OF 50000A-OR-OP GTD<br>TO THE VAN DIEMENS LAND COMPANY |                                 | PLAN OF TITLE<br><br>LOCATION<br>CITY OF BURNIE<br><br>FIRST SURVEY PLAN No. P.1214<br>COMPILED BY LDRB<br>SCALE 1: 600                      LENGTHS IN METRES |  | Registered Number<br><b>P.159557</b><br><br>APPROVED 19 MAY 2010<br><i>Alice Kawa</i><br>Recorder of Titles |
| MAPSHEET MUNICIPAL<br>CODE No. 103 (4045-32)  | LAST<br>UPI No 4201389, 4201388 | LAST PLAN<br>No. P.119946, P.59177   | ALL EXISTING SURVEY NUMBERS TO BE<br>CROSS REFERENCED ON THIS PLAN |   |



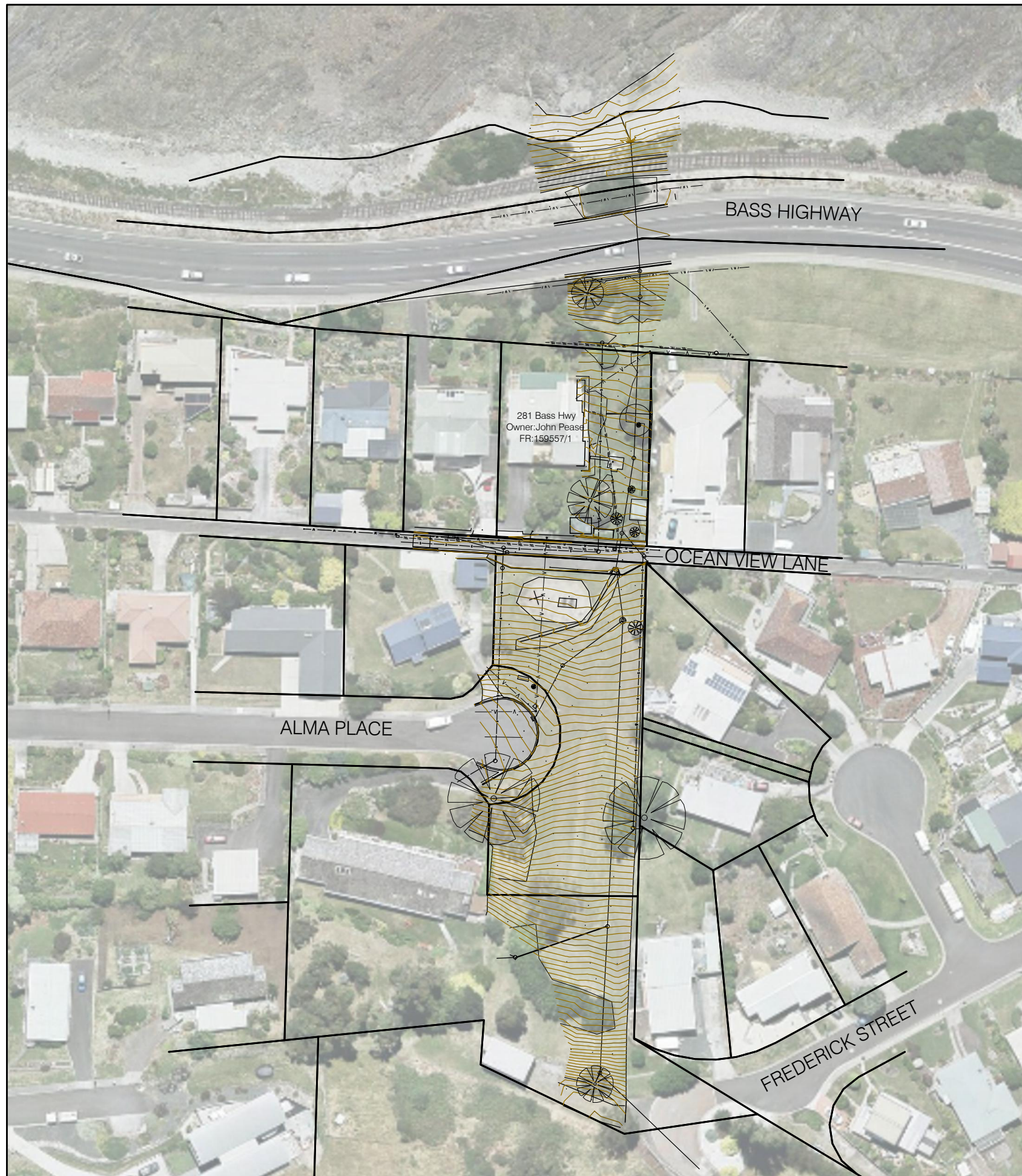
NC



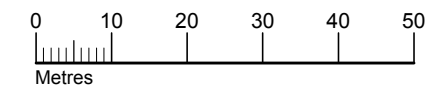
Figure 1 Detailed Plan







SCALE 1: 1000 (A3)



**NOTES:**

Date of Survey: 9th and 15th October 2020

Coordinate Datum is planar based on MGA55 (GDA 94) per coordinate origin SPM10322, with coordinates of

E: 404360.088

N: 5456155.488

RL: 5.402 per Surcom \*NOTE COORDINATES ARE GDA 94

While reasonable effort has been made to locate all visible above ground services, there may be other services which were not located during survey.

Some services have been plotted from council records, and as such are approximate only.

Prior to any demolition, excavation, final design or construction on this site, a comprehensive site investigation should be undertaken to locate all above and below ground service infrastructure.

If any works are to be conducted on or near the boundary a remark survey will be required.

Contour Interval 0.25m

GIS boundaries have been sourced by the Department of Primary Industries Water and Environment. PDA Surveyors accepts no responsibility for the accuracy of the data.

Any DTM modeling that is to be done from the accompanying 3D digital file must be done using only the layer TRIANGLE to ensure that surface matches that verified by PDA Surveyors. No responsibility is taken for the use or interpretation of this data in any other format.

Some feature levels are not shown on this plan for clarity. These can be found turned on in model space or on the OFF Levels layer.

|     |            |  |       |      |       |
|-----|------------|--|-------|------|-------|
| E   |            |  |       |      |       |
| D   |            |  |       |      |       |
| C   |            |  |       |      |       |
| B   |            |  |       |      |       |
| A   |            |  |       |      |       |
| REV | AMENDMENTS |  | DRAWN | DATE | APPR. |

NOTES:

|          |            |          |       |
|----------|------------|----------|-------|
| SURVEYOR | ML         | GEOCIVIL | 46367 |
| DRAWN    | ML         | CHECKED  | AE    |
| DATE     | 22-10-2020 |          |       |

**DETAIL SURVEY**  
**ALMA PLACE, OCEAN VISTA**  
**FOR BURNIE CITY COUNCIL**



**PDA Surveyors**  
 Surveying, Engineering & Planning

6 Queen Street  
 Burnie, Tasmania, 7320  
 www.pda.com.au Also at: Hobart,  
 Launceston & Kingston  
 ABN 71 217 806 325  
 PHONE: +61 03 6431 4400  
 FAX: +61 03 6431 6663  
 EMAIL: pda.bne@pda.com.au

|            |         |
|------------|---------|
| SCALE      | PAPER   |
| 1: 1000    | (A3)    |
| JOB NUMBER | DRAWING |
| 46367      | - 1     |





**NOTES:**

1. NO ATTEMPT HAS BEEN MADE TO LOCATE ALL SERVICES. ONLY THOSE SERVICES CONSPICUOUS DURING FIELD SURVEYS ARE SHOWN. PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY(S) SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICE AND DETAILED LOCATIONS OF ALL SERVICES.
2. ALL DIMENSIONS, LOT SIZES, EASMENTS AND RIGHT OF WAYS ARE SUBJECT TO FINAL SURVEY.
3. PLANS ARE AS FOLLOWS:
 

|         |                                      |
|---------|--------------------------------------|
| 001     | SITE PLAN AND GENERAL NOTES          |
| 100-101 | STORMWATER LAYOUT PLANS              |
| 400-403 | STORMWATER DETAILS AND LONG SECTIONS |
| 410     | STORMWATER ACCESS CHAMBER DETAILS    |
| 411     | TWIN DN525 OUTLET DETAILS            |
4. REFER IPWEA/ LGAT TASMANIAN SUBDIVISION STANDARD DRAWINGS ISSUED - 3rd DECEMBER 2020
 

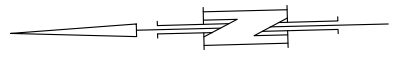
|          |  |
|----------|--|
| TSD-G01  | TRENCH REINSTATEMENT FLEXIBLE PAVEMENTS            |
| TSD-SW01 | PIPE INSTALLATION ANCHOR BLOCKS                    |
| TSD-SW02 | MANHOLES 100 - 600 DIA. PIPES GENERAL ARRANGEMENTS |
| TSD-SW03 | MANHOLES 100 - 600 DIA. PIPES BENCHING DETAILS     |
| TSD-SW15 | STORMWATER 'GP'                                    |
| TSD-SW17 | OUTLET HEADWALLS 300 - 600 DIA PIPES               |
| TSD-SW25 | STORMWATER PROPERTY CONNECTIONS TO MAINS           |
| TSD-SW26 | SADDLE CONNECTION TO STORMWATER DRAIN              |
| TSD-RF04 | NATURE STRIP DETAILS                               |
5. ALL UNDERGROUND SERVICES' LOCATION AND DEPTH TO BE CONFIRMED PRIOR TO START OF WORKS.
6. DRAWINGS ARE NOT TO BE SCALED.
7. 1.0m CONTOURS SHOWN IN ALL DRAWINGS.
8. ALL STORMWATER MAIN SIZES AND MATERIAL PROPERTIES SHOWN IN LONGITUDINAL SECTIONS.
9. ALL EXISTING SERVICES LOCATION AND DEPTH TO BE CONFIRMED PRIOR TO START OF WORKS AND ANY ALTERATIONS TO EXISTING SERVICES TO BE COMPLETED IN ACCORDANCE WITH RELEVANT AUTHORITIES' APPROVAL.

PROPOSED EXTENT OF WORK

**WARNING**  
**BEWARE OF**  
**UNDERGROUND SERVICES**  
 The location of underground services is approximate only and the exact position should be proven on site. No guarantee is given that all services are shown.

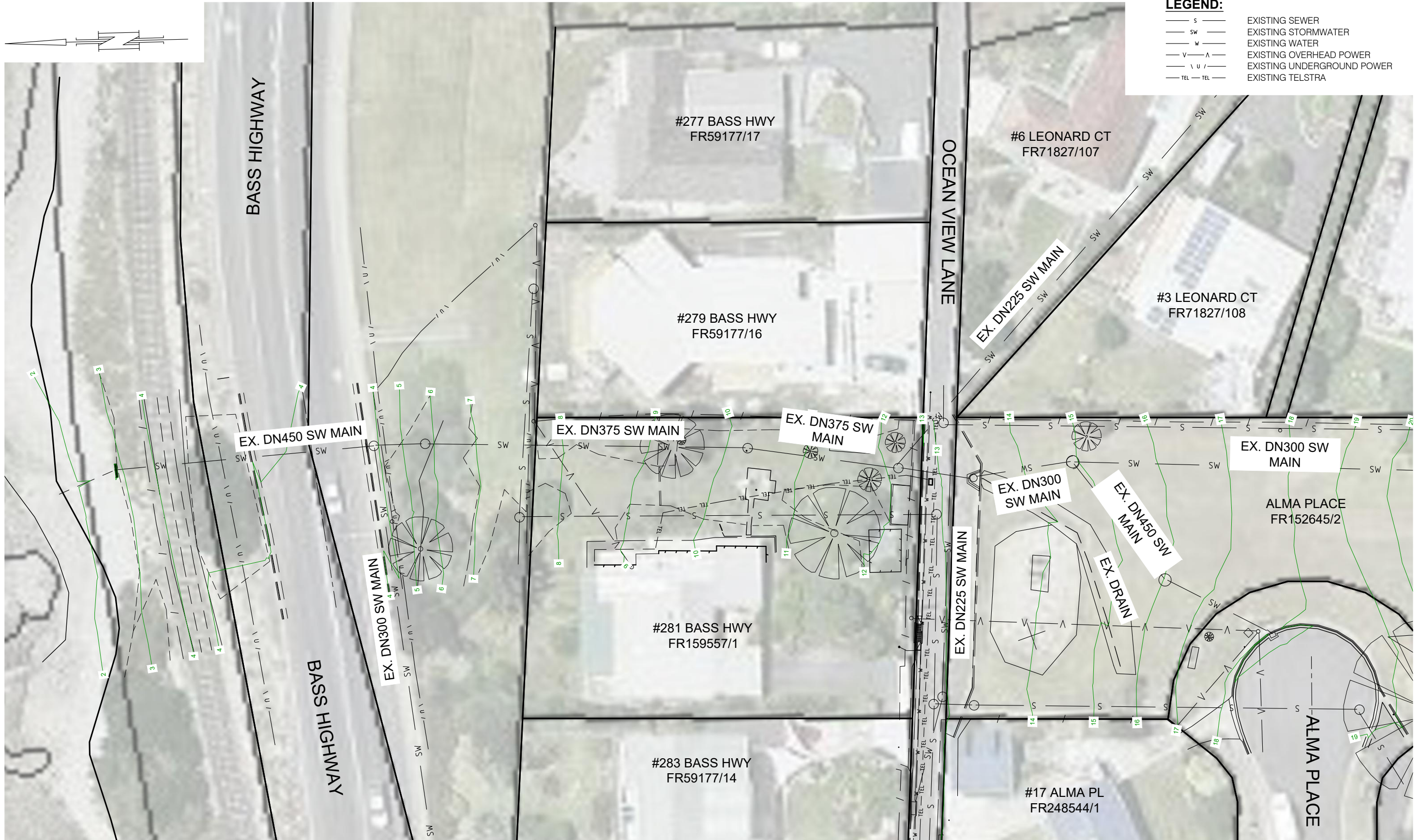
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|---|--|------------|---------|-------|---|---|--|--|--|--|--|--|---|-----------------|--|-------------------------|--|-------------------|--|--------------------------------|--|---|-----------|-----|-----------|---------|--------|-----|-----------|---------|--------------|-----------------|--|--|--------------|------------|--|--|---|---------|---------------------|----------------------|--|----------|--|----------------|--|--|--|--|--|--|---|--|--|--|---|--------------|-------|-------|------|--------|------|------------|------------|-------|---------|---|-------|
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">REV</td> <td style="width: 15%;">AMENDMENTS</td> <td style="width: 5%;">DRAWN</td> <td style="width: 5%;">DATE</td> <td style="width: 5%;">APPR.</td> <td style="width: 15%;">THIS SHEET MAY BE PRINTED USING COLOUR AND MAY BE INCOMPLETE IF COPIED.</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table> | REV  | AMENDMENTS | DRAWN   | DATE  | APPR.   | THIS SHEET MAY BE PRINTED USING COLOUR AND MAY BE INCOMPLETE IF COPIED. |  |  |  |  |  |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="2">DRAWING STATUS:</td> </tr> <tr> <td align="center" colspan="2" style="font-size: 1.2em; color: red;"><b>FOR CONSTRUCTION</b></td> </tr> <tr> <td colspan="2">COORDINATE/DATUM:</td> </tr> <tr> <td align="center" colspan="2" style="border: 1px solid red;"><b>PLANAR (SCALED MGA2020)</b></td> </tr> </table> | DRAWING STATUS: |  | <b>FOR CONSTRUCTION</b> |  | COORDINATE/DATUM: |  | <b>PLANAR (SCALED MGA2020)</b> |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>DESIGNED:</td> <td>G.S</td> <td>REVIEWED:</td> <td>M.W/D.P</td> </tr> <tr> <td>DRAWN:</td> <td>G.S</td> <td>REVIEWED:</td> <td>M.W/D.P</td> </tr> <tr> <td>JOB MANAGER:</td> <td colspan="3">MARK WESTERBERG</td> </tr> <tr> <td>ISSUED DATE:</td> <td colspan="3">10/03/2022</td> </tr> </table> | DESIGNED: | G.S | REVIEWED: | M.W/D.P | DRAWN: | G.S | REVIEWED: | M.W/D.P | JOB MANAGER: | MARK WESTERBERG |  |  | ISSUED DATE: | 10/03/2022 |  |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>CLIENT:</td> <td>BURNIE CITY COUNCIL</td> </tr> <tr> <td>PROJECT DESCRIPTION:</td> <td>STORMWATER UPGRADE WORKS<br/>OCEAN VISTA LANE, OCEAN VISTA<br/>OVERALL SITE PLAN AND GENERAL NOTES</td> </tr> <tr> <td>ADDRESS:</td> <td> </td> </tr> <tr> <td>DRAWING TITLE:</td> <td> </td> </tr> </table> | CLIENT: | BURNIE CITY COUNCIL | PROJECT DESCRIPTION: | STORMWATER UPGRADE WORKS<br>OCEAN VISTA LANE, OCEAN VISTA<br>OVERALL SITE PLAN AND GENERAL NOTES | ADDRESS: |  | DRAWING TITLE: |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2"> </td> </tr> <tr> <td align="center" colspan="2"> </td> </tr> <tr> <td align="center" colspan="2"> <small>6 Queen Street<br/>Burnie, Tasmania, 7320<br/>www.pda.com.au<br/>Also at: Launceston, Devonport,<br/>Hobart &amp; Kingston</small> </td> </tr> <tr> <td align="center" colspan="2"> <small>PHONE: +61 03 6431 4400<br/>FAX: +61 03 6431 6663<br/>EMAIL: pda.bne@pda.com.au</small> </td> </tr> </table> |  |  |  |  | <small>6 Queen Street<br/>Burnie, Tasmania, 7320<br/>www.pda.com.au<br/>Also at: Launceston, Devonport,<br/>Hobart &amp; Kingston</small> |  | <small>PHONE: +61 03 6431 4400<br/>FAX: +61 03 6431 6663<br/>EMAIL: pda.bne@pda.com.au</small> |  | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>CONTRACT NO.</td> <td>SCALE</td> <td>PAPER</td> </tr> <tr> <td align="center">----</td> <td align="center">1:1500</td> <td align="center">(A3)</td> </tr> <tr> <td>JOB NUMBER</td> <td>DISCIPLINE</td> <td>SHEET</td> </tr> <tr> <td align="center">48178MW</td> <td align="center">H</td> <td align="center">001 A</td> </tr> </table> | CONTRACT NO. | SCALE | PAPER | ---- | 1:1500 | (A3) | JOB NUMBER | DISCIPLINE | SHEET | 48178MW | H | 001 A |
| REV   | AMENDMENTS   | DRAWN      | DATE    | APPR. | THIS SHEET MAY BE PRINTED USING COLOUR AND MAY BE INCOMPLETE IF COPIED. |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
|   |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| DRAWING STATUS:   |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| <b>FOR CONSTRUCTION</b>   |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| COORDINATE/DATUM:   |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| <b>PLANAR (SCALED MGA2020)</b>  |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| DESIGNED:   | G.S  | REVIEWED:  | M.W/D.P |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| DRAWN:  | G.S  | REVIEWED:  | M.W/D.P |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| JOB MANAGER:  | MARK WESTERBERG  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| ISSUED DATE:  | 10/03/2022   |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| CLIENT:   | BURNIE CITY COUNCIL  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| PROJECT DESCRIPTION:  | STORMWATER UPGRADE WORKS<br>OCEAN VISTA LANE, OCEAN VISTA<br>OVERALL SITE PLAN AND GENERAL NOTES |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| ADDRESS:  |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| DRAWING TITLE:  |  |            |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
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| CONTRACT NO.  | SCALE  | PAPER      |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
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| JOB NUMBER  | DISCIPLINE   | SHEET      |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |
| 48178MW   | H  | 001 A      |         |       |   |   |  |  |  |  |  |  |   |                 |  |                         |  |                   |  |                                |  |   |           |     |           |         |        |     |           |         |              |                 |  |  |              |            |  |  |   |         |                     |                      |  |          |  |                |  |  |  |  |  |  |   |  |  |  |   |              |       |       |      |        |      |            |            |       |         |   |       |





**LEGEND:**

|               |                            |
|---------------|----------------------------|
| — S —         | EXISTING SEWER             |
| — SW —        | EXISTING STORMWATER        |
| — W —         | EXISTING WATER             |
| — V — A —     | EXISTING OVERHEAD POWER    |
| — U — U —     | EXISTING UNDERGROUND POWER |
| — TEL — TEL — | EXISTING TELSTRA           |



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|     |                           |       |            |                         |
|-----|---------------------------|-------|------------|-------------------------|
| --- | ---                       | ---   | ---        | DRAWING STATUS:         |
| --- | ---                       | ---   | ---        | <b>FOR CONSTRUCTION</b> |
| --- | ---                       | ---   | ---        | COORDINATE/DATUM:       |
| A   | FOR CONSTRUCTION DRAWINGS | GS    | 30/10/2023 | PLANAR (SCALED MGA2020) |
| REV | AMENDMENTS                | DRAWN | DATE       | APPR.                   |

|              |                 |           |         |
|--------------|-----------------|-----------|---------|
| DESIGNED:    | G.S             | REVIEWED: | M.W/D.P |
| DRAWN:       | G.S             | REVIEWED: | M.W/D.P |
| JOB MANAGER: | MARK WESTERBERG |           |         |
| ISSUED DATE: | 10/03/2022      |           |         |

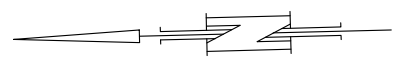
CLIENT: BURNIE CITY COUNCIL  
PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS  
ADDRESS: OCEAN VISTA LANE, OCEAN VISTA  
DRAWING TITLE: STORMWATER LAYOUT PLANS  
EXISTING SERVICES LOCATION PLAN



**PDA Surveyors**  
Surveying, Engineering & Planning  
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www.pda.com.au  
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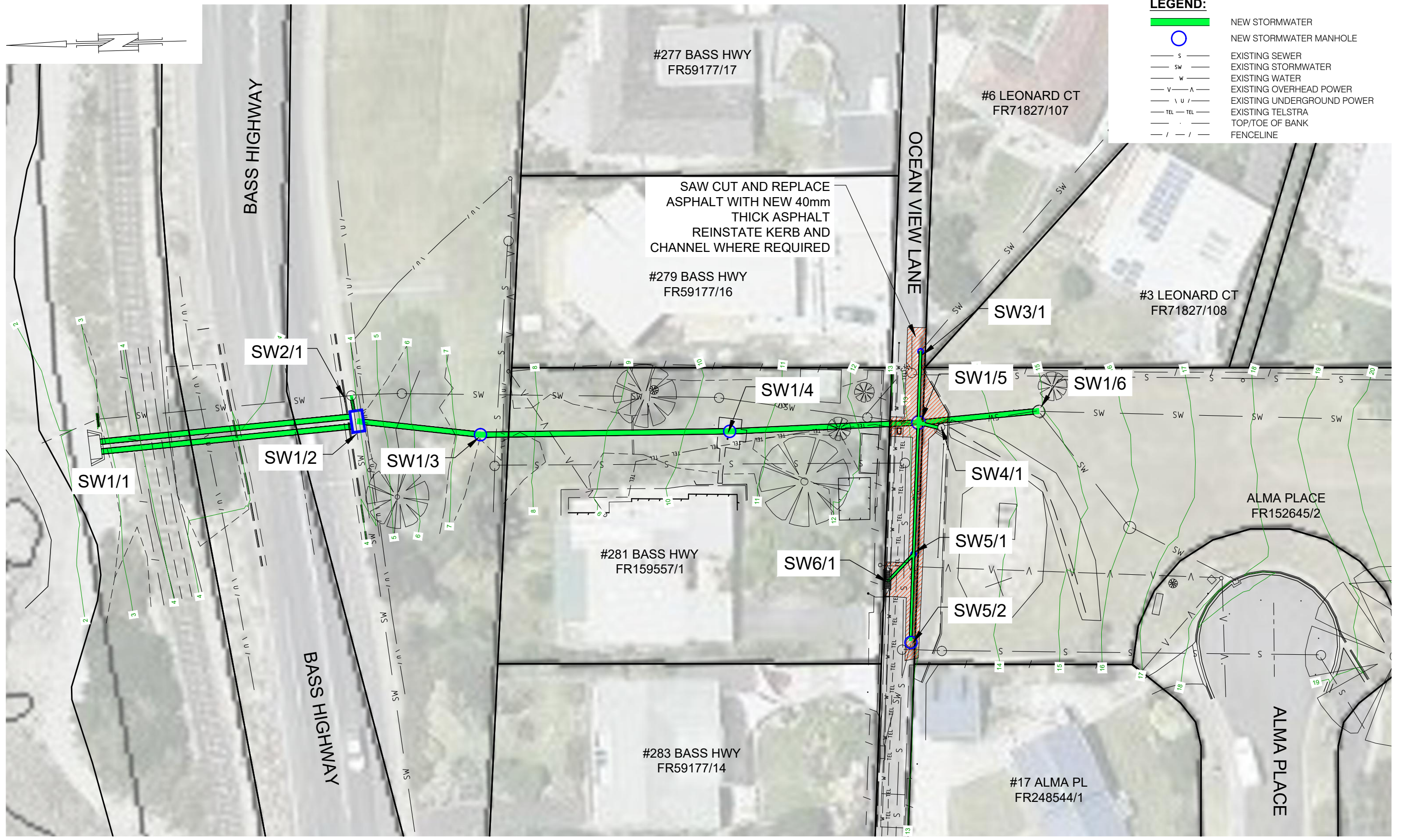
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|--------------|---------|------------|-------|-------|------|
| CONTRACT NO. | ---     | SCALE      | 1:400 | PAPER | (A3) |
| JOB NUMBER   | 48178MW | DISCIPLINE | H     | SHEET | 100  |
| REVISION     | A       |            |       |       |      |





**LEGEND:**

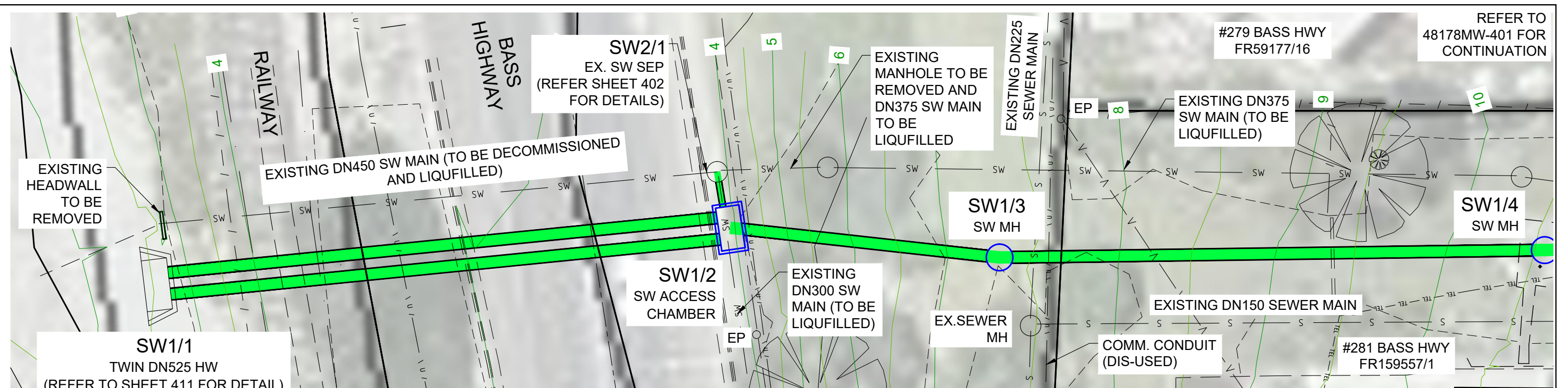
|  |                            |
|--|----------------------------|
|  | NEW STORMWATER             |
|  | NEW STORMWATER MANHOLE     |
|  | EXISTING SEWER             |
|  | EXISTING STORMWATER        |
|  | EXISTING WATER             |
|  | EXISTING OVERHEAD POWER    |
|  | EXISTING UNDERGROUND POWER |
|  | EXISTING TELSTRA           |
|  | TOP/TOE OF BANK            |
|  | FENCELINE                  |



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|   |  |   |                                |  |  |   |  |   |
|---|--|---|--------------------------------|--|--|---|--|---|
| DRAWING STATUS:<br><b>FOR CONSTRUCTION</b>          |  | DESIGNED: G.S.<br>DRAWN: G.S.                           | REVIEWED: M.W/D.P.<br>M.W/D.P. | CLIENT: BURNIE CITY COUNCIL<br>PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS<br>ADDRESS: OCEAN VISTA LANE, OCEAN VISTA<br>DRAWING TITLE: STORMWATER LAYOUT PLANS<br>PROPOSED STORMWATER OVERALL PLAN |  |   | 6 Queen Street<br>Burnie, Tasmania, 7320<br>www.pda.com.au<br>Also at: Launceston, Devonport,<br>Hobart & Kingston<br>Surveying, Engineering & Planning<br>PHONE: +61 03 6431 4400<br>FAX: +61 03 6431 6663<br>EMAIL: pda.bne@pda.com.au | CONTRACT NO.: ----<br>SCALE: 1:400<br>PAPER: (A3) |
| COORDINATE/DATUM:<br><b>PLANAR (SCALED MGA2020)</b> |  | JOB MANAGER: MARK WESTERBERG<br>ISSUED DATE: 10/03/2022 |                                | REGISTRATION NUMBER: ----  |  | JOB NUMBER: 48178MW<br>DISCIPLINE: H<br>SHEET: 101<br>REVISION: A |  |   |



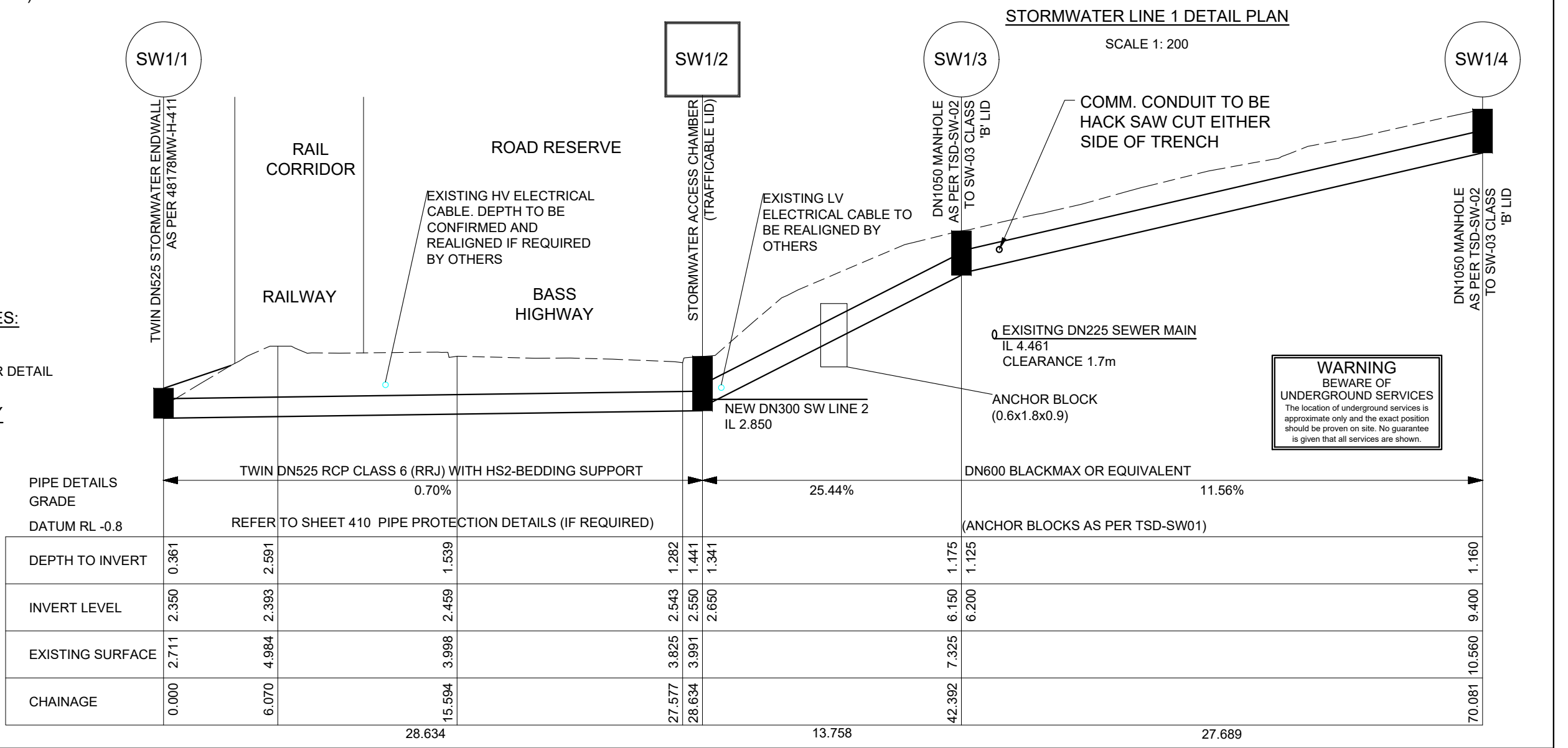


- LEGEND:**
- NEW STORMWATER
  - S — EXISTING SEWER
  - SW — EXISTING STORMWATER
  - W — EXISTING WATER
  - V — A — EXISTING OVERHEAD POWER
  - U — U — EXISTING UNDERGROUND POWER
  - TEL — TEL — EXISTING TELSTRA
  - — — TOP/TOE OF BANK
  - / — / — FENCELINE
  - EP EXISTING ELECTRICAL POLE
  - MH MAINTENANCE HOLE
  - SEP SIDE ENTRY PIT
  - GP GRATED PIT

**STORMWATER LONG SECTION NOTES:**  
 REFER TO NOTES ON SHEET 401  
 REFER TO SHEET 410 FOR ACCESS CHAMBER DETAIL

**TWIN DN525 UNDER BASS HIGHWAY & RAILWAY NOTES:**  
 SERVICE DESIGN LOAD APPLIED TO DN525 RCP (AS5100.2:2017):  
 VEHICLES - SM1600 & HLP400  
 RAILWAY LOADS - 300LA, STANDARD GAUGE  
 REFER TP DSG'S SPECIFICATIONS SCETION 107, UNDERGROUND DRAINS.

**STORMWATER LINE 1 LONGITUDINAL SECTION**  
 SCALE: HOR 1:250 VER 1:100



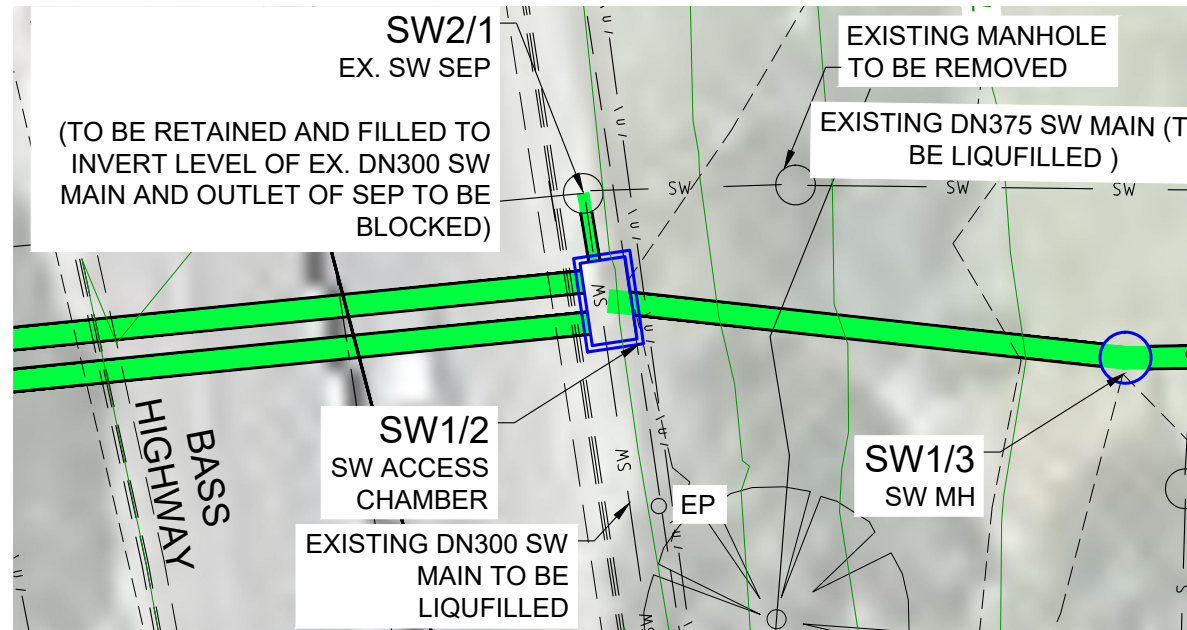
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|  |  |  |                                |   |  |  |  |
|--|--|--|--------------------------------|---|--|--|--|
| <b>FOR CONSTRUCTION</b><br>PLANAR (SCALED MGA2020) |  | DESIGNED: G.S.<br>DRAWN: G.S.<br>JOB MANAGER: MARK WESTERBERG<br>ISSUED DATE: 10/03/2022 | REVIEWED: M.W/D.P.<br>M.W/D.P. | CLIENT: BURNIE CITY COUNCIL<br>PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS OCEAN VISTA LANE, OCEAN VISTA STORMWATER DETAILS AND LONG SECTIONS LINE 1 DETAIL PLAN AND LONG SECTION - 1/2 |  |  | CONTRACT NO.: ----<br>SCALE: 1:200<br>PAPER: (A3)<br>JOB NUMBER: 48178MW H 400 A<br>DISCIPLINE: SHEET REVISION |
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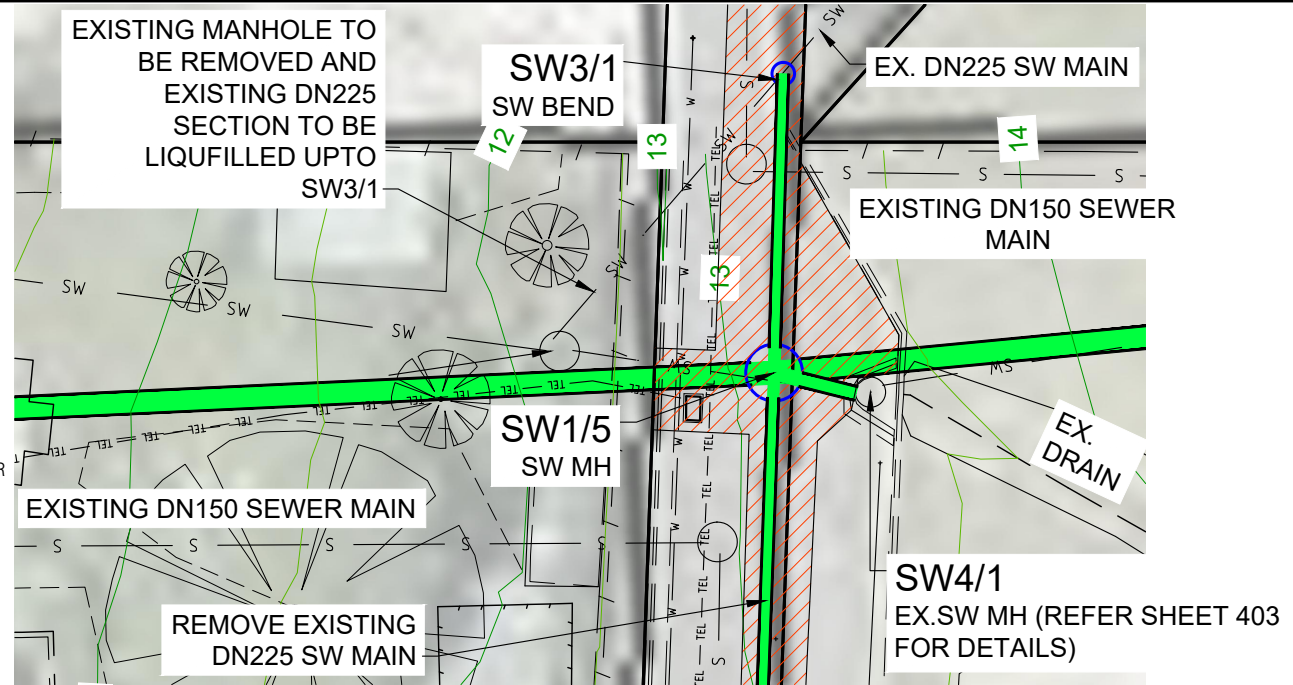




STORMWATER LINE 2 DETAIL PLAN

SCALE 1: 200

- LEGEND:**
- NEW STORMWATER
  - S — EXISTING SEWER
  - SW — EXISTING STORMWATER
  - W — EXISTING WATER
  - V — A — EXISTING OVERHEAD POWER
  - U — U — EXISTING UNDERGROUND POWER
  - TEL — TEL — EXISTING TELSTRA
  - — — TOP/TOE OF BANK
  - - - - FENCELINE
  - EP EXISTING ELECTRICAL POLE
  - MH MAINTENANCE HOLE
  - SEP SIDE ENTRY PIT
  - GP GRATED PIT



STORMWATER LINE 3 DETAIL PLAN

SCALE 1: 200

REFER TO 48178MW-400-401 LINE 1 DETAILS

**STORMWATER LONG SECTION NOTES:**

REFER TO NOTES ON SHEET 401

|                  | SW1/2 | SW2/1 |
|------------------|-------|-------|
| DEPTH TO INVERT  | 1.141 | 0.927 |
| INVERT LEVEL     | 2.550 | 2.900 |
| EXISTING SURFACE | 3.991 | 3.827 |
| CHAINAGE         | 0.000 | 3.031 |

PIPE DETAILS GRADE 1.65%  
DATUM RL -0.3

STORMWATER LINE 2 LONGITUDINAL SECTION

SCALE: HOR 1:250 VER 1:100

|                  | SW1/5 | SW3/1 BEND |
|------------------|-------|------------|
| DEPTH TO INVERT  | 1.141 | 0.927      |
| INVERT LEVEL     | 2.550 | 2.900      |
| EXISTING SURFACE | 3.991 | 3.827      |
| CHAINAGE         | 0.000 | 3.031      |

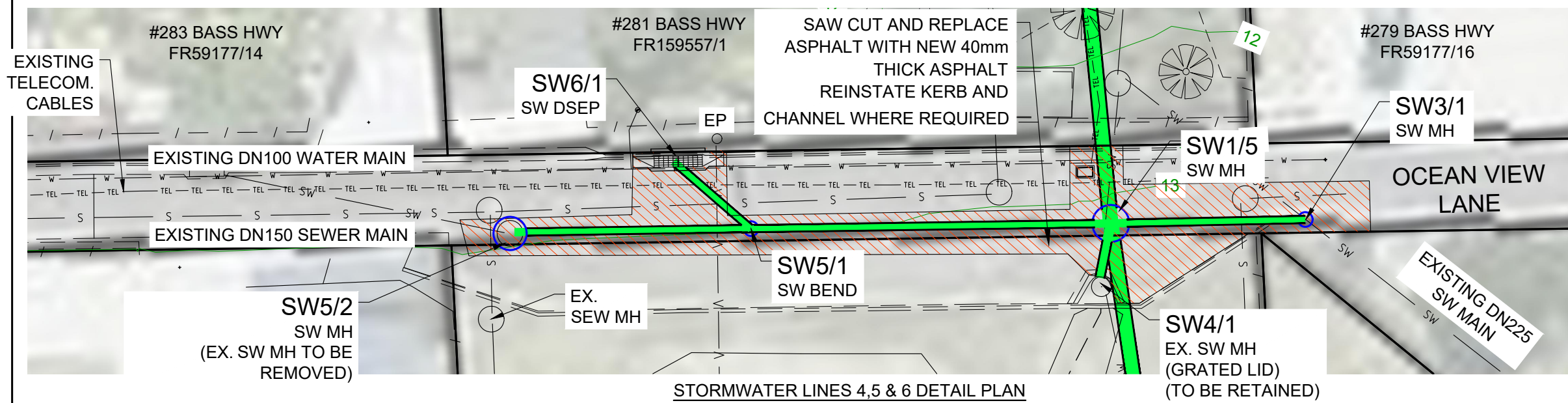
EXISTING DN150 SEWER MAIN IL 11.866 CLEARANCE 75mm  
STORMPRO 45° HORIZONTAL JUNCTION/BEND TO EXISTING SW MAIN  
EX. DN225 SW IL 12.12  
DN225 BM OR EQUIV NET 1.01  
RL 7.8  
11.300 12.040 12.120  
0.000 13.098 12.040 7.912

STORMWATER LINE 3 LONGITUDINAL SECTION

SCALE: HOR 1:250 VER 1:100

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
The location of underground services is approximate only and the exact position should be proven on site. No guarantee is given that all services are shown.

|   |  |   |                                |  |  |   |   |
|---|--|---|--------------------------------|--|--|---|---|
| DRAWING STATUS:<br><b>FOR CONSTRUCTION</b>          |  | DESIGNED: G.S.<br>DRAWN: G.S.                           | REVIEWED: M.W/D.P.<br>M.W/D.P. | CLIENT: BURNIE CITY COUNCIL<br>PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS OCEAN VISTA LANE, OCEAN VISTA<br>ADDRESS: OCEAN VISTA LANE, OCEAN VISTA<br>DRAWING TITLE: STORMWATER DETAILS AND LONG SECTIONS LINE 2 & 3 DETAIL PLANS & LONG SETCTIONS |  |   | CONTRACT NO.: ----<br>SCALE: 1:200<br>PAPER: (A3) |
| COORDINATE/DATUM:<br><b>PLANAR (SCALED MGA2020)</b> |  | JOB MANAGER: MARK WESTERBERG<br>ISSUED DATE: 10/03/2022 |                                | REGISTRATION NUMBER: ----  | 6 Queen Street<br>Burnie, Tasmania, 7320<br>www.pda.com.au<br>Also at: Launceston, Devonport, Hobart & Kingston<br>PDA Surveyors<br>Surveying, Engineering & Planning<br>PHONE: +61 03 6431 4400<br>FAX: +61 03 6431 6663<br>EMAIL: pda.bne@pda.com.au | JOB NUMBER: 48178MW<br>DISCIPLINE: H<br>SHEET: 402<br>REVISION: A |   |

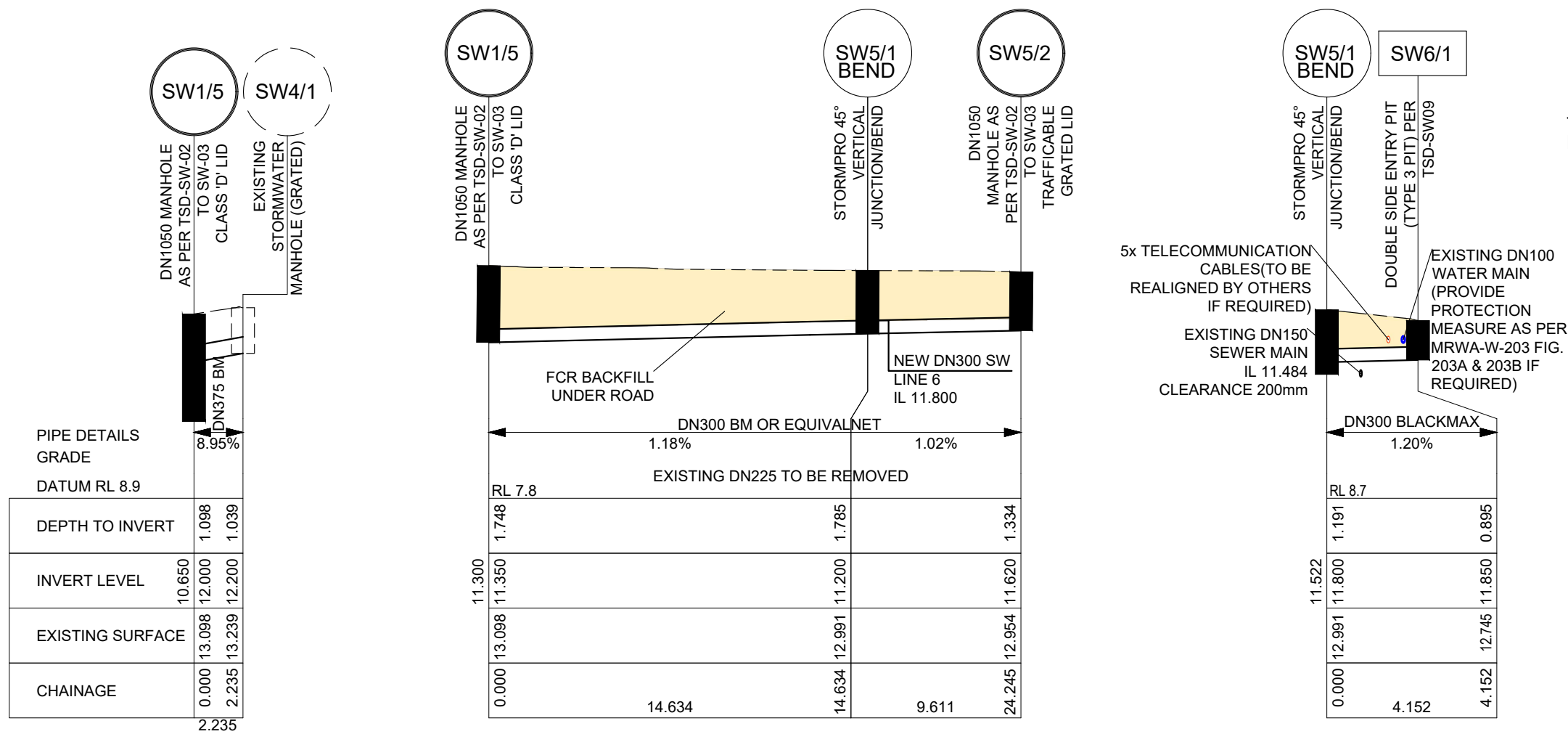


- LEGEND:**
- NEW STORMWATER
  - S — EXISTING SEWER
  - SW — EXISTING STORMWATER
  - W — EXISTING WATER
  - V — A — EXISTING OVERHEAD POWER
  - U — EXISTING UNDERGROUND POWER
  - TEL — TEL — EXISTING TELSTRA
  - / — / — EXISTING TOP/TOE OF BANK FENCELINE
  - EP EXISTING ELECTRICAL POLE
  - MH MAINTENANCE HOLE
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**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
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STORMWATER LINES 4,5 & 6 DETAIL PLAN



SCALE 1: 200



**STORMWATER LONG SECTION NOTES:**  
REFER TO NOTES ON SHEET 401  
REFER TO 48178MW-400-401 LINE 1 DETAILS .

STORMWATER LINES 4,5 & 6 LONGITUDINAL SECTION

SCALE: HOR 1:250 VER 1:100

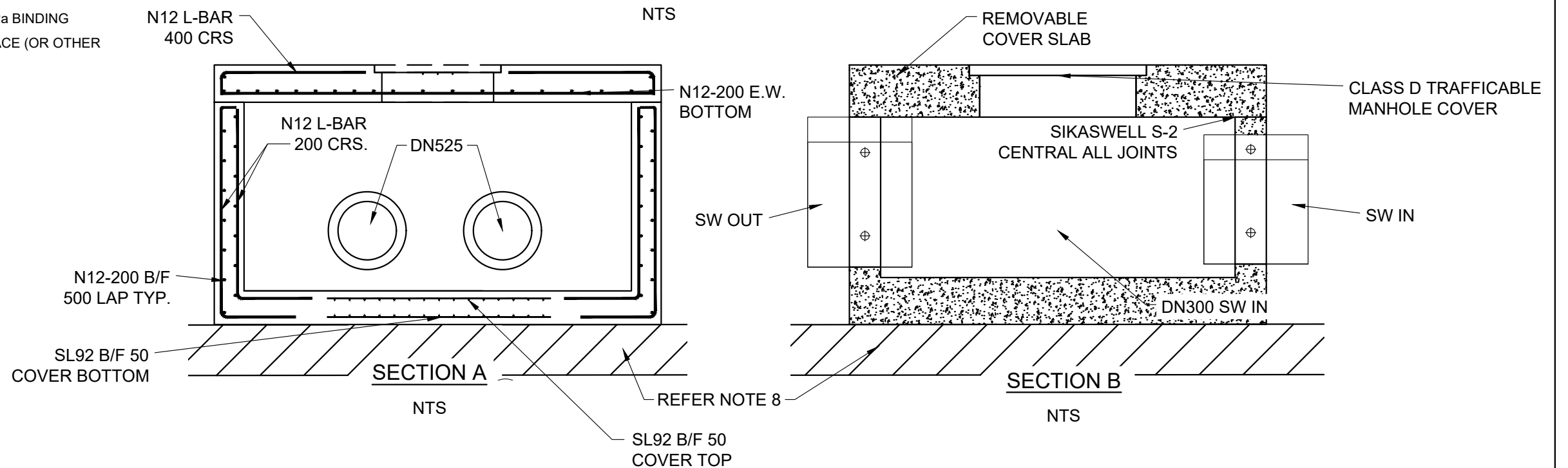
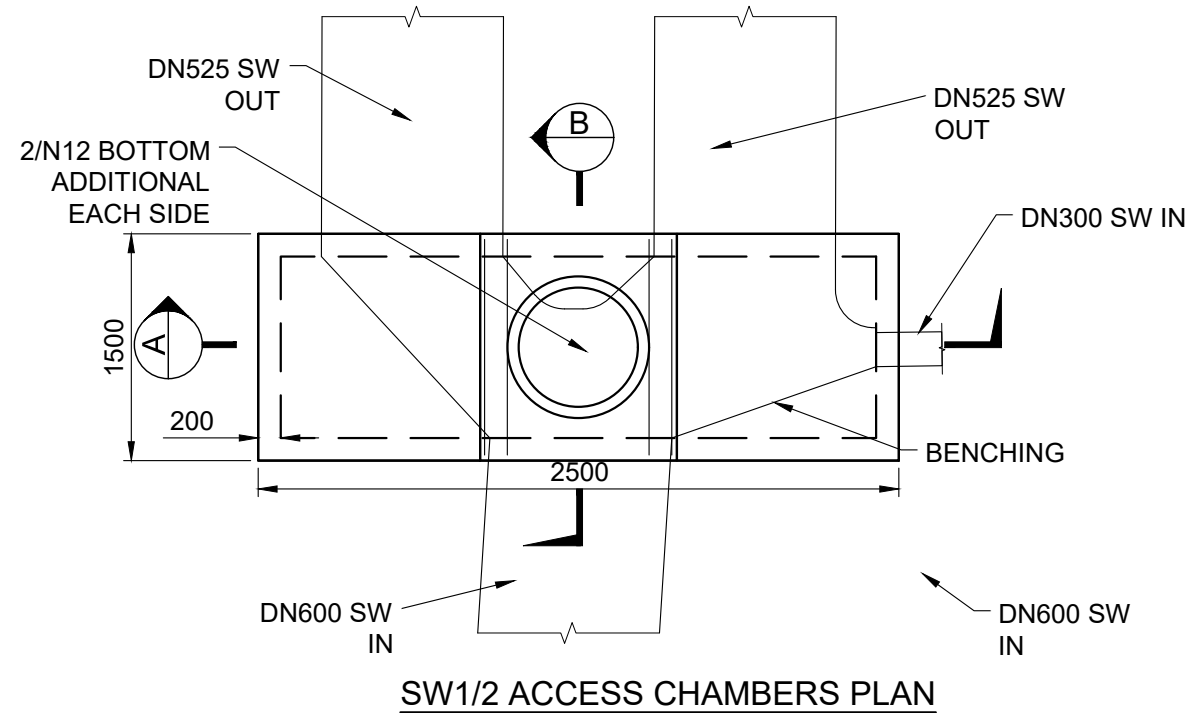
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| DRAWING STATUS:<br><b>FOR CONSTRUCTION</b>          |  | DESIGNED: G.S.<br>DRAWN: G.S.<br>JOB MANAGER: MARK WESTERBERG<br>ISSUED DATE: 10/03/2022  | REVIEWED: M.W/D.P.<br>REVIEWED: M.W/D.P. | CLIENT: BURNIE CITY COUNCIL<br>PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS OCEAN VISTA LANE, OCEAN VISTA STORMWATER DETAILS AND LONG SECTIONS LINES 4-6 DETAIL PLAN AND LONG SECTIONS |  |  | CONTRACT NO.: ----<br>SCALE: 1:200<br>PAPER: (A3) |
| COORDINATE/DATUM:<br><b>PLANAR (SCALED MGA2020)</b> |  | DATE/TIME: Monday, 30 October 2023 10:45:54 AM<br>PLOTTED: GOLAM SAJID<br>FILE LOCATION: \\192.168.0.25\DATA\48178MW_BURNIE CITY COUNCIL_OCEAN VISTA\AUTOCAD DRAWINGS\48178MW-ENG.DWG |  |   | REGISTRATION NUMBER: ----<br><b>48178MW H 403 A</b>                                   |   |   |

**PIT NOTES:**

1. ALL CONSTRUCTION METHODS AND MATERIALS SHALL BE IN ACCORDANCE WITH MANUFACTURE'S SPECIFICATIONS.
2. ANY DEVIATION IN THE DESIGN ARRANGEMENT MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
3. THE FOUNDING MATERIAL SHALL BE PROOF ROLLED PRIOR PLACEMENT OF ANY CHAMBER, INSPECTED AND APPROVED BY THE ENGINEER.
4. CONNECTION DETAILS FOR CHAMBERS PROVIDED ON SECTION B. THE DN300 CONNECTION WILL BE IN ACCORDANCE WITH TSD-SW02-V2 AS APPLICABLE.
5. THE FOUNDATION SHALL BE PROOF ROLLED PRIOR TO PLACEMENT OF ANY MATERIAL, APPROVED & INSPECTED BY THE ENGINEER.
6. ALL CONSTRUCTION METHODS & MATERIALS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATION.
7. ALL PRECAST UNITS OR OTHER ARE TO BE STORED, TRANSPORTED, HANDLED AND PLACED TO THE MANUFACTURERS SPECIFICATIONS. THEY SHALL NOT BE DAMAGED OR DISPLACED DURING PLACEMENT AND DURING COMPACTION OF BACKFILL.
8. STRUCTURES TO BE FOUNDED ON LAYER OF 15MPa BINDING CONCRETE PLACED OVER EXCAVATED ROCK SURFACE (OR OTHER METHOD APPROVED BY THE SUPERINTENDENT).

**CONSTRUCTION HOLD POINTS RC UNITS:**

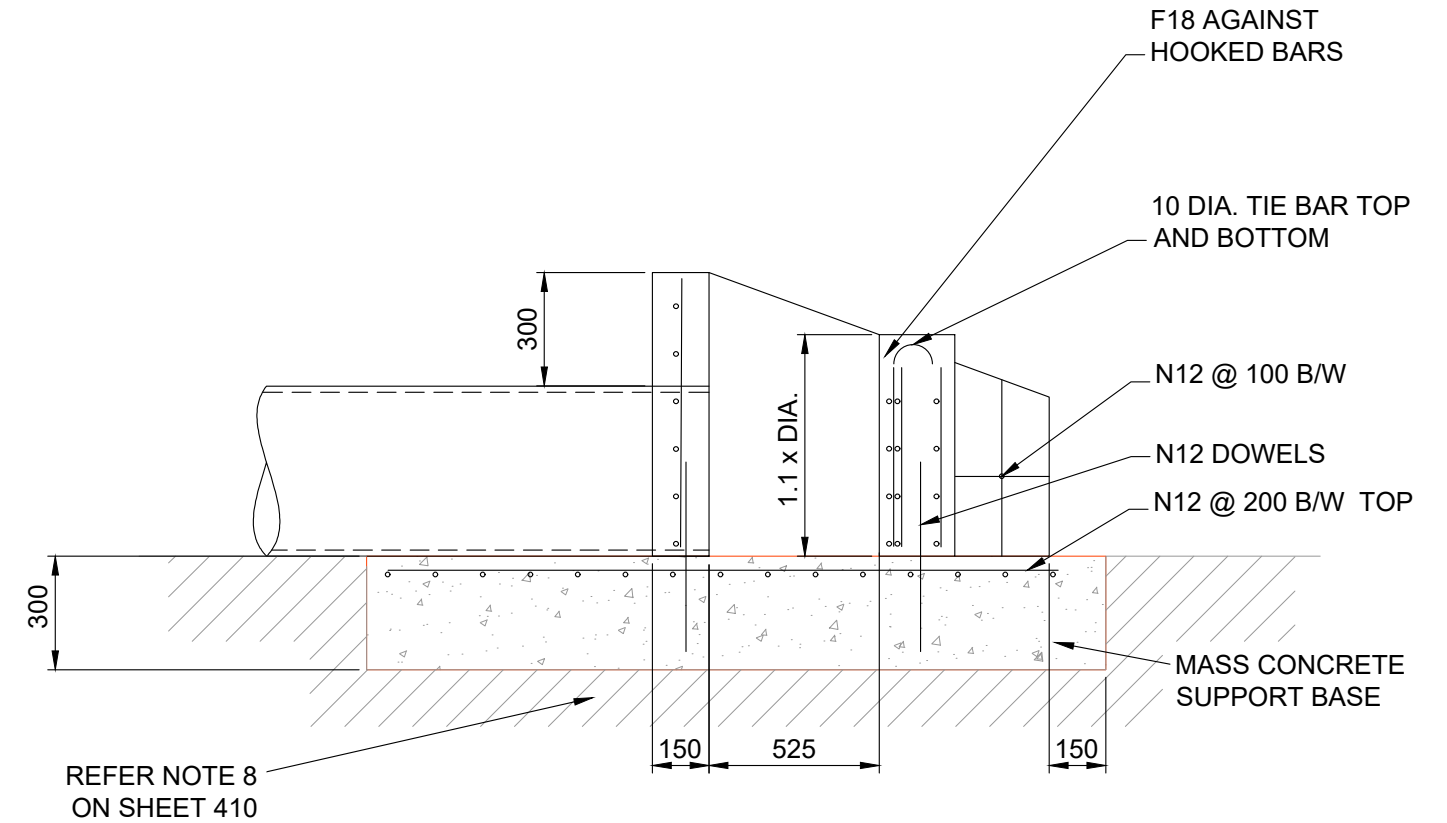
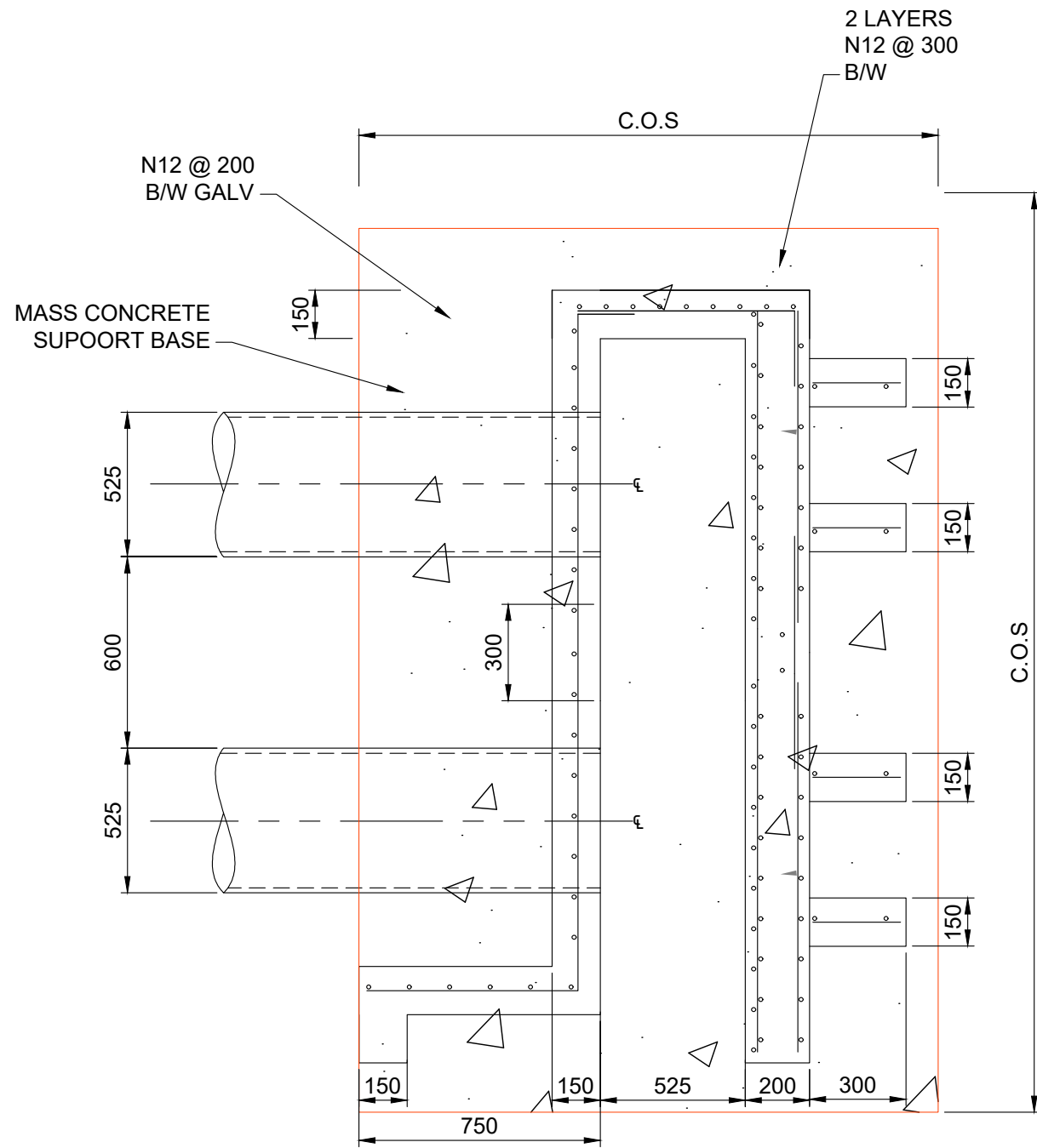
- THE ENGINEER IS TO INSPECT AND CERTIFY THE WORKS AT THE FOLLOWING POINTS:  
UPON VERIFYING FOUNDING MATERIAL
- PRIOR TO THE PLACEMENT OF THE BASE
  - FOR CHECKING REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE



**WARNING**  
BEWARE OF  
UNDERGROUND SERVICES  
The location of underground services is approximate only and the exact position should be proven on site. No guarantee is given that all services are shown.

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| <p>DRAWING STATUS: <b>FOR CONSTRUCTION</b></p> <p>COORDINATE/DATUM: <b>PLANAR (SCALED MGA2020)</b></p>              |  |                                     |                                  | <p>DESIGNED: G.S</p> <p>REVIEWED: M.W/D.P</p> | <p>CLIENT: BURNIE CITY COUNCIL</p> <p>PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS</p> <p>ADDRESS: OCEAN VISTA LANE, OCEAN VISTA</p> <p>DRAWING TITLE: STORMWATER ACCESS CHAMBER DETAILS</p> | <p>6 Queen Street<br/>Burnie, Tasmania, 7320<br/>www.pda.com.au<br/>Also at: Launceston, Devonport,<br/>Hobart &amp; Kingston</p> <p><b>PDA Surveyors</b><br/>Surveying, Engineering &amp; Planning</p> <p>PHONE: +61 03 6431 4400<br/>FAX: +61 03 6431 6663<br/>EMAIL: pda.bne@pda.com.au</p> | <p>CONTRACT NO. ----</p> <p>SCALE: NTS</p> <p>PAPER: (A3)</p> <p>JOB NUMBER: 48178MW</p> <p>DISCIPLINE: H</p> <p>SHEET: 410</p> <p>REVISION: A</p> |
| <p>REV: A</p> <p>AMENDMENTS: FOR CONSTRUCTION DRAWINGS</p> <p>DRAWN: GS</p> <p>DATE: 30/10/2023</p> <p>APPR: MW</p> | <p>DESIGNED: G.S</p> <p>REVIEWED: M.W/D.P</p> <p>ISSUED DATE: 10/03/2022</p> | <p>JOB MANAGER: MARK WESTERBERG</p> | <p>REGISTRATION NUMBER: ----</p> |   |   |  |  |





**STORMWATER OUTLET DETAILS**

NTS

**CONSTRUCTION HOLD POINTS RC UNITS:**

THE ENGINEER IS TO INSPECT AND CERTIFY THE WORKS AT THE FOLLOWING POINTS:  
UPON VERIFYING FOUNDING MATERIAL

- PRIOR TO THE PLACEMENT OF THE BASE
- FOR CHECKING REINFORCEMENT PRIOR TO PLACEMENT OF CONCRETE

**OUTLET NOTES:**

1. ALL REINFORCING BAR TO BE GALVANISED.
2. THE FOUNDING MATERIAL SHALL BE INSPECTED AND APPROVED PRIOR TO THE PLACEMENT OF THE BASE.

**WARNING**  
BEWARE OF UNDERGROUND SERVICES  
The location of underground services is approximate only and the exact position should be proven on site. No guarantee is given that all services are shown.

|   |  |  |  |  |   |  |  |   |
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| DRAWING STATUS:<br><b>FOR CONSTRUCTION</b>          |  | DESIGNED: G.S.<br>DRAWN: G.S.<br>JOB MANAGER: MARK WESTERBERG<br>ISSUED DATE: 10/03/2022 | REVIEWED: M.W/D.P.<br>REVIEWED: M.W/D.P. | CLIENT: BURNIE CITY COUNCIL<br>PROJECT DESCRIPTION: STORMWATER UPGRADE WORKS OCEAN VISTA LANE, OCEAN VISTA TWIN DN525 OUTLET DETAILS<br>ADDRESS: ---<br>DRAWING TITLE: --- |   |  | 6 Queen Street<br>Burnie, Tasmania, 7320<br>www.pda.com.au<br>Also at: Launceston, Devonport, Hobart & Kingston<br>PHONE: +61 03 6431 4400<br>FAX: +61 03 6431 6663<br>EMAIL: pda.bne@pda.com.au | CONTRACT NO. ---<br>SCALE: NTS<br>PAPER: (A3) |
| COORDINATE/DATUM:<br><b>PLANAR (SCALED MGA2020)</b> |  | REGISTRATION NUMBER: ---   |  |  | JOB NUMBER: 48178MW<br>DISCIPLINE: H<br>SHEET: 411<br>REVISION: A |  |  |   |

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30 July 2024

# Supporting Planning Statement

Alma Place Reserve, Ocean View  
Lane and 281 Bass Highway Ocean  
Vista

A series of thin, overlapping, curved lines in shades of blue and grey originate from the bottom left and sweep upwards and to the right, creating a sense of movement and depth.

Sally Pearce

BURNIE CITY COUNCIL  
VERSION 1

## THE PROPOSAL

Burnie City Council proposes to install new stormwater pipes from the Alma Place Reserve existing infrastructure towards the Bass Highway to prevent flooding of Ocean View Lane, Bass Highway and nearby properties.

The use is a Utilities use class (minor utilities) which is an existing use, connecting four existing pipes to improve the existing stormwater drainage network.

The proposed development is shown in red on the detailed plan (Figure 1) below. Further details are included in the attached Landslide Risk Assessment undertaken by Tasman Geotechnics.

The majority of the excavations for the pipe will be approximately 1.1m deep x 1.2m wide but will reach approximately 1.7m in depth at the deepest point in Ocean View Lane.

Due to part of the pipe being located in a medium landslip hazard area, this development is not exempt under clause 4.2 of the Tasmanian Planning Scheme and involves significant works as defined in C15.0 Landslip Hazard Code.

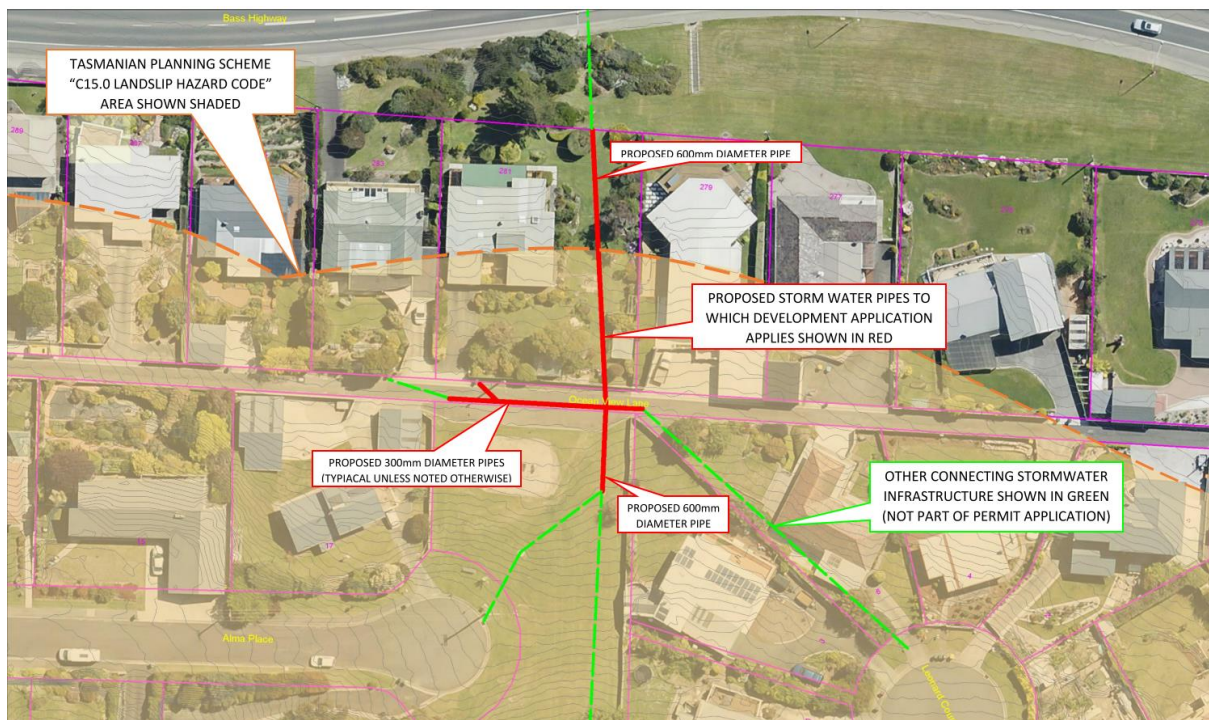


Figure 1- Detailed Plan

## TITLE DETAILS

| ADDRESS                         | OWNER               | TITLE REFERENCE | PROPERTY ID |
|---------------------------------|---------------------|-----------------|-------------|
| Alma Place Reserve, Ocean Vista | Burnie City Council | 152645/2        | 2859476     |
| Ocean View Lane, Ocean Vista    | Burnie City Council | 197329/1        | Nil         |
| 281 Bass Highway, Ocean Vista   | Jodi Marie Watts    | 159557/1        | 3030168     |



## SITE AND SURROUNDS

The proposed development is over three separate titles, two in the ownership of the Burnie City Council and the third in private ownership with the proposed works contained within a benefiting drainage easement to the Burnie City Council (acting in its role as the Drainage Authority).

The Bass Highway is to the north of the site, Alma Place to the west and Leonard Court and Frederick Street to the east.



Figure 2 – Site and Surrounds

## ZONING

The site has two zonings, with Alma Place Reserve assigned to the Open Space zone and Ocean View Lane and 281 Bass Highway assigned to the General Residential zone.

To the north of the site is the Bass Highway and Strategic Infrastructure Corridor within the Utilities zone. There is no proposed works within the Utilities zone.

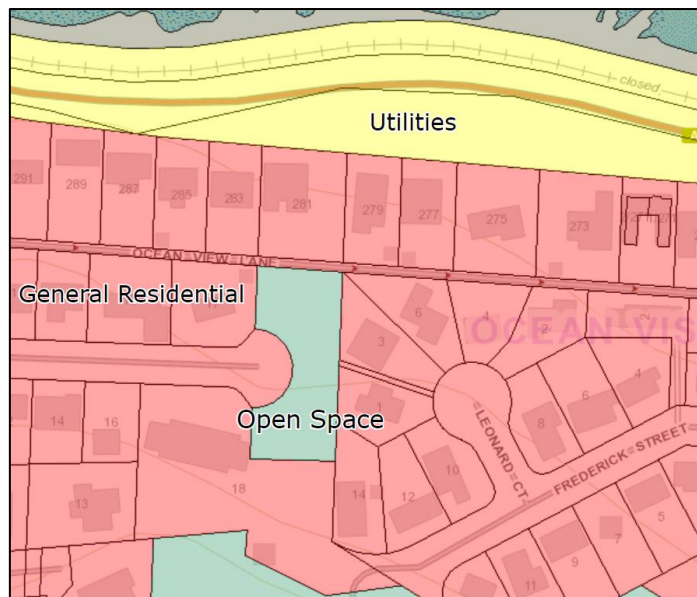


Figure 3 - Zoning

## OVERLAYS

The site is subject to two separate Code overlays being medium landslip hazard (shown in orange below) and the airport obstacle limitation area for the flight path to the North West Regional Hospital helipad (shown in blue hatched lines below).



Figure 4 – Code Overlays

## TASMANIAN PLANNING SCHEME ASSESSMENT

### USE STATUS

The use is a Utilities use class (minor utilities) which is an existing use, connecting four existing pipes to improve the existing stormwater drainage network.

### GENERAL RESIDENTIAL ZONE

In accordance with 8.2 Use Table, Utilities use class (minor utilities) is a No Permit Required use within the General Residential zone.

The development standards contained within 8.5 Development Standards for Non-dwellings is not applicable as there is no buildings, fencing, outdoor storage areas, air extraction, pumping, refrigeration systems or compressors proposed.

### OPEN SPACE ZONE

In accordance with 29.2 Use Table, Utilities use class (minor utilities) is a No Permit Required use within the Open Space zone.

The development standards contained within 29.4 Development Standards for Buildings and Works is not applicable as there is no buildings, air extraction, pumping, refrigeration systems, compressors or outdoor storage areas proposed.

## CODES

### C1.0 Signs Code

The Code is not applicable as there are no signs proposed.

### C2.0 Parking and Sustainable Transport Code

The Code is applicable as there are no exemptions to this Code. The utilities use class has no requirements for car or bicycle spaces and no new spaces are proposed.

### C3.0 Road and Railway Code

The Code is not applicable as there is no increase in the amount of vehicular traffic; there is no new vehicle crossing, junction or level crossing; and does not involve subdivision or a habitable building within a road or railway attenuation area.

### C4.0 Electrical Transmission Infrastructure Protection Code

The Code is not applicable as the site is not within the Electrical Transmission Infrastructure Protection overlay.

### C5.0 Telecommunications Code

The Code is not applicable as there are no telecommunications proposed.

### C6.0 Local Historic Heritage Code

The Code is not applicable as the site is not listed within the Code.

### C7.0 Natural Assets Code

The Code is not applicable as the site does not have any identified waterway and coastal protection areas; or future coastal refugia areas; or any priority vegetation area.

### C8.0 Scenic Protection Code

The Code is not applicable as the site does not identify any scenic values.

### C9.0 Attenuation Code

The Code is not applicable as the development is not on land within an attenuation area.

### C10.0 Coastal Erosion Hazard Code

The Code is not applicable as the development is not on land within a coastal erosion hazard area, nor identified in a report on land located on an actively mobile landform within the coastal zone.

### C11.0 Coastal Inundation Hazard Code

The Code is not applicable as the development is not on land within a coastal inundation hazard area.

### C12.0 Flood-Prone Areas Code

The Code is not applicable as the development is not on land identified as a flood prone area.

### C13.0 Bushfire-Prone Areas Code

The Code is not applicable as the development does not involve subdivision or a vulnerable or hazardous use.

### C14.0 Potentially Contaminated Land Code

The Code is not applicable as the development is not identified as within an area of potentially contaminated land; nor are we aware of the land having been used for a potentially contaminating activity in the past.

### C15.0 Landslip Hazard Code

The Code is applicable as the site is within an identified medium landslip hazard area and involves significant works as there is excavation greater than 1m in depth proposed.

#### C15.6.1 - Building and works within a landslip hazard area

| <b>Objective:</b><br>That building and works on land within a landslip hazard area can:<br>(a) Minimise the likelihood of triggering a landslip event; and<br>(b) Achieve and maintain a tolerable risk from a landslip. |  |
|--|--|
| Acceptable Solution  | Performance Criteria   |
| A1<br>No Acceptable Solution.  | <p><b>P1.1</b><br/>Building and works within a landslip hazard area must minimise the likelihood of triggering a landslip event and achieve and maintain a tolerable risk from landslip, having regard to:</p> <ul style="list-style-type: none"><li>(a) The type, form, scale and intended duration of the development;</li><li>(b) Whether any increase in the level of risk from a landslip requires and specific hazard reduction or protection measures;</li><li>(c) Any advice from a State authority, regulated entity or a council; and</li><li>(d) The advice contained in a landslip hazard report.</li></ul> <p><b>P1.2</b><br/>A landslip hazard report also demonstrates that the buildings and works do not cause or contribute to landslip on the site, on an adjacent land or public infrastructure.</p> <p><b>P1.3</b><br/>If landslip reduction or protection measures are required beyond the boundary of the site the consent in writing of the owner of that land must be provided for that land to be managed in accordance with the specific hazard reduction or protection measures.</p> |

**Comment:**

The Landslide Risk Assessment prepared by Tasman Geotechnics dated 30 July 2024, document reference TG21041/1 – 01report Rev03 has provided an assessment against the performance criteria on pages 6 through to 8 inclusive.

**C16.0 Safeguarding of Airports Code**

The Code is applicable as part of the development is within an airport obstacle limitation area. LISTMap identifies the site as within the 0m-100m elevation band.

In accordance with clause C16.4.1 (a) the development is exempt from the Code as the development is not more than the 129.6m AHD height specified for the site.



**LANDSLIDE RISK ASSESSMENT  
STORMWATER UPGRADE  
OCEAN VIEW LANE, OCEAN VISTA**

Prepared for: **Burnie City Council**

Date: 30 July 2024

Document Reference: TG21041/1 - 01report Rev03

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## Important information about your report

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- Figure 1 Extract of MRT Geology Map
- Figure 2 Extract of MRT Landslide Inventory Map
- Figure 3 Extract of MRT Deep Seated Landslide Susceptibility Map
- Figure 4 Extract of MRT Shallow Slide and Debris Flow Landslide Susceptibility Map
- Figure 5 Site Layout and Proposed Pipeline Locations

## Appendices

- Appendix A Landslide Risk Matrix
- Appendix B Guidelines to Hillside Construction

| <b>Version</b> | <b>Date</b>   | <b>Prepared by</b> | <b>Reviewed by</b> | <b>Distribution</b> |
|----------------|---------------|--------------------|--------------------|---------------------|
| Original       | 20 March 2021 | David Gibbons      | Dr Wayne Griffioen | Electronic          |
| Rev01          | 1 July 2021   | David Gibbons      | Dr Wayne Griffioen | Electronic          |
| Rev02          | 26 July 2021  | David Gibbons      | Dr Wayne Griffioen | Electronic          |
| Rev03          | 30 July 2024  | David Gibbons      | Dr Wayne Griffioen | Electronic          |



## 1 INTRODUCTION

Tasman Geotechnics was commissioned by Simon Hughes on behalf of the Burnie City Council to carry out a Landslide Risk Assessment for a proposed stormwater upgrade at Ocean View Lane, Ocean Vista.

The proposed works are:

- The installation of a new section of nominally 600mm diameter stormwater pipe running approximately north-south from the Alma Place Reserve on Ocean View Lane, through a drainage easement on No. 281 Bass Highway for a total length of approximately 60m.
- The replacement of several sections of pipe, generally running east-west within Ocean View Lane, for a total length of approximately 35m.

Tasman Geotechnics understands there may be other stormwater works in the area later, however this report only addresses the works described above.

The assessment is required as the site is within a Medium Landslide Hazard band and involves significant works (e.g., excavation equal to or greater than 1m in depth, including temporary excavations for the installation or maintenance of services or pipes).

Our scope of work consisted of:

- Reviewing available reports and maps;
- Carrying out a site walkover to note geomorphological features associated with landslide activity; and
- Conducting a Landslide Risk Assessment.

The assessment is consistent with the Landslide Risk Assessment guidelines published by the Australian Geomechanics Society (2007).

This revision of our previous report adds additional discussion of the performance criteria from Clause C15.6 of the State Planning Provisions of the Tasmanian Planning Scheme.

## 2 BACKGROUND INFORMATION

### 2.1 Planning Scheme

The Tasmanian Planning Scheme is effective in Burnie from 22 July 2020. Clause C15.6.1 of the scheme stipulates that the objective for building and works within a landslip hazard area is:

*“That building and works on land within a landslip hazard area can:*

- (a) minimise the likelihood of triggering a landslip event; and*
- (b) achieve and maintain a tolerable risk from a landslip.”*

There are no acceptable solutions, and a landslip hazard report must be prepared. The performance criteria are outlined and addressed in Section 5.6.

In this report, the terms landslide and landslip are used interchangeably.

A landslip hazard report must include a risk assessment. A risk assessment is to address risk to property and risk to life.

Although tolerable levels of risk for property loss are rarely quoted in literature, AGS (2007d) suggests a Moderate risk profile as a tolerable level of risk for low-rise residential buildings on existing slopes as well as existing landslides.

AGS (2007c) suggests the tolerable loss of life individual risk should be  $10^{-5}$ /annum for new constructed slopes, new development, or existing landslide, and  $10^{-4}$ /annum for existing slopes or existing development.

For the proposed works, the following tolerable levels of risk are adopted;

- Risk to property: Moderate,
- Risk to life:  $10^{-5}$ /annum.

## 2.2 Regional Setting

The site is south of the foreshore on a relatively level bench below the coastal escarpment, just above the level of the coastal plain. The base of the coastal escarpment is about 30m above sea level and the plateau above the escarpment is approximately 150m above sea level. Most of the site is about 10 to 15m above sea level.

## 2.3 Geology

The Mineral Resources Tasmania (MRT) 1:25,000 Series Digital Geological map, Burnie Sheet, shows the site to be mapped across two different units:

- The southern part of the site including the Alma Place Reserve and Ocean View Lane are mapped on Quaternary aged landslide deposits predominantly derived from weathered Tertiary rocks (i.e. basalt talus), and
- The northern part of the site is mapped as Proterozoic aged Oonah Formation rocks consisting of dominantly quartzwacke turbidites. The boundary between the two units is mapped running approximately east-west midway across No. 281 Bass Highway, and the Proterozoic rocks extend northward.

Previous investigations by Tasman Geotechnics in Alma Place west of the site have questioned the geological mapping in the area (see section 2.6) and concluded that the area mapped as landslide deposits is less extensive than the published mapping shows, and the Proterozoic exposure is correspondingly greater. Nevertheless, an extract of the MRT geology map is presented on Figure 1.

## 2.4 Landslide Mapping

The MRT Landslide Inventory Map shows that the site is set within a complex of possible landslides. Three recent or active landslides are mapped on the coastal escarpment southwest and southeast of the site; the nearest is approximately 250m away. An extract of the Landslide Inventory Map is presented in Figure 2.

## 2.5 Landslide Susceptibility

For the basalt soils of North-West coast of Tasmania, MRT have identified two scales of landslides:

- Shallow slides or debris flows, and
- Deep-seated rotational landslides

Landslide susceptibility maps for both scales of landsliding have been developed by MRT, and extracts are presented in Figures 3 and 4 respectively.

Susceptibility zones for first time deep-seated failures were developed by MRT by statistical analysis of slope geometry and geological material of known landslides, and are mapped as possible source, regression and runout areas associated with potential landslide movement. For the Tertiary (Cenozoic) basalts, threshold values of source, regression and runout areas are  $14^\circ$ ,  $20^\circ$  and  $16^\circ$  respectively.

The Burnie Deep-seated Landslide Susceptibility Map shows that the site is located on potential runout areas. Areas immediately south of the site are mapped as source areas. In addition, active landslides are located south-west of the site. One of these (ID3014) was first noted as active on 13/8/2013. The site is mapped within a complex of possible landslides.

For shallow slides and debris flows, the susceptibility for source area is also based on slope angle:

- High: greater than  $20^\circ$

- Moderate: between 10° and 20°
- Low: between 6° and 10°
- Very Low: less than 6°

The Burnie Shallow Slide and Debris Flow Susceptibility Map shows that the site is mapped across Low susceptibility source and runout areas.

## 2.6 Previous Reports

A search on the MRT website for previous investigations at or near the site found one report by Matthews (1971) which refers to an active landslide about 400m southwest of the site. This landslide has occurred in an area where seepages are evident, and the geology is talus.

Investigations undertaken by Tasman Geotechnics at Nos. 5 and 10 Alma Place are relevant. The site observations from No. 5 noted that:

*The area surrounding the site has been built over so that very few natural features are still present.*

*Most of the dwellings are close to or more than 50 years old. Many of the dwellings are of brick construction and some are rendered brick. While cracking was observed in the brickwork of the existing house, the damage was attributed to shrink/swell movements of the clay soils not landslide activity.*

*Cracks were visible in seals of Ocean View Lane and Alma Place and Bernard Road. Each road appeared to be constructed with a fill embankment on the northern (lower) side. Cracks and distortion including rotation of the concrete gutters appeared to be concentrated on the northern (lower) sides of each road. Therefore, these cracks were more likely caused by expansion of the clays or failure in the fill embankments than landslide movement.*

*The natural topographic features have been covered or greatly modified to a large degree by the residential development. Nevertheless, no features were observed which could be attributed to landslide activity.*

In terms of the subsurface, it was noted that:

*The profile observed is interpreted to be an in-situ weathering profile derived from the underlying Proterozoic quartzwacke turbidite rock. The subsurface profile is not consistent with a talus deposit as mapped.*

*The talus in this area is normally red brown basalt derived clay, with numerous cobbles and gravel fragments, none of which were present.*

The report concluded that:

*...that the possible landslide complex interpreted from air photos is not real. Instead, the site is located over stable rock and no landslide debris is present. Hence the only landslide hazard is for landslides on the escarpment to the south.*

*The desiccation cracking in the soil, and cracks in the road are interpreted to be from highly expansive clays, as confirmed by the laboratory testing.*

Similar observations (and conclusions) were made regarding No. 10 Alma Place, with the soil again found to be highly expansive.

## 2.7 Proposed Development

It is proposed to install a new section of stormwater pipe from the Alma Place Reserve almost directly north beneath Ocean View Lane, through the drainage easement on 281 Bass Highway and terminating at the northern boundary of No. 281. The total length of the new pipe is approximately 60m. Over this distance the ground level falls from about 15m (AHD) to 7.5m, an overall slope of about 7°. The pipe will be installed approximately 1m below ground level in an excavated trench which will be backfilled on installation. The excavation will be perpendicular to the slope.

In addition, it is proposed to replace several sections of stormwater pipe within Ocean View Lane immediately north of the reserve. The pipes run approximately east-west over a length of approximately 35m, and hence the excavations will be parallel to the slope. The pipes are located beneath the pavement of Ocean View Lane. Ocean View Lane has a fall of about 5 – 7° towards the north.

### **3 FIELD INVESTIGATION**

The site inspection was carried out by an Engineering Geologist on 2 March 2021. The fieldwork involved a site walkover. Subsurface investigations have previously been conducted on the site by Burnie City Council and these are briefly discussed in section 4.2.

## **4 RESULTS**

### **4.1 Surface Conditions**

The Alma Place Reserve has an area of about 2069m<sup>2</sup> and is mostly vegetated with (mown) grass. Little soil is visible. An animal burrow south-west of the Alma Place cul-de-sac exposed grey clay soil. The reserve (title reference 152645/2) has an overall fall of about 10° towards the north, flattening towards the north and steepening towards the south.

Multiple generations of cracking in the surface seal of Ocean View Lane were observed, including one 15mm wide crack extending several meters in length. Surface cracking in the asphalt seal of Alma Place and Bernard Road was also observed. The brick fence on the southern side of 17 Alma Place was cracked and leaning downhill, and the timber fence on the southern side of 3 Leonard Court was also leaning downhill, with the concrete footing appearing to be rotated.

The wide verge on the southern side of the Bass Highway just east of the site was grassed and no soil was visible. A streetlight labelled 'Aurora 501411' and 'INGAL EPS ASFL12FS030-42' north of 281 Bass Highway exposed a low cut in a gravelly clay soil where the gravel component was largely or entirely fragments of the Proterozoic Oonah formation rocks. The rock itself was exposed in a roadside cut immediately west of the site, across the highway on the foreshore, and next to a concrete wall outside No. 287 Bass Highway. No basalt rocks (cobbles, boulders or gravel) were observed on the site, and the observed soil was not consistent with typical basalt derived soil. Tertiary basalt cobbles and boulders were noted on the escarpment south of the site.

No soil cracking was observed other than as described above, and there were no indications of high groundwater levels on the site or surrounds.

### **4.2 Subsurface Conditions**

We understand that three test pits were excavated by the Burnie City Council to assess excavatability. Results for the test pits and subsurface conditions were as follows:

- In Ocean View Lane, about 1.5m of high plasticity firm mottled grey clay
- In the middle of No. 281 Bass Highway, mottled grey clay containing boulders below about 1m depth; and
- Between No. 281 and the Bass Highway, rock at about 1.2m below ground level.

Based on the descriptions provided, the soils encountered in the test pits are considered more likely to be derived from the Proterozoic rocks than from the Tertiary (Cenozoic) basalt, assuming the boulders in the second test pit were not basalt.

## **5 LANDSLIDE RISK ASSESSMENT**

### **5.1 General**

Risk assessment and management principles applied to slopes can be interpreted as answering the following questions:

- What might happen? (HAZARD IDENTIFICATION).
- How likely is it? (LIKELIHOOD).
- What damage or injury might result? (CONSEQUENCE).
- How important is it? (RISK EVALUATION).
- What can be done about it? (RISK TREATMENT).

The risk is a combination of the likelihood and the consequences for the hazard in question. Thus, both likelihood and consequences are considered when evaluating a risk and deciding whether treatment is required.

The qualitative likelihood, consequence and risk terms used in this report for risk to property are given in Appendix A and are based on the Landslide Risk Management Guidelines, published by Australian Geomechanics Society (AGS, 2007). The risk terms are defined by a matrix that brings together different combinations of likelihood and consequence. Risk matrices help to communicate the results of risk assessment, rank risks, set priorities and develop transparent approaches to decision making.

### **5.2 Geotechnical Model**

Based on our experience on nearby sites, our own site observations and those of the Burnie City Council we conclude that the proposed works are mostly or entirely located on the Proterozoic Oonah formation and soils derived from the weathering of the same, with little or no Quaternary aged basalt talus. Our laboratory testing of soils from multiple locations within Alma Place shows the natural clay to be highly reactive, and the soil on the site can be expected to be similarly reactive. The observed damage to the roads and fences is assessed to be largely attributable to construction practices coupled with the expansive soils, although soil creep may also be a factor.

### **5.3 Potential Hazards**

Based on our site observations and the above discussion it is our assessment that there is no credible landslide hazard for the site arising from the proposed works. A collapse of trenches during excavation is a construction risk and not a long-term risk to property or life.

The identification of the site as a potential runout area (see section 2.5) suggests that a landslide on the escarpment slopes to the south could cause debris to flow onto the site. Whilst such an event may be disruptive and/or damaging to infrastructure such as houses, it is unlikely to impact buried pipework, and the triggering of such a landslide is not a plausible consequence of the proposed works.

### **5.4 Risk to Property**

As there is no credible landslide hazard for the site associated with the proposed works, there is a Very Low level of risk. No specific risk mitigation measures are required.

### **5.5 Risk to Life**

The proposed works are for excavation and backfilling of trenches. There is no long-term risk to life arising from the proposed works.

### **5.6 Risk Evaluation**

#### **5.6.1 General**

##### Risk to Property

The risk to property is assessed to be Very Low. If the Moderate risk profile is adopted as the tolerable level of risk, then the risk assessment shows that the works achieve and maintain a tolerable risk from a landslip in terms of risk to property.

Risk to Life

In the absence of a credible landslide hazard at the site, the default risk to life is lower than the tolerable loss of life for an existing slope and hence the works can achieve and maintain a tolerable risk from a landslip in terms of risk to life.

**5.6.2 Tasmanian Planning Scheme**

The Landslip Hazard Code of the Tasmanian Planning Scheme requires that a landslip hazard report (i.e., this document) makes conclusions regarding:

- i. as to whether the use or development is likely to cause or contribute to the occurrence of a landslip event on the site or on adjacent land;
- ii. as to whether the use or development can achieve and maintain a tolerable risk for the intended life of the development, having regard to various factors.

It is our conclusion that the proposed work is not likely to cause or contribute to the occurrence of a landslip event on the site or on adjacent land. The following section discusses whether the work can achieve and maintain a tolerable risk for the intended life of the development, in relation to the various factors.

|  |   |
|--|---|
| the nature, intensity and duration of the use                                    | The nature of the use is disposal of stormwater. The intensity of the use will be dependent upon rainfall, but we presume the stormwater infrastructure has been designed to accommodate expected flows. The duration of the use will be for the life of the infrastructure, e.g., 50 – 100 years.  |
| the type, form and duration of any development                                   | The type of development is temporary trenching for the installation of stormwater pipes. The form of the development is temporary trenches to be reinstated to the existing ground level upon installation of the pipes. The duration of the installation process is unknown to us at this time but in any event, it would be considered 'short'.                       |
| the likely change in the risk across the intended life of the use or development | There are no reasonably predictable factors which we forecast as increasing the risk of landslide at the site across the intended life or use of the development.   |
| the ability to adapt to a change in the level of risk                            | Adaptations to the change in the level of risk at the site would likely involve new or supplemental stormwater pipes (e.g., from increased inflows) or replacement or re-routing of pipelines (if landsliding affected the infrastructure). The proposed infrastructure, once installed, has little ability to adapt to change without supplementation or modification. |
| the ability to maintain access to utilities and services                         | The proposed works is a utility or service, and loss of access to (other) utilities and services arising from landslide is not considered a credible outcome of the proposed works, nor is it a risk to the proposed works.   |

|  |  |
|--|--|
| the need for specific landslip hazard reduction or protection measures on the site;            | No specific landslip hazard reduction or protection measures are required on the site associated with the proposed works.                                    |
| the need for landslip hazard reduction or protection measures beyond the boundary of the site; | No specific landslip hazard reduction or protection measures are required beyond the boundary of the site associated with the proposed work.                 |
| any landslip management plan in place for the site and/or adjacent land                        | We are not aware of any landslip management plan in place for the site or adjacent land, nor have we identified the need for the development of such a plan. |

We have no additional advice relating to the ongoing management of the use or development.

**Performance criteria P1.1** requires that building and works within a landslip hazard area must minimise the likelihood of triggering a landslip event and achieve and maintain a tolerable risk from landslip, having regard to:

|  |  |
|--|--|
| the type, form, scale and intended duration of the development;  | The type of development is installation and renewal of stormwater infrastructure. The form of the land will remain effectively unaltered once the pipework is in place. Based on the length of pipework to be installed, the overall scale of works is small. The duration of the works is short, but the infrastructure will be designed to last for an extended period, e.g., 50 – 100 years. With regard to the type, form, scale and intended duration of the development, the proposed works can achieve and maintain a tolerable risk from landslip. |
| whether any increase in the level of risk from a landslip requires any specific hazard reduction or protection measures; | It is our assessment that there is no increase in the level of risk from a landslip which requires any specific hazard reduction or protection measures.   |
| any advice from a State authority, regulated entity or a council; and  | We are not aware of any such advice in relation to the proposed works.   |
| the advice contained in a landslip hazard report.  | This clause refers to this report.   |

Therefore, Performance criteria P1.1 is satisfied.

**Performance criteria P1.2** requires that a landslip hazard report also demonstrates that the buildings and works do not cause or contribute to landslip on the site, on adjacent land or public infrastructure

This report demonstrates that the proposed works will not cause or contribute to landslip on the site, on adjacent land or public infrastructure and hence Performance criteria P1.2 is satisfied.

**Performance criteria P1.3** requires that if landslip reduction or protection measures are required beyond the boundary of the site the consent in writing of the owner of that land must be provided for that land to be managed in accordance with the specific hazard reduction or protection measures.

This report demonstrates that no landslip reduction or protection measures are required beyond the boundary of the site and hence Performance criteria P1.3 is satisfied.

## **6 DISCUSSION & RECOMMENDATIONS**

No specific site requirements are required for long-term landslide risk management purposes. Risks of trench collapse during construction/excavation should be addressed by implementation of a Construction Management Plan. Examples of Good Hillside Construction Practices are shown in Appendix B.





# TASMAN geotechnics

## Important information about your report

**These notes are provided to help you understand the limitations of your report.**

### **Project Scope**

Your report has been developed on the basis of your unique project specific requirements as understood by Tasman Geotechnics at the time, and applies only to the site investigated. Tasman Geotechnics should be consulted if there are subsequent changes to the proposed project, to assess how the changes impact on the report's recommendations.

### **Subsurface Conditions**

Subsurface conditions are created by natural processes and the activity of man.

A site assessment identifies subsurface conditions at discrete locations. Actual conditions at other locations may differ from those inferred to exist, because no professional, no matter how qualified, can reveal what is hidden by earth, rock and time.

Nothing can be done to change the conditions that exist, but steps can be taken to reduce the impact of unexpected conditions. For this reason, the services of Tasman Geotechnics should be retained throughout the project, to identify variable conditions, conduct additional investigation or tests if required and recommend solutions to problems encountered on site.

### **Advice and Recommendations**

Your report contains advice or recommendations which are based on observations, measurements, calculations and professional interpretation, all of which have a level of uncertainty attached.

The recommendations are based on the assumption that subsurface conditions encountered at the discrete locations are indicative of an area. This can not be substantiated until implementation of the project has commenced. Tasman Geotechnics is familiar with the background information and should be consulted to assess whether or not the report's recommendations are valid, or whether changes should be considered.

The report as a whole presents the findings of the site assessment, and the report should not be copied in part or altered in any way.

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Lo  
Undifferentiated Oonah  
Formation. Dominantly  
quartzwacke turbidites.

Qhbd  
Younger, active dune and beach  
sand and beach gravel.

Qhwr  
Sand of stabilised  
longitudinal beach ridges.

281 Bass Highway

Qhwr  
Sand of stabilised  
longitudinal beach ridges.

Qh  
Sand gravel and mud of  
alluvial, lacustrine and  
littoral origin.

Lo  
Undifferentiated Oonah  
Formation. Dominantly  
quartzwacke turbidites.

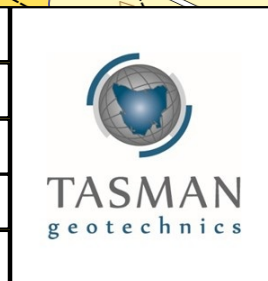
Qxt  
Landslide deposits  
predominantly derived from  
weathered Tertiary rocks.

Lo  
Undifferentiated Oonah  
Formation. Dominantly  
quartzwacke turbidites.

Tb  
Tertiary basalt

100 0 100 200 m

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| Date:     | 11/3/2021 |
| Scale:    | 1:5000    |
| Size:     | A4        |



|  |                     |
|--|---------------------|
| client: Burnie City Council  |                     |
| project: Landslide Risk Assessment<br>Ocean View Lane, Ocean Vista |                     |
| title: Extract from MRT Geology Mapping                            |                     |
| project no: TG21041/1 – 01report                                   | figure no: FIGURE 1 |

Note: basemap airphoto and cadastral boundaries are from TheLIST Web Services (<http://services.thelist.tas.gov.au>) and were retrieved on the date shown above. Current site conditions may differ from this plan. TheLIST data is copyright of TheLIST, and use is subject to terms found at: <http://listdata.thelist.tas.gov.au/public/LISTWebServicesTermsConditions.pdf>

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Note: Due to data density, not all within the box have been labelled

### Landslide Features

|  |                             |  |  |  |  |
|--|-----------------------------|--|--|--|--|
|  | Recent or active landslide. |  | 1061 Recent or active earth or debris flow.      |  | 1066 Earth or debris flow, activity unknown. |
|  | Activity unknown.           |  | 1062 Recent or active rock or soil slide.        |  | 1067 Rock or soil slide, activity unknown.   |
|  | Possible landslide.         |  | 1063 Recent or active rock fall.                 |  | 1068 Rock fall, activity unknown.            |
|  |                             |  | 1064 Possible landslide, activity not specified. |  |  |

Note: Not all landslide points have an associated polygon. Some polygons not shown if too small for map scale. Landslide point with landslide ID from GEOHAZARD (landslide) database. Further details of landslides may be obtained from MRT.

### Damaged Points

Record of damage to houses, buildings or infrastructure (roads & rail) known to be caused by a landslide.

Note: Damage due to other causes (eg. reactive soil) are also recorded in the GEOHAZARD (landslide) database.

### Miscellaneous

Municipality boundary.

Limit of Geomorphological mapping.

Boundary between Airborne Laser Scanning and 1:5 000 / 1:25 000 topographic contours - for DEM derivatives.

Note: Landslides outside the limit of geomorphological mapping have not been reviewed or refined in this map series.

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281. Bass Highway

2987

3150

3012

3011

3014

3013

3010

2986

365

2988

371

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Tb Tertiary basalt

|           |           |
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| Approved: | WG        |
| Date:     | 11/3/2021 |
| Scale:    | 1:5000    |
| Size:     | A4        |

**TASMAN**  
geotechnics

|  |                     |
|--|---------------------|
| client: Burnie City Council  |                     |
| project: Landslide Risk Assessment<br>Ocean View Lane, Ocean Vista |                     |
| title: Extract from MRT Landslide Inventory                        |                     |
| project no: TG21041/1 – 01report                                   | figure no: FIGURE 2 |

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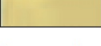
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### Susceptibility Zones


-  High susceptibility source area.
-  Moderate susceptibility source area.
-  Low susceptibility source area.
-  Flow runoff area.

Source area: An area of hillside with the potential to form a slope failure, identified largely on the basis of slope angle and geology.  
 Runout area: An area down-slope of a source area where the moving earth, debris or rock can potentially travel.

### Shallow Slide or Flow Features

-  Shallow slide or flow affected area.
-  Shallow slide, recent or active.
-  Shallow slide, activity unknown.
-  Earth or debris flow, recent or active.
-  Earth or debris flow, activity unknown.
-  Unclassified shallow slides or flows.

### Miscellaneous

-  Municipality boundary.
-  Spring or seep - which have a known association with landslides in many cases.



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281 Bass Highway

200 m

Tb  
Tertiary basalt

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| Drawn:    | DG        |
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| Date:     | 11/3/2021 |
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|  |                     |
|--|---------------------|
| client: Burnie City Council  |                     |
| project: Landslide Risk Assessment<br>Ocean View Lane, Ocean Vista |                     |
| title: Extract from MRT Shallow Slide Susceptibility               |                     |
| project no: TG21041/1 – 01report                                   | figure no: FIGURE 3 |

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### Susceptibility Zones for First Time Failure




-  Regression area.
-  Source area.
-  Runout area.


Regression area: An area up-slope of a source area that could fail following a landslide movement (a.k.a. a retrogression or set-back area).

Source area: An area of hillside with the potential to form a slope failure, identified largely on the basis of slope angle and geology.

Runout area: An area down-slope of a source area where the moving earth, debris or rock can potentially travel.

### Susceptibility Zones for Landslide Reactivation

-  Landslide, recent or active.
-  Landslide, activity unknown.
-  Possible landslide, activity unknown.

 Spring or seep - which have a known association with landslides in many cases.

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281. Bass Highway



200 m

Tb  
Tertiary basalt

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| Date:     | 11/3/2021 |
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| client: Burnie City Council  |                     |
| project: Landslide Risk Assessment<br>Ocean View Lane, Ocean Vista |                     |
| title: Extract from MRT Deep-Seated Slide Susceptibility           |                     |
| project no: TG21041/1 – 01report                                   | figure no: FIGURE 4 |

Note: basemap airphoto and cadastral boundaries are from TheLIST Web Services (<http://services.thelist.tas.gov.au>) and were retrieved on the date shown above. Current site conditions may differ from this plan. TheLIST data is copyright of TheLIST, and use is subject to terms found at: <http://listdata.thelist.tas.gov.au/public/LISTWebServicesTermsConditions.pdf>

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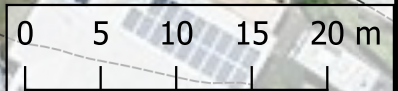
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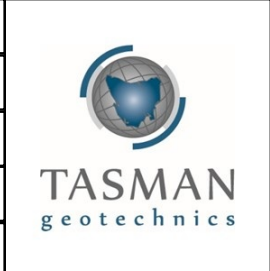
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Proposed new stormwater pipes; existing connecting infrastructure not shown



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| Size:     | A4       |



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|--|---------------------|
| client: Burnie City Council  |                     |
| project: Landslide Risk Assessment<br>Ocean View Lane, Ocean Vista |                     |
| title: Site Layout and Proposed Pipeline Locations                 |                     |
| project no: TG21041/1 – 01report Rev01                             | figure no: FIGURE 5 |

Note: basemap airphoto and cadastral boundaries are from TheLIST Web Services (<http://services.thelist.tas.gov.au>) and were retrieved on the date shown above. Current site conditions may differ from this plan. TheLIST data is copyright of TheLIST, and use is subject to terms found at: <http://listdata.thelist.tas.gov.au/public/LISTWebServicesTermsConditions.pdf>

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# **Appendix A**

## **Landslide Risk Matrix**

## Terminology for use in Assessing Risk to Property

These notes are provided to help you understand concepts and terms used in **Landslide Risk Assessment** and are based on the “Practice Note Guidelines for Landslide Risk Management 2007” published in *Australian Geomechanics Vol 42, No 1, 2007*.

### Likelihood Terms

The qualitative likelihood terms have been related to a nominal design life of 50 years. The assessment of likelihood involves judgment based on the knowledge and experience of the assessor. Different assessors may make different judgments.

| Approximate Annual Probability | Implied indicative Recurrence Interval | Description  | Descriptor      | Level |
|--------------------------------|--|--|-----------------|-------|
| $10^{-1}$                      | 10 years                               | The event is expected to occur over the design life                                    | Almost Certain  | A     |
| $10^{-2}$                      | 100 years                              | The event will probably occur under adverse conditions over the design life            | Likely          | B     |
| $10^{-3}$                      | 1000 years                             | The event could occur under adverse conditions over the design life                    | Possible        | C     |
| $10^{-4}$                      | 10,000 years                           | The event might occur under very adverse conditions over the design life               | Unlikely        | D     |
| $10^{-5}$                      | 100,000 years                          | The event is conceivable but only under exceptional circumstances over the design life | Rare            | E     |
| $10^{-6}$                      | 1,000,000 years                        | The event is inconceivable or fanciful for the design life                             | Barely Credible | F     |

### Qualitative Measures of Consequence to Property

| Indicative Cost of Damage | Description  | Descriptor    | Level |
|---------------------------|--|---------------|-------|
| 200%                      | Structure(s) completely destroyed and/or large scale damage requiring major engineering works for stabilisation. Could cause at least one adjacent property major consequential damage.          | Catastrophic  | 1     |
| 60%                       | Extensive damage to most of structure, and/or extending beyond site boundaries requiring significant stabilisation works. Could cause at least one adjacent property medium consequential damage | Major         | 2     |
| 20%                       | Moderate damage to some of structure, and/or significant part of site requiring large stabilisation works. Could cause at least one adjacent property minor consequential damage.                | Medium        | 3     |
| 5%                        | Limited damage to part of structure, and/or part of site requiring some reinstatement stabilisation works  | Minor         | 4     |
| 0.5%                      | Little damage.   | Insignificant | 5     |

The assessment of consequences involves judgment based on the knowledge and experience of the assessor. The relative consequence terms are value judgments related to how the potential consequences may be perceived by those affected by the risk. Explicit descriptions of potential consequences will help the stakeholders understand the consequences and arrive at their judgment.



## Qualitative Risk Analysis Matrix – Risk to Property

| Likelihood         |                                | Consequences to Property |          |           |          |                  |
|--------------------|--------------------------------|--------------------------|----------|-----------|----------|------------------|
|                    | Approximate annual probability | 1: Catastrophic          | 2: Major | 3: Medium | 4: Minor | 5: Insignificant |
| A: Almost Certain  | 10 <sup>-1</sup>               | VH                       | VH       | VH        | H        | L                |
| B: Likely          | 10 <sup>-2</sup>               | VH                       | VH       | H         | M        | L                |
| C: Possible        | 10 <sup>-3</sup>               | VH                       | H        | M         | M        | VL               |
| D: Unlikely        | 10 <sup>-4</sup>               | H                        | M        | L         | L        | VL               |
| E: Rare            | 10 <sup>-5</sup>               | M                        | L        | L         | VL       | VL               |
| F: Barely credible | 10 <sup>-6</sup>               | L                        | VL       | VL        | VL       | VL               |

### NOTES:

1. The risk associated with Insignificant consequences, however likely, is defined as Low or Very Low
2. The main purpose of a risk matrix is to help rank risks and set priorities and help the decision making process.

## Response to Risk

In general, it is the responsibility of the client and/or regulatory and/or others who may be affected to decide whether to accept or treat the risk. The risk assessor and/or other advisers may assist by making risk comparisons, discussing treatment options, explaining the risk management process, advising how others have reacted to risk in similar situations and making recommendations. Attitudes to risk vary widely and risk evaluation often involves considering more than just property damage (eg environmental effects, public reaction, business confidence etc).

The following is a guide to typical responses to assessed risk.

| Risk Level |           | Example Implications  |
|------------|-----------|---|
| VH         | Very High | Unacceptable without treatment. Extensive detailed investigation and research, planning and implementation of treatment options essential to reduce risk to Low; may be too expensive and not practical. Work likely to cost more than the value of the property.         |
| H          | High      | Unacceptable without treatment. Detailed investigation, planning and implementation of treatment options required to reduce risk to Low. Work would cost a substantial sum in relation to the value of the property.  |
| M          | Moderate  | May be tolerated in certain circumstances (subject to regulator's approval) but requires investigation, planning and implementation of treatment options to reduce the risk to Low. Treatment options to reduce to Low risk should be implemented as soon as practicable. |
| L          | Low       | Usually accepted by regulators. Where treatment has been required to reduce the risk to this level, ongoing maintenance is required.  |
| VL         | Very Low  | Acceptable. Manage by normal slope maintenance procedures   |

# **Appendix B**

## **Guidelines to Hillside Construction**

# PRACTICE NOTE GUIDELINES FOR LANDSLIDE RISK MANAGEMENT 2007

## APPENDIX G - SOME GUIDELINES FOR HILLSIDE CONSTRUCTION

### GOOD ENGINEERING PRACTICE

### POOR ENGINEERING PRACTICE

#### ADVICE

|                         |   |  |
|-------------------------|---|--|
| GEOTECHNICAL ASSESSMENT | Obtain advice from a qualified, experienced geotechnical practitioner at early stage of planning and before site works. | Prepare detailed plan and start site works before geotechnical advice. |
|-------------------------|---|--|

#### PLANNING

|               |   |   |
|---------------|---|---|
| SITE PLANNING | Having obtained geotechnical advice, plan the development with the risk arising from the identified hazards and consequences in mind. | Plan development without regard for the Risk. |
|---------------|---|---|

#### DESIGN AND CONSTRUCTION

|                               |  |   |
|-------------------------------|--|---|
| HOUSE DESIGN                  | Use flexible structures which incorporate properly designed brickwork, timber or steel frames, timber or panel cladding.<br>Consider use of split levels.<br>Use decks for recreational areas where appropriate.   | Floor plans which require extensive cutting and filling.<br>Movement intolerant structures.   |
| SITE CLEARING                 | Retain natural vegetation wherever practicable.  | Indiscriminately clear the site.  |
| ACCESS & DRIVEWAYS            | Satisfy requirements below for cuts, fills, retaining walls and drainage.<br>Council specifications for grades may need to be modified.<br>Driveways and parking areas may need to be fully supported on piers.  | Excavate and fill for site access before geotechnical advice.   |
| EARTHWORKS                    | Retain natural contours wherever possible.   | Indiscriminatory bulk earthworks.   |
| CUTS                          | Minimise depth.<br>Support with engineered retaining walls or batter to appropriate slope.<br>Provide drainage measures and erosion control.   | Large scale cuts and benching.<br>Unsupported cuts.<br>Ignore drainage requirements   |
| FILLS                         | Minimise height.<br>Strip vegetation and topsoil and key into natural slopes prior to filling.<br>Use clean fill materials and compact to engineering standards.<br>Batter to appropriate slope or support with engineered retaining wall.<br>Provide surface drainage and appropriate subsurface drainage.                                | Loose or poorly compacted fill, which if it fails, may flow a considerable distance including onto property below.<br>Block natural drainage lines.<br>Fill over existing vegetation and topsoil.<br>Include stumps, trees, vegetation, topsoil, boulders, building rubble etc in fill. |
| ROCK OUTCROPS & BOULDERS      | Remove or stabilise boulders which may have unacceptable risk.<br>Support rock faces where necessary.  | Disturb or undercut detached blocks or boulders.  |
| RETAINING WALLS               | Engineer design to resist applied soil and water forces.<br>Found on rock where practicable.<br>Provide subsurface drainage within wall backfill and surface drainage on slope above.<br>Construct wall as soon as possible after cut/fill operation.  | Construct a structurally inadequate wall such as sandstone flagging, brick or unreinforced blockwork.<br>Lack of subsurface drains and weepholes.   |
| FOOTINGS                      | Found within rock where practicable.<br>Use rows of piers or strip footings oriented up and down slope.<br>Design for lateral creep pressures if necessary.<br>Backfill footing excavations to exclude ingress of surface water.   | Found on topsoil, loose fill, detached boulders or undercut cliffs.   |
| SWIMMING POOLS                | Engineer designed.<br>Support on piers to rock where practicable.<br>Provide with under-drainage and gravity drain outlet where practicable.<br>Design for high soil pressures which may develop on uphill side whilst there may be little or no lateral support on downhill side.   |   |
| DRAINAGE                      | Provide at tops of cut and fill slopes.<br>Discharge to street drainage or natural water courses.<br>Provide general falls to prevent blockage by siltation and incorporate silt traps.<br>Line to minimise infiltration and make flexible where possible.<br>Special structures to dissipate energy at changes of slope and/or direction. | Discharge at top of fills and cuts.<br>Allow water to pond on bench areas.  |
| SURFACE                       | Provide filter around subsurface drain.<br>Provide drain behind retaining walls.<br>Use flexible pipelines with access for maintenance.<br>Prevent inflow of surface water.  | Discharge roof runoff into absorption trenches.   |
| SUBSURFACE                    | Usually requires pump-out or mains sewer systems; absorption trenches may be possible in some areas if risk is acceptable.<br>Storage tanks should be water-tight and adequately founded.  | Discharge sullage directly onto and into slopes.<br>Use absorption trenches without consideration of landslide risk.  |
| SEPTIC & SULLAGE              | Control erosion as this may lead to instability.<br>Revegetate cleared area.   | Failure to observe earthworks and drainage recommendations when landscaping.  |
| EROSION CONTROL & LANDSCAPING |  |   |

#### DRAWINGS AND SITE VISITS DURING CONSTRUCTION

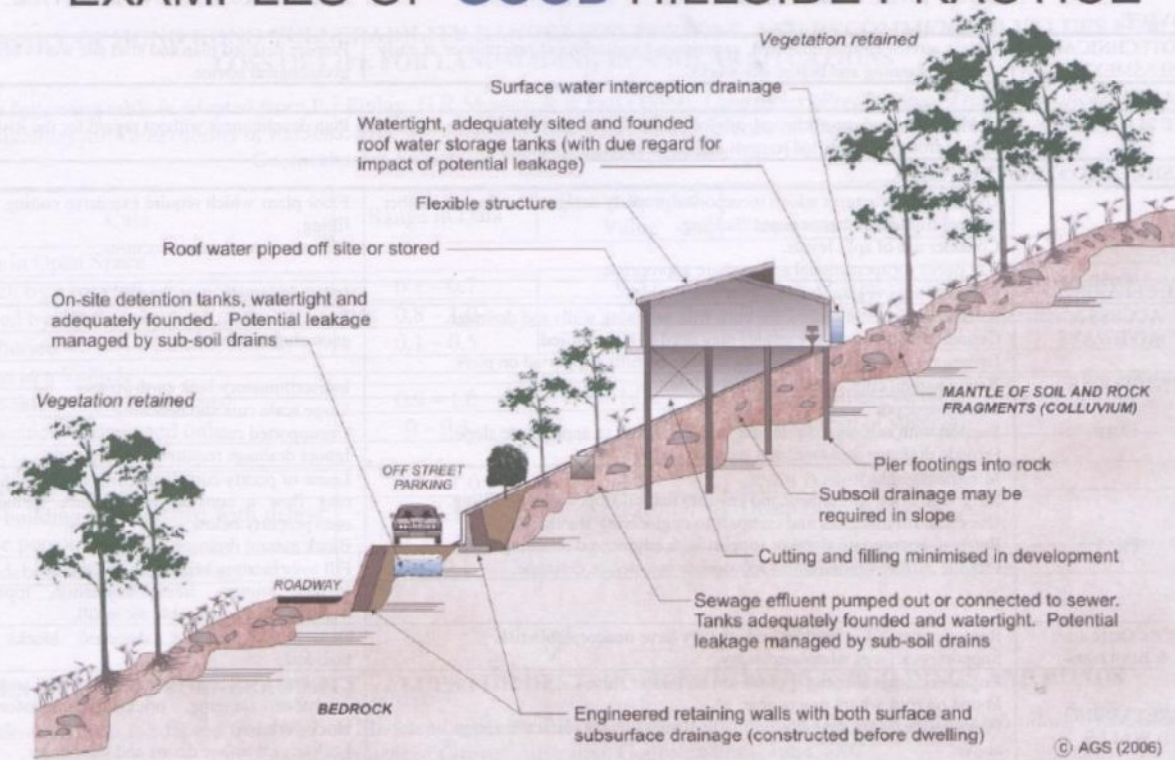
|             |   |  |
|-------------|---|--|
| DRAWINGS    | Building Application drawings should be viewed by geotechnical consultant |  |
| SITE VISITS | Site Visits by consultant may be appropriate during construction/         |  |

#### INSPECTION AND MAINTENANCE BY OWNER

|                        |  |  |
|------------------------|--|--|
| OWNER'S RESPONSIBILITY | Clean drainage systems; repair broken joints in drains and leaks in supply pipes.<br>Where structural distress is evident see advice.<br>If seepage observed, determine causes or seek advice on consequences. |  |
|------------------------|--|--|



## EXAMPLES OF GOOD HILLSIDE PRACTICE



## EXAMPLES OF POOR HILLSIDE PRACTICE

