Exhibited

This planning application is open for public comment until 31 August 2026

Reference no	**PLN-26-0156**
Site	**778, 840, 866, 876, FR 159893/4 & 107326/1, 188870/1 WHITE HILLS ROAD, & 138 TRAFALGAR LANE EVANDALE**
Proposed Development	**Stormwater infrastructure (trunk main)**
Zone	**21.0 Agriculture**
Use class	**Utilities**

Written representations may be made during this time to the General Manager;
mailed to PO Box 156, Longford, Tasmania 7301,
delivered to Council offices or
a pdf letter emailed to planning@nmc.tas.gov.au

(no special form required)

NORTHERN MIDLANDS COUNCIL

Exhibited

PLANNING APPLICATION

FOR BUILDINGS, WORKS AND CHANGE OF USE

(E.g. Residential houses, sheds, carports, retaining walls, visitor accommodation, commercial development, signage etc.)

Office Use Only:

The Proposal

Description of proposal: Construction of a new stormwater pipe trunk main.

Driveway construction material:	

The Land

Site address:	Refer to owner's detail table at end page.
Title reference:	C/T:
Existing buildings on site:	
Existing use of site:	

Applicant justification of any variation/discretion to the *Tasmanian Planning Scheme – Northern Midlands*

Contained within accompanying planning report.

"Provisional Plan"

OWNER: EVERTON (TAS) PTY LTD

FOLIO REFERENCE:
F/R 170329-2

GRANTEE:
PART OF 215 ACRES & PART OF 500 ACRES GTD TO JAMES AITKEN, THOMAS WILLIAMS & JOHN SINCLAIR
PART OF 330 ACRES GTD TO ANDREW BARCLAY &
PART OF 500 AC. LOCATED TO ANDREW BARCLAY

PLAN OF SURVEY

BY SURVEYOR: PAUL HODGETTS of MICHELL HODGETTS SURVEYORS
25 YORK STREET, LAUNCESTON, 7250

LOCATION:
LAND DISTRICT OF CORNWALL
PARISH OF EVANDALE

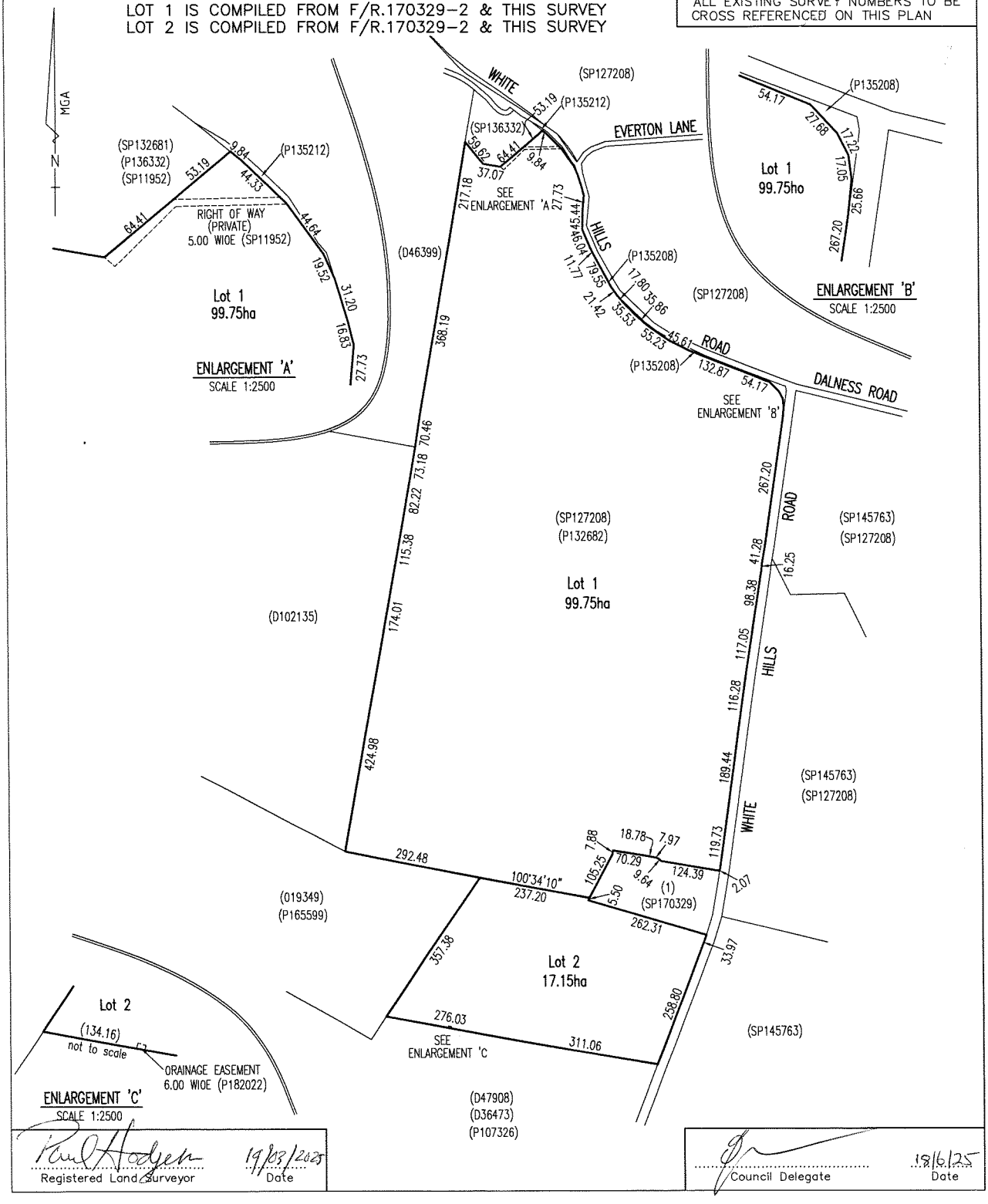
SCALE 1:7500 LENGTHS IN METRES

REGISTERED NUMBER
SP188870

~~APPROVED~~
EFFECTIVE FROM 25 AUG 2025
Recorder of Titles

LOT 1 IS COMPILED FROM F/R.170329-2 & THIS SURVEY
LOT 2 IS COMPILED FROM F/R.170329-2 & THIS SURVEY

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN



Registered Land Surveyor — 19/03/2025 Date

Council Delegate — 18/6/25 Date

Owner:	PLAN OF TITLE	REGISTERED NUMBER
Title Reference: C.T. 103485-1	of land situated in the TOWN OF EVANDALE LAND DISTRICT OF CORNWALL PARISH OF EVANDALE	P 107326
Grantee:	COMPILED FROM P103485 SCALE 1: MEASUREMENTS IN METRES	Approved Effective from: 20 OCT 1993 Titles

BALANCE PLAN

THE LAND SHOWN AS LOT 1 (NOT INCLUDING THE LAND MARKED A B C D) HAS THE STATUS OF SKETCH BY WAY OF ILLUSTRATION ONLY. THE LAND MARKED ABCD IS COMPILED FROM C.T. 4774-89 (D.47916)

SKETCH BY WAY OF ILLUSTRATION ONLY

EXCEPTED LANDS
LOT 1 (2/10 PS) SP3709, LOT 2 (SP5197) 1795m²
LOTS 1, 2 & 3 (SP6207) 1747m² LOTS 3, 4, 5 & 7 (SP7190) 3205m²
LOT 1 (SP7465) 751m² LOTS 3 & 4 (SP13426) 418m²
LOTS 1 TO 17 INCL (SP35942) 1347 ha
CONV. 45/9680 (3·1·26)
CONV. 50/1950
(31/10 PS) NOTN. 40/526
LOTS 52 TO 58 (SP40711) 9345 m²
LOT 1 5689m² D.43045
LOTS 11 TO 17 & 19 AND PART OF LOTS 9, 10 & 18 SP47879 1·329 ha.
LOT 1 (S.P.53210) 1379m²
LOT 1 (S.P.102290) 1462m²
LOT 1 (SP106775) 9·431 ha

ENLARGEMENT

DRAINAGE EASEMENT 6·00 WIDE (CREATED BY E288052) (P182022) & (M916961)

NOT INCL. HATCHED PORTIONS BUT INCL. HIGH ST. AND THE LAND MARKED ABCD

(GRANT 50/1949) PIPELINE, ELECTRIC LINE & PUMPHOUSE EASEMENT

RIGHT OF WAY (PRIVATE) 6·00 WIDE

DRAINAGE EASEMENT 4·00 WIDE (CREATED BY E288052)

TASMAP MUNICIPAL CODE NO. 47	LAST TASMAP SHEET NO. 04 87	LAST SURVEY PLAN NO. P103485
ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN		

R.P.-5469
TASMANIA
REAL PROPERTY ACT, 1862, as amended

CERTIFICATE OF TITLE

Register Book
Vol. 2939 Fol. 45

Cert. of Title Vol. 915 Fol. 18

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

RECORDER OF TITLES * TASMANIA *

DESCRIPTION OF LAND

PARISH OF EVANDALE LAND DISTRICT OF CORNWALL
F I F T E E N A C R E S on the Plan hereon

FIRST SCHEDULE (continued overleaf)

ERNEST MILTON ROBERTS CHEEK of Evandale, Farmer and
AMY EILEEN CHEEK of Evandale, Spinster

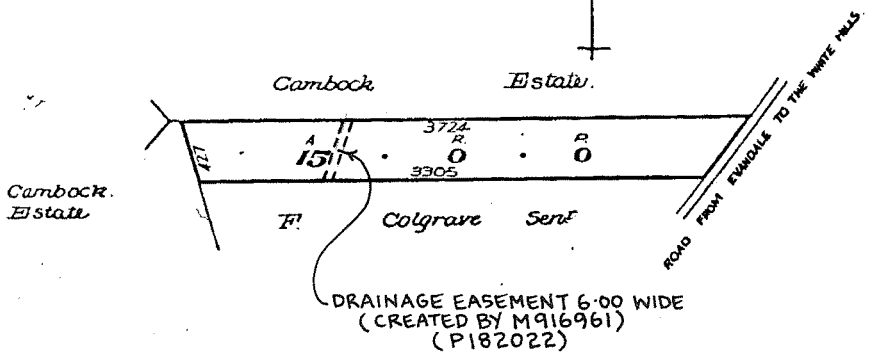
SECOND SCHEDULE (continued overleaf)
NIL.

CANCELLED
15 FEB 1995
RECORDER OF TITLES
NEW TITLE 5

RECORDER OF TITLES ARE NO LONGER SUBSISTING.

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register

REGISTERED NUMBER 227393



Part of 76 acs. 3rds.Gtd.to J.R.Kenworthy. Meas.are in links.
P204

FIRST Edition. Registered -

Derived from C.T.Vol. 915 Fol. 18 - Transfer A98900 T.L. Cheek & ors.

Exhibited

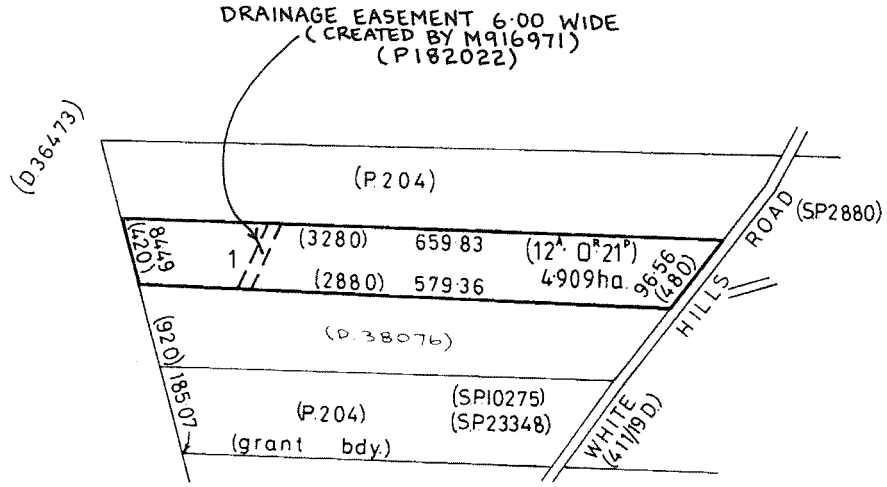
APPROVED 3 - AUG 1988 RECORDER OF TITLES	CONVERSION PLAN CONVERTED FROM	REGISTERED NUMBER D.36474
FILE NUMBER R.A.W. ENTERPRISES OW. CONV. 42/8254 (2NDLY)	GRANTEE PART OF 76A 3R 0P GTD TO JAMES RYLEY KENWORTHY	DRAWN

SKETCH BY WAY OF ILLUSTRATION ONLY

~~CITY~~/TOWN OF EVENDALE
~~LAND DISTRICT OF~~
~~PARISH OF~~
LENGTHS ARE IN METRES. NOT TO SCALE.
LENGTHS IN BRACKETS IN LINKS/~~FEET & INCHES~~.

...SIDE FIELD NOTES FOR REPEG.

EXCEPTED LAND
NIL.



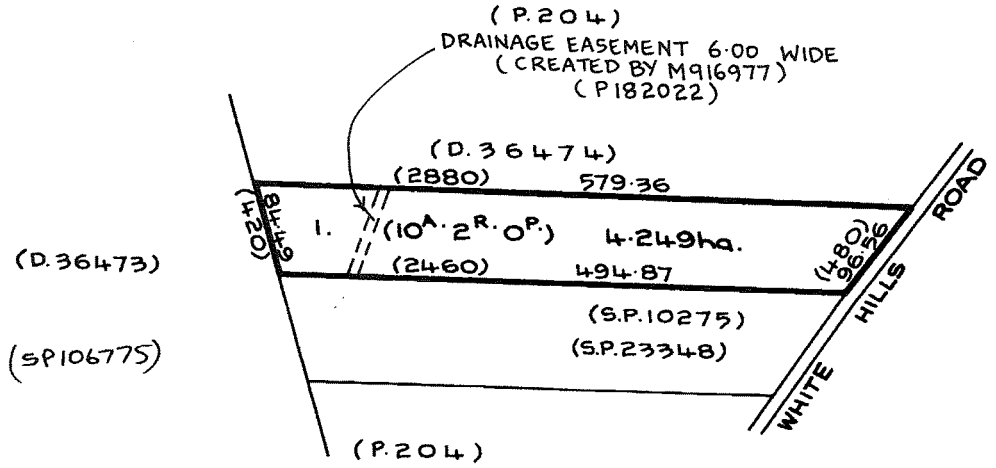
Exhibited

APPROVED 22 DEC 1988 RECORDER OF TITLES	CONVERSION PLAN CONVERTED FROM 64/1166.	REGISTERED NUMBER D 38076
FILE NUMBER Y. 9565.	GRANTEE PART OF 76·3·0 JAMES RYLEY KENWORTHY.	DRAWN B. HILL. 12·12·88

OS-K 2082

SKETCH BY WAY OF ILLUSTRATION ONLY

~~CITY~~/TOWN OF EVANDALE.
~~LAND DISTRICT OF~~
~~PARISH OF~~
LENGTHS ARE IN METRES. NOT TO SCALE.
LENGTHS IN BRACKETS IN LINKS ~~/FEET & INCHES~~.



OWNER: McKENZIE, ROBERT ANOREW

FOLIO REFERENCE: CT.140081/3

GRANTEE: ~~PART OF 55^{A} - 2^{R} - 33^{P} GRANTED TO KENNEDY MURRAY.~~ PART OF 54 ACRES GRANTED TO JOSEPH WILLIAM BELL. PART OF 76^{A} - 3^{R} - 0^{P} GRANTED TO JAMES RYLEY KENWORTHY.

PLAN OF SURVEY

BY SURVEYOR JOHN WILLIAM OENT of CAMPBELL SMITH PHELPS PEDLEY 3/23 BRISBANE STREET, LAUNCESTON

LOCATION

TOWN OF EVANDALE

SCALE: 1:2000 | LENGTHS IN METRES | SURVEYORS REF: 264-09

REGISTERED NUMBER

SP159893

APPROVED 27 AUG 2010

EFFECTIVE FROM .....

Alice Kawa

Recorder of Titles

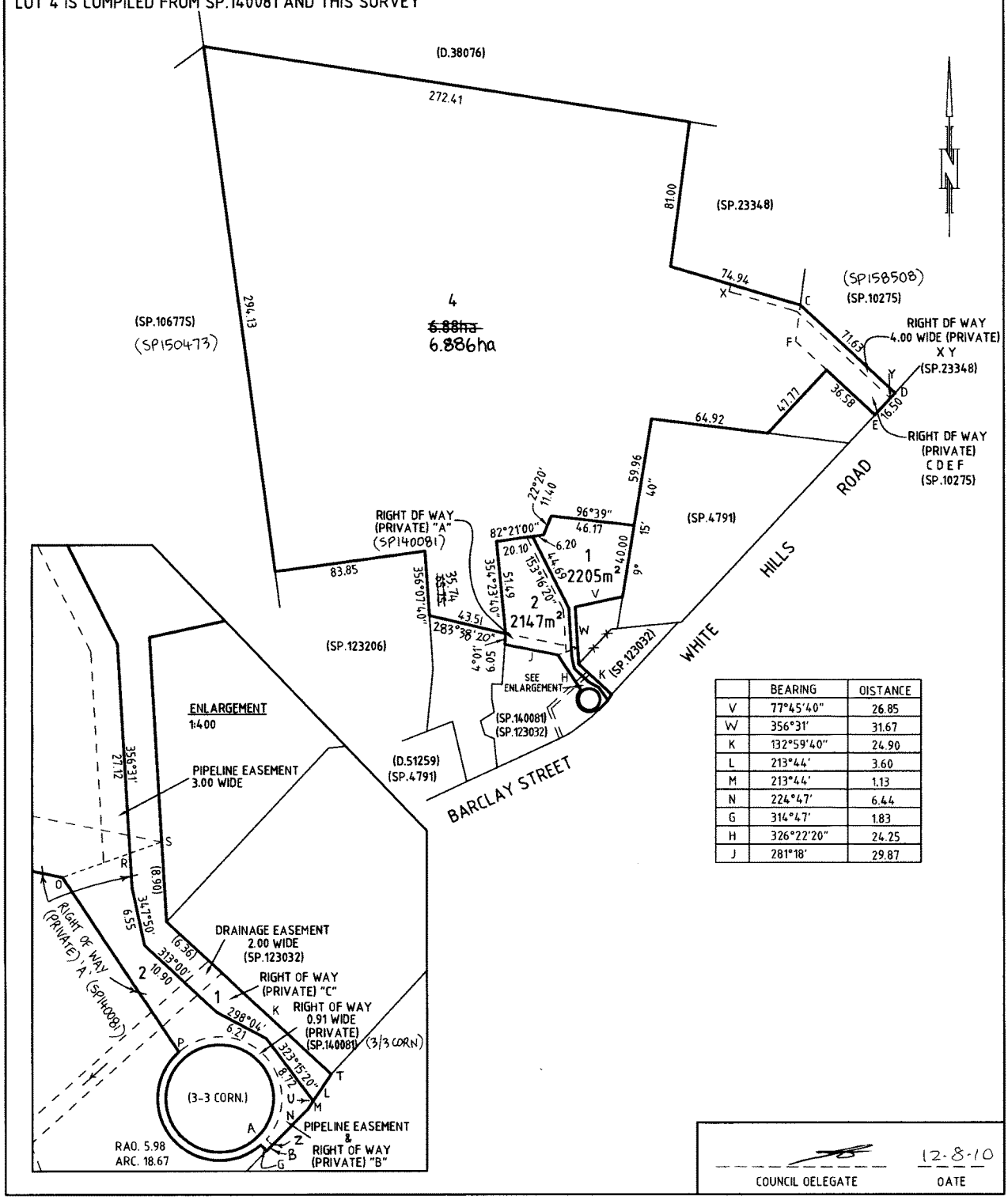
MAPSHEET MUNICIPAL CODE No. 123 (5239 - 11)

LAST UPI No FCV60

LAST PLAN No. SP140081

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

LOT 4 IS COMPILED FROM SP.140081 AND THIS SURVEY



	BEARING	DISTANCE
V	77°45'40"	26.85
W	356°31'	31.67
K	132°59'40"	24.90
L	213°44'	3.60
M	213°44'	1.13
N	224°47'	6.44
G	314°47'	1.83
H	326°22'20"	24.25
J	281°18'	29.87

COUNCIL DELEGATE

12-8-10

DATE

Exhibited

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
188870	2
EDITION	DATE OF ISSUE
2	01-June-2026

SEARCH DATE : 20-July-2026
SEARCH TIME : 12.37 pm

DESCRIPTION OF LAND

Parish of EVANDALE Land District of CORNWALL
Lot 2 on Sealed Plan 188870
Derivation : Part of 500 Acres Gtd. to James Aitkin, Thomas Williams and John Sinclair
Prior CT 170329/2

SCHEDULE 1

N294099 TRANSFER to CLARE MARGARET LORNA PELTZER Registered 01-June-2026 at noon

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP188870 EASEMENTS in Schedule of Easements
SP188870 FENCING COVENANT in Schedule of Easements
SP127208 SEWERAGE AND/OR DRAINAGE RESTRICTION

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Exhibited

"Provisional Plan"

OWNER: EVERTON (TAS) PTY LTD

FOLIO REFERENCE:
F/R 170329-2

GRANTEE:
PART OF 215 ACRES & PART OF 500 ACRES GTD TO JAMES AITKEN, THOMAS WILLIAMS & JOHN SINCLAIR
PART OF 330 ACRES GTD TO ANDREW BARCLAY &
PART OF 500 AC. LOCATED TO ANDREW BARCLAY

PLAN OF SURVEY

BY SURVEYOR: PAUL HODGETTS of MICHELL HODGETTS SURVEYORS
25 YORK STREET, LAUNCESTON, 7250

LOCATION:
LAND DISTRICT OF CORNWALL
PARISH OF EVANDALE

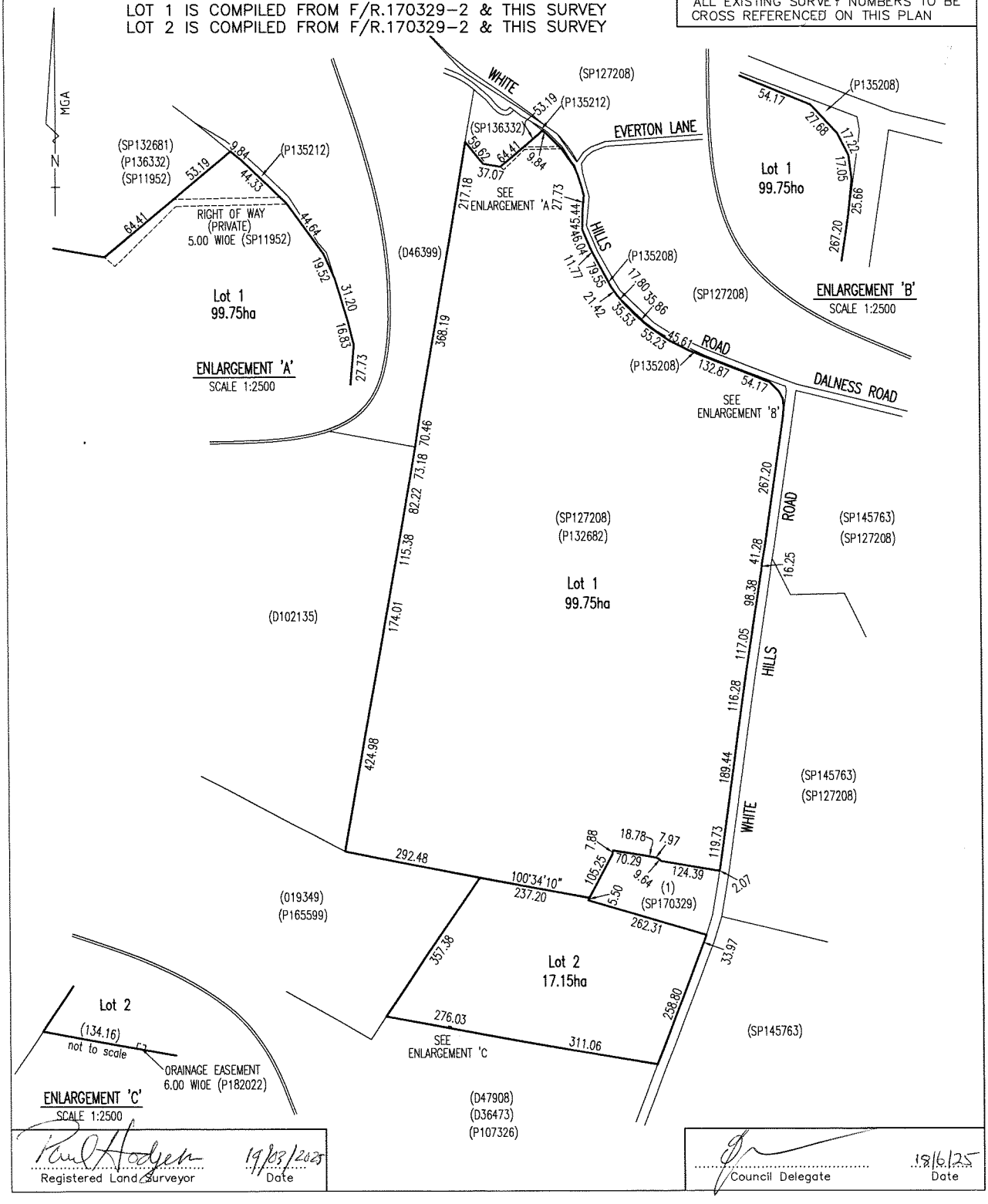
SCALE 1:7500 LENGTHS IN METRES

REGISTERED NUMBER
SP188870

~~APPROVED~~
EFFECTIVE FROM 25 AUG 2025
Recorder of Titles

LOT 1 IS COMPILED FROM F/R.170329-2 & THIS SURVEY
LOT 2 IS COMPILED FROM F/R.170329-2 & THIS SURVEY

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN



Registered Land Surveyor — 19/03/2025 Date

Council Delegate — 18/6/25 Date

Exhibited

SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 188870

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.

Lot 1 on the Plan is subject to a right of carriageway over the strip of land shown on the Plan as "Right of Way (Private) 5.00 wide" appurtenant to Lot 2 on the Plan.

Lot 2 on the Plan is subject to a right of drainage over the strip of land shown on the Plan as "Drainage Easement 6.00 wide" appurtenant to Lot 1 on the Plan.

The Owner of each Lot on the Plan covenants with Everton (Tas) Pty Ltd ("the Vendor") that the Vendor shall not be required to fence.

Executed by Everton (Tas) Pty Ltd
A.C.N. 674 703 523 pursuant to
section 127(1) of the Corporations
Act 2001 by being signed by:

Michael Pierre Marc Henri Peltzer
Director (signature)

Julie Anne Peltzer
Director (signature)

(USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: Everton (Tas) Pty Ltd FOLIO REF: Volume 170329/2 SOLICITOR & REFERENCE: JMF 242998	PLAN SEALED BY: DATE: 18/6/2025 PLN 24 -0151 REF NO. 27/003/1059 Council Delegate

NOTE: The Council Delegate must sign the Certificate for the purposes of identification.

Exhibited

PIN OR STAPLE HERE
DO NOT GUM THIS
FORM TO THE INSTRUMENT

ANNEXURE PAGE

Lot 2 on the Plan is together with a Right of Carriageway over the strip of land shown on the Plan as "Right of Way (Private) 5.00 wide".

Lot 1 on the Plan is together with a Right of Drainage over the strip of land shown on the Plan as "Drainage Easement 6.00 wide".

Lot 1 on the Plan is subject to a Right of Carriageway appurtenant to Folios of the Register Volume 136332 Folio 1 and Volume 135212 Folio 5 over the strip of land shown as Right of Way (Private) 5.00 wide on the Plan.

Lot 2 on the Plan is subject to a Right of Drainage in gross in favour of the Northern Midlands Council over the land marked "Drainage Easement 6.00 wide".

Michael Pierre Marc Henri Peltzer, Director

Julie Anne Peltzer, Director

NOTE:- Every annexed page shall be signed by the parties to the dealing, or where the party is a corporate body, be signed by the persons who have attested the affixing of the seal of that body to the dealing.

Version 1

THE BACK OF THIS PAGE MUST NOT BE USED

Exhibited

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
107326	1
EDITION	DATE OF ISSUE
9	28-Apr-2023

SEARCH DATE : 20-July-2026
SEARCH TIME : 12.37 pm

DESCRIPTION OF LAND

Town of EVANDALE
Lot 1 on Plan 107326
As to the whole of the said land within described excepting the marked A.B.C.D. being the land described in Conveyance 42/8754(excepting the lands set out below)
Excepting thereout the exceptions shown on Plan No 107326
Derivation : Part of 328 Acres Gtd. to J.Aitkin,T.Williams & J. Sinclair
Prior CT 103485/1

SCHEDULE 1

B704518 M197193 TRANSFER to RODNEY KENT SUMMERS

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP 47879 BURDENING EASEMENT:Right of Carriageway (appurtenant to Lots 1 to 19 on Sealed Plan No.47879) over the land marked Drainage Easements 4.00 wide on Plan No. 107326.
50/1949 BURDENING EASEMENT:a Pipeline,Electric Line and Pumphouse Easement more fully set forth in Grant of Easement.
B401925 ADHESION ORDER under Section 477A of the Local Government Act 1962 Registered 20-May-1991 at noon
E126303 LEASE to IWG-TLA AUSTRALIA PTY LTD of a leasehold estate for the term of 10 years from 01-Aug-2016 (of that part of the said land within described as Lot 1 on Annexure B on the plan attached to the said lease) Registered 15-May-2019 at noon
E126304 LEASE to IWG-TLA AUSTRALIA PTY LTD of a leasehold estate for the term of 10 years from 01-Aug-2026 (of that part of the said land within described as Lot 1 on Annexure B on the plan attached to the said lease) Registered 15-May-2019 at 12.01 pm
E126305 LEASE to IWG-TLA AUSTRALIA PTY LTD of a leasehold estate for the term of 10 years from 01-Aug-2036 (of

Exhibited

that part of the said land within described as Lot 1 on Annexure B on the plan attached to the said lease)
Registered 15-May-2019 at 12.02 pm

E288052 BURDENING EASEMENT: a right of drainage in favour of Northern Midlands Council over the land marked Drainage Easement 6.00 wide on Plan 107326

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Owner:	PLAN OF TITLE	REGISTERED NUMBER
Title Reference: C.T. 103485-1	of land situated in the TOWN OF EVANDALE LAND DISTRICT OF CORNWALL PARISH OF EVANDALE	P 107326
Grantee:	COMPILED FROM P103485 SCALE 1: MEASUREMENTS IN METRES	Approved Effective from: 20 OCT 1993 Titles

BALANCE PLAN

THE LAND SHOWN AS LOT 1 (NOT INCLUDING THE LAND MARKED A B C D) HAS THE STATUS OF SKETCH BY WAY OF ILLUSTRATION ONLY. THE LAND MARKED ABCD IS COMPILED FROM C.T. 4774-89 (D.47916)

SKETCH BY WAY OF ILLUSTRATION ONLY

EXCEPTED LANDS

LOT 1 (2/10 PS) SP3709, LOT 2 (SP5197) 1795m²
LOTS 1, 2 & 3 (SP6207) 1747m² LOTS 3, 4, 5 & 7 (SP7190) 3205m²
LOT 1 (SP7465) 751m² LOTS 3 & 4 (SP13426) 418m²
LOTS 1 TO 17 INCL (SP35942) 1347 ha
CONV. 45/9680 (3A 1R 26P)
CONV. 50/1950
(31/10 PS) NOTN. 40/526
LOTS 52 TO 58 (SP40711) 9345 m²
LOT 1 5689m² D.43045
LOTS 11 TO 17 & 19 AND PART OF LOTS 9, 10 & 18 SP47879 1.329 ha.
LOT 1 (S.P.53210) 1379m²
LOT 1 (S.P.102290) 1462m²
LOT 1 (SP106775) 9.431 ha

ENLARGEMENT

DRAINAGE EASEMENT 6.00 WIDE (CREATED BY E288052) (P182022) & (M916961)

NOT INCL. HATCHED PORTIONS BUT INCL. HIGH ST. AND THE LAND MARKED ABCD

(GRANT 50/1949) PIPELINE, ELECTRIC LINE & PUMPHOUSE EASEMENT

RIGHT OF WAY (PRIVATE) 6.00 WIDE

DRAINAGE EASEMENT 4.00 WIDE (CREATED BY E288052)

TASMAP MUNICIPAL CODE NO. 47	LAST TASMAP SHT. NO. 0487	LAST SURVEY PLAN NO. P103485

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

Exhibited

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
227393	1
EDITION	DATE OF ISSUE
6	03-Oct-2022

SEARCH DATE : 20-July-2026
SEARCH TIME : 12.37 pm

DESCRIPTION OF LAND

Parish of EVANDALE, Land District of CORNWALL
Lot 1 on Plan 227393
Derivation : Part of 76A-3R-0Ps Gtd to J R Kenworthy
Prior CT 2939/45

SCHEDULE 1

C518168 & M887730 TRANSFER to DONNA MAREE BAILEY Registered 14-May-2021 at 12.01 pm

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
M916961 BURDENING EASEMENT: a right of drainage in favour of Northern Midlands Council over the land marked Drainage Easement 6.00 wide on Plan 227393 Registered 15-Aug-2022 at noon
E318252 MORTGAGE to Commonwealth Bank of Australia Registered 03-Oct-2022 at 12.01 pm

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

R.P.-5469
TASMANIA
REAL PROPERTY ACT, 1862, as amended

CERTIFICATE OF TITLE

Register Book
Vol. 2939 Fol. 45

Cert. of Title Vol. 915 Fol. 18

I certify that the person described in the First Schedule is the registered proprietor of an estate in fee simple in the land within described together with such interests and subject to such encumbrances and interests as are shown in the Second Schedule. In witness whereof I have hereunto signed my name and affixed my seal.

Recorder of Titles.

RECORDER OF TITLES TASMANIA

DESCRIPTION OF LAND

PARISH OF EVANDALE LAND DISTRICT OF CORNWALL
F I F T E E N A C R E S on the Plan hereon

FIRST SCHEDULE (continued overleaf)

ERNEST MILTON ROBERTS CHEEK of Evandale, Farmer and
AMY EILEEN CHEEK of Evandale, Spinster

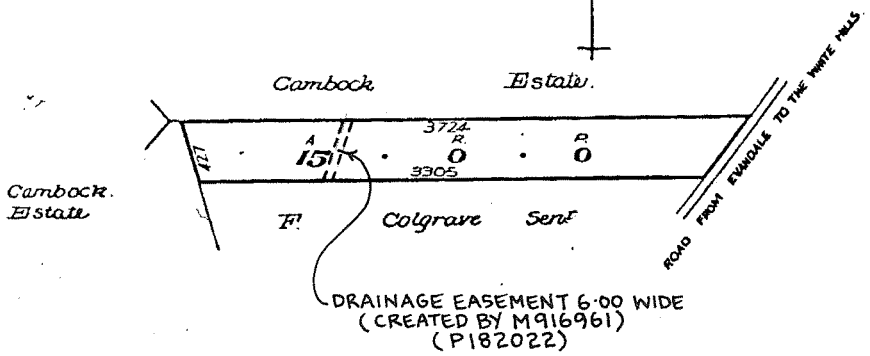
SECOND SCHEDULE (continued overleaf)
NIL.

CANCELLED
15 FEB 1995
RECORDER OF TITLES
NEW TITLE 5

RECORDER OF TITLES ARE NO LONGER SUBSISTING.

Lot 1 of this plan consists of all the land comprised in the above-mentioned cancelled folio of the Register

REGISTERED NUMBER 227393



Part of 76 acs. 3rds.Gtd.to J.R.Kenworthy. Meas.are in links.
P204

FIRST Edition. Registered -

Derived from C.T.Vol. 915 Fol. 18 - Transfer A98900 T.L. Cheek & ors.

RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Exhibited

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
36474	1
EDITION	DATE OF ISSUE
3	16-Aug-2022

SEARCH DATE : 20-July-2026
SEARCH TIME : 12.37 pm

DESCRIPTION OF LAND

Town of EVANDALE
Lot 1 on Diagram 36474
being the land secondly described in Conveyance No. 42/8754
Derivation : Part of 328 Acres Granted to J. Aitkin, T. Williams and J. Sinclair
Prior CT 4486/1

SCHEDULE 1

B414320 TRANSFER to ANDREW BOYTON WILKES and CAROLINE ANN WILKES

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
M916971 BURDENING EASEMENT: a right of drainage in favour of Northern Midlands Council over the land marked Drainage Easement 6.00 wide on Diagram 36474 Registered 15-Aug-2022 at noon
B450435 MORTGAGE to Commonwealth Savings Bank of Australia Registered 21-Aug-1991 at noon
C277845 MORTGAGE to Commonwealth Bank of Australia Registered 08-Mar-2001 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

Exhibited

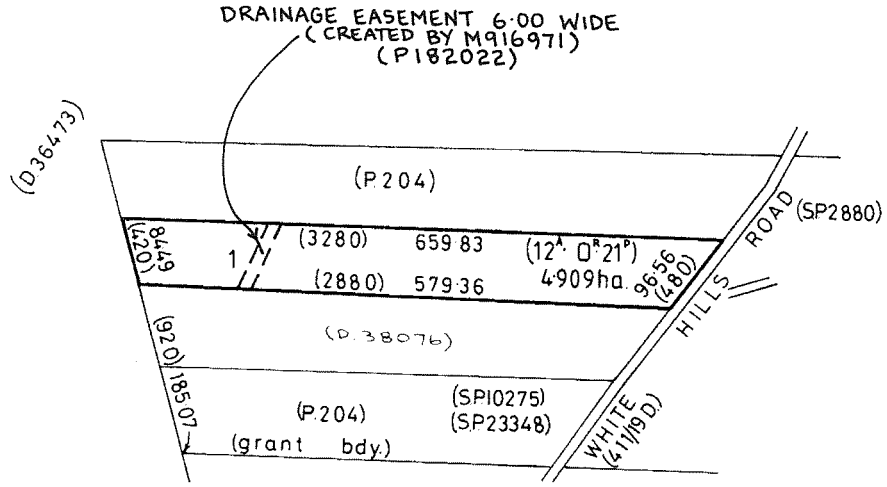
APPROVED 3 - AUG 1988 RECORDER OF TITLES	CONVERSION PLAN CONVERTED FROM	REGISTERED NUMBER D.36474
FILE NUMBER R.A.W. ENTERPRISES OW. CONV. 42/8254 (2NDLY)	GRANTEE PART OF 76A 3R 0P GTD TO JAMES RYLEY KENWORTHY	DRAWN

SKETCH BY WAY OF ILLUSTRATION ONLY

~~CITY~~/TOWN OF EVENDALE
~~LAND DISTRICT OF~~
~~PARISH OF~~
LENGTHS ARE IN METRES. NOT TO SCALE.
LENGTHS IN BRACKETS IN LINKS/~~FEET & INCHES~~.

...SIDE FIELD NOTES FOR REPEG.

EXCEPTED LAND
NIL.



RESULT OF SEARCH

RECORDER OF TITLES

Issued Pursuant to the Land Titles Act 1980

Exhibited

Tasmanian Government

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
38076	1
EDITION	DATE OF ISSUE
4	24-Oct-2023

SEARCH DATE : 20-July-2026
SEARCH TIME : 12.36 pm

DESCRIPTION OF LAND

Town of EVANDALE
Lot 1 on Diagram 38076
Being the land described in Conveyance No. 64/1166
Derivation : Part of 76 Acres Gtd. to James Ryley Kenworthy
Prior CT 4523/99

SCHEDULE 1

N160988 TRANSFER to CHRISTOPHER CHARLES LAYTON and ANNA NICOLE CUNNINGHAM Registered 24-Oct-2023 at 12.01 pm

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
M916977 BURDENING EASEMENT: a right of drainage in favour of Northern Midlands Council over the land marked Drainage Easement 6.00 wide on Diagram 38076 Registered 15-Aug-2022 at 12.01 pm
E366174 MORTGAGE to Westpac Banking Corporation Registered 24-Oct-2023 at 12.02 pm

UNREGISTERED DEALINGS AND NOTATIONS

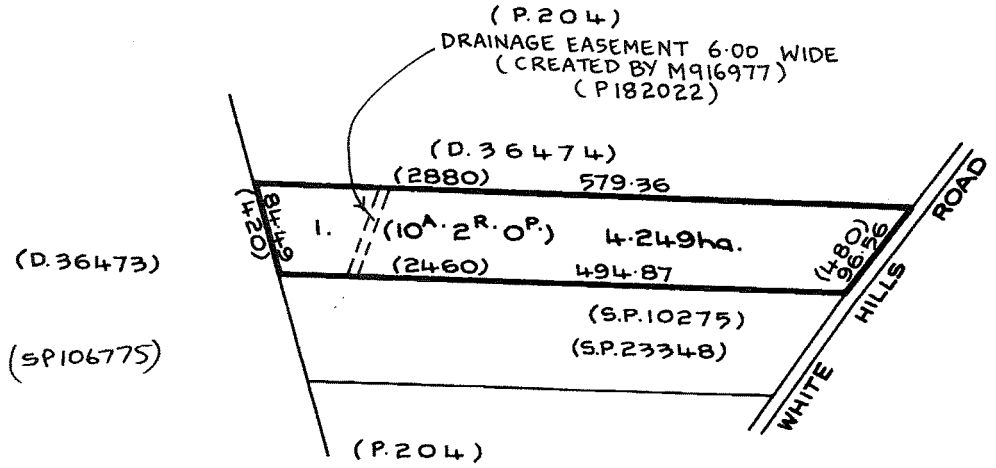
No unregistered dealings or other notations

APPROVED 22 DEC 1988 RECORDER OF TITLES	**CONVERSION PLAN** CONVERTED FROM 64/1166.	REGISTERED NUMBER D 38076
FILE NUMBER Y. 9565.	GRANTEE PART OF 76·3·0 JAMES RYLEY KENWORTHY.	DRAWN B. HILL. 12·12·88

OS-K 2082

SKETCH BY WAY OF ILLUSTRATION ONLY

~~CITY~~/TOWN OF EVANDALE.
~~LAND DISTRICT OF~~
~~PARISH OF~~
LENGTHS ARE IN METRES. NOT TO SCALE.
LENGTHS IN BRACKETS IN LINKS ~~/FEET & INCHES~~.



Exhibited

SEARCH OF TORRENS TITLE

VOLUME	FOLIO
159893	4
EDITION	DATE OF ISSUE
3	13-Nov-2025

SEARCH DATE : 20-July-2026
SEARCH TIME : 12.36 pm

DESCRIPTION OF LAND

Town of EVANDALE
Lot 4 on Sealed Plan 159893
Derivation : Part of 54 Acres Gtd to Joseph William Bell and
Part of 76A-3R-0Ps. Gtd. to James Ryley Kenworthy
Prior CT 140081/3

SCHEDULE 1

M753243 TRANSFER to THE BAKER GROUP (TAS) PTY LTD
Registered 14-May-2019 at 12.02 pm

SCHEDULE 2

Reservations and conditions in the Crown Grant if any
SP159893 EASEMENTS in Schedule of Easements
SP159893 FENCING COVENANT in Schedule of Easements
SP159893 SEWERAGE AND/OR DRAINAGE RESTRICTION
C966617 AGREEMENT pursuant to Section 71 of the Land Use Planning and Approvals Act 1993 Registered 27-Aug-2010 at noon

UNREGISTERED DEALINGS AND NOTATIONS

No unregistered dealings or other notations

OWNER: McKENZIE, ROBERT ANOREW

FOLIO REFERENCE: CT.140081/3

GRANTEE: ~~PART OF 55A - 2R - 33P GRANTED TO KENNEDY MURRAY.~~ PART OF 54 ACRES GRANTED TO JOSEPH WILLIAM BELL. PART OF 76A - 3R - 0P GRANTED TO JAMES RYLEY KENWORTHY.

PLAN OF SURVEY

BY SURVEYOR JOHN WILLIAM OENT of CAMPBELL SMITH PHELPS PEDLEY 3/23 BRISBANE STREET, LAUNCESTON

LOCATION

TOWN OF EVANDALE

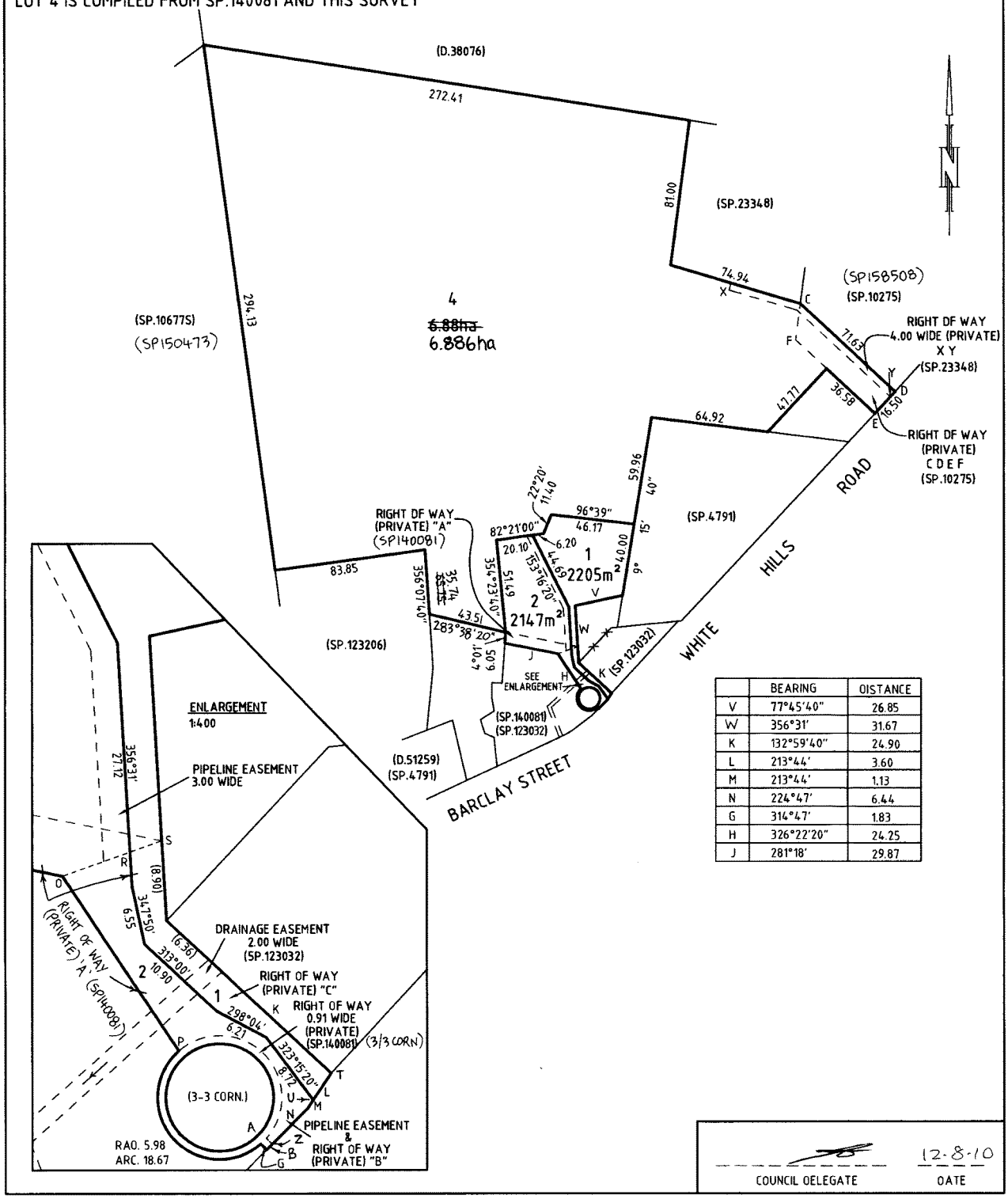
SCALE: 1:2000 | LENGTHS IN METRES | SURVEYORS REF: 264-09

REGISTERED NUMBER
SP159893

APPROVED
EFFECTIVE FROM 27 AUG 2010
Alice Kawa
Recorder of Titles

MAPSHEET MUNICIPAL CODE No. 123 (5239 - 11) | LAST UPI No FCV60 | LAST PLAN No. SP140081 | ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

LOT 4 IS COMPILED FROM SP.140081 AND THIS SURVEY



	BEARING	DISTANCE
V	77°45'40"	26.85
W	356°31'	31.67
K	132°59'40"	24.90
L	213°44'	3.60
M	213°44'	1.13
N	224°47'	6.44
G	314°47'	1.83
H	326°22'20"	24.25
J	281°18'	29.87

COUNCIL DELEGATE

12-8-10
DATE

SCHEDULE OF EASEMENTS	Registered Number
NOTE: THE SCHEDULE MUST BE SIGNED BY THE OWNERS & MORTGAGEES OF THE LAND AFFECTED. SIGNATURES MUST BE ATTESTED.	SP 159893

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.

In this Schedule, pipeline easement means:

"Pipeline Easement" means the full and free right and liberty to pump sewerage waste through pipes now or to be installed as hereinafter appears within that portion of the Servient Land respectively marked "Pipeline Easement 3.00 wide" and "Pipeline and Right of Way (Private) "B"" on the Plan and for that purpose to enter thereon and clear and install and maintain thereon a pumping system and such pipe or pipes (as the owner of the Dominant Tenement shall from time to time determine) at a depth of greater than 600mm below ground level and the right at all times to carry out all necessary repairs thereto and together also with the right to lay in and upon the Pipeline Easement such pipe or pipes as shall from time to time be necessary for the purposes aforesaid and to pump sewerage waste through such pipes and at all times with workmen vehicles and machinery to enter into and upon the pipeline easement for the purpose of maintaining any pumping system and inspecting cleansing repairing maintaining removing and renewing such pipes and to carry out all necessary work thereon causing as little damage as possible and making reasonable compensation for all damage done under or caused thereby.

EASEMENTS

A. Lot 1 is subject to a right of carriageway (appurtenant to Lot 1 + Lot 2 on SP 140081) over the "Right of Way 'A' (Private)" shown on SP 140081 and on the Plan.

B. Lot 2 is subject to a right of carriageway (appurtenant to Lot 1 + Lot 2 on SP 140081) over the "Right of Way 'A' (Private)" shown on SP 140081 and on the Plan.

C. Lot 1 is subject to a right of drainage (appurtenant to Lot 2 on SP 123032) over the "Drainage Easement 2.00 wide" shown on SP 123032 and on the Plan.

D. Lot 2 is subject to a right of drainage (appurtenant to Lot 2 on SP 123032) over the "Drainage Easement 2.00 wide" shown on SP 123032 and on the Plan.

(USE ANNEXURE PAGES FOR CONTINUATION)

SUBDIVIDER: Robert Andrew McKenzie FOLIO REF: C.T. 140081/3 SOLICITOR & REFERENCE: Douglas & Collins (G.W. Arnott)	PLAN SEALED BY: Northern Midlands Council DATE: 12-8-10 27/003/487 REF NO. P07-378 Council Delegate
NOTE: The Council Delegate must sign the Certificate for the purposes of identification.	

Exhibited

ANNEXURE TO SCHEDULE OF EASEMENTS PAGE 2 OF 3 PAGES	Registered Number SP159893
SUBDIVIDER: Robert Andrew McKenzie FOLIO REFERENCE: C.T. 140081/3	

E. Lot 4 is subject to a right of carriageway (appurtenant to Lot 1 on SP 23348) over the "Right of Way (Private) 'XY' 4.00 wide" as shown on SP 23348 and as shown on SP 140081 and on the Plan.

F. Lot 4 is subject to a right of carriageway (appurtenant to Lot 6 on SP 10275) over the "Right of Way (Private) CDEF" as shown on SP 10275 and on SP 140081 and on the Plan.

G. Lot 2 is subject to an existing Right of Way ~~of~~ for the Trustees of the Evandale Water District over the Roadway 0.91 wide shown on Plan No. 123207 and shown as "Right of Way (Private) 0.91 wide" on SP 140081 and on the Plan.

H. Lot 2 is subject to an existing pipeline right for the Trustees of the Evandale Water District under the land marked 'AB' on Plan No. 123207 and as shown on SP 140081. ~~and~~ on the plan

I. Lot 1 is together with a right of carriageway over that part of Lot 2 marked ""Pipeline Easement and Right of Way (Private) "B" ~~QRMNP~~ QRUZP" shown on the Plan.

J. Lot 2 is subject to a right of carriageway (appurtenant to Lot 1) over the area marked "Pipeline Easement and Right of Way (Private) "B" ~~QRMNP~~ QRUZP" as shown on the Plan.

K. Lot 2 is together with a right of carriageway over that part of Lot 1 marked "Right of Way (Private) "C" ~~SKLR~~ STUR" shown on the Plan.

L. Lot 1 is subject to a right of carriageway (appurtenant to Lot 2) over the area marked "Right of Way (Private) "C" ~~SKLR~~ STUR" as shown on the Plan.

M. Lot 4 is together with a pipeline easement over that part of Lot 2 marked "Pipeline Easement 3.00 wide" as shown on the Plan.

N. Lot 2 is subject to a pipeline easement (appurtenant to Lot 4) over the area marked "Pipeline Easement 3.00 wide" as shown on the Plan.

O. Lot 4 is together with a pipeline easement over that part of Lot 2 marked "Pipeline Easement and Right of Way (Private) "B" ~~QRMNP~~ QRUZP" as shown on the Plan.

P. Lot 2 is subject to a pipeline easement (appurtenant to Lot 4) over the area marked "Pipeline Easement and Right of Way (Private) "B" ~~QRMNP~~ QRUZP" as shown on the Plan.

FENCING COVENANT

The owners of each lot on the plan covenant with the Vendor Robert Andrew McKenzie that the Vendor shall not be required to fence.

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

Exhibited

ANNEXURE TO SCHEDULE OF EASEMENTS PAGE 3 OF 3 PAGES	Registered Number SP159893
SUBDIVIDER: Robert Andrew McKenzie FOLIO REFERENCE: C.T. 140081/3	

SIGNED by ROBERT ANDREW McKENZIE
the registered proprietor of Certificate of Title
Volume 140081 Folio 32 in the presence of:

Witness
Full name
Address
Occupation

Geoffrey William Arnott
9-13 George Street
Launceston TAS 7250
Solicitor

The Common Seal of Equitas Perpetual Trustee
Limited is affixed hereto in the presence of

Director

Authorised Officer

NOTE: Every annexed page must be signed by the parties to the dealing or where the party is a corporate body be signed by the persons who have attested the affixing of the seal of that body to the dealing.

Received
11.8.2026
Exhibited

OWNER: EVERTON (TAS) PTY LTD

FOLIO REFERENCE: F/R 170329-2

GRANTEE:
PART OF 215 ACRES & PART OF 500 ACRES GTD TO JAMES AITKEN, THOMAS WILLIAMS & JOHN SINCLAIR
PART OF 330 ACRES GTD TO ANDREW BARCLAY &
PART OF 500 AC. LOCATED TO ANDREW BARCLAY

PLAN OF SURVEY

BY SURVEYOR: PAUL HODGETTS of MICHELL HODGETTS SURVEYORS
25 YORK STREET, LAUNCESTON, 7250

LOCATION:
LAND DISTRICT OF CORNWALL
PARISH OF EVANDALE

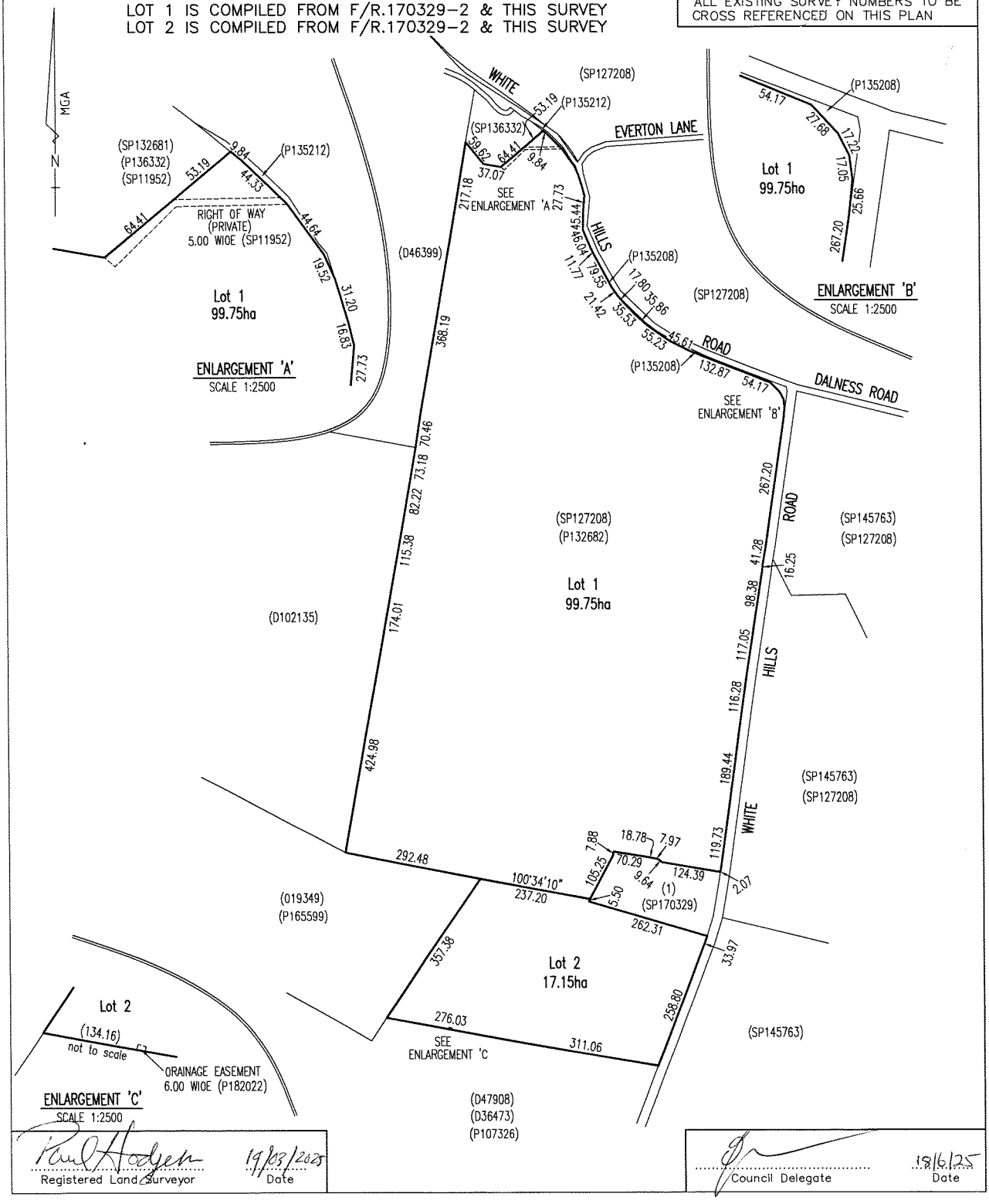
SCALE 1:7500 LENGTHS IN METRES

REGISTERED NUMBER
SP188870

~~APPROVED~~
EFFECTIVE FROM 25 AUG 2025
Recorder of Titles

LOT 1 IS COMPILED FROM F/R.170329-2 & THIS SURVEY
LOT 2 IS COMPILED FROM F/R.170329-2 & THIS SURVEY

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN



Registered Land Surveyor — 19/03/2025 Date

Council Delegate — 18/6/25 Date

Received
11.8.2026
Exhibited

OWNER: ~~OLA MARY HART~~
RICHARD CROMPTON HART

FOLIO REFERENCE: F/R 165599/1

GRANTEE: PART OF 500 ACRES LOCATED TO ANDREW BARCLAY

PLAN OF TITLE

LOCATION
LAND DISTRICT OF CORNWALL
PARISH OF EVANDALE

CONVERTED BY PLAN No. D19349

COMPILED BY DJ.McCULLOCH SURVEYING

NOT TO SCALE LENGTHS IN METRES

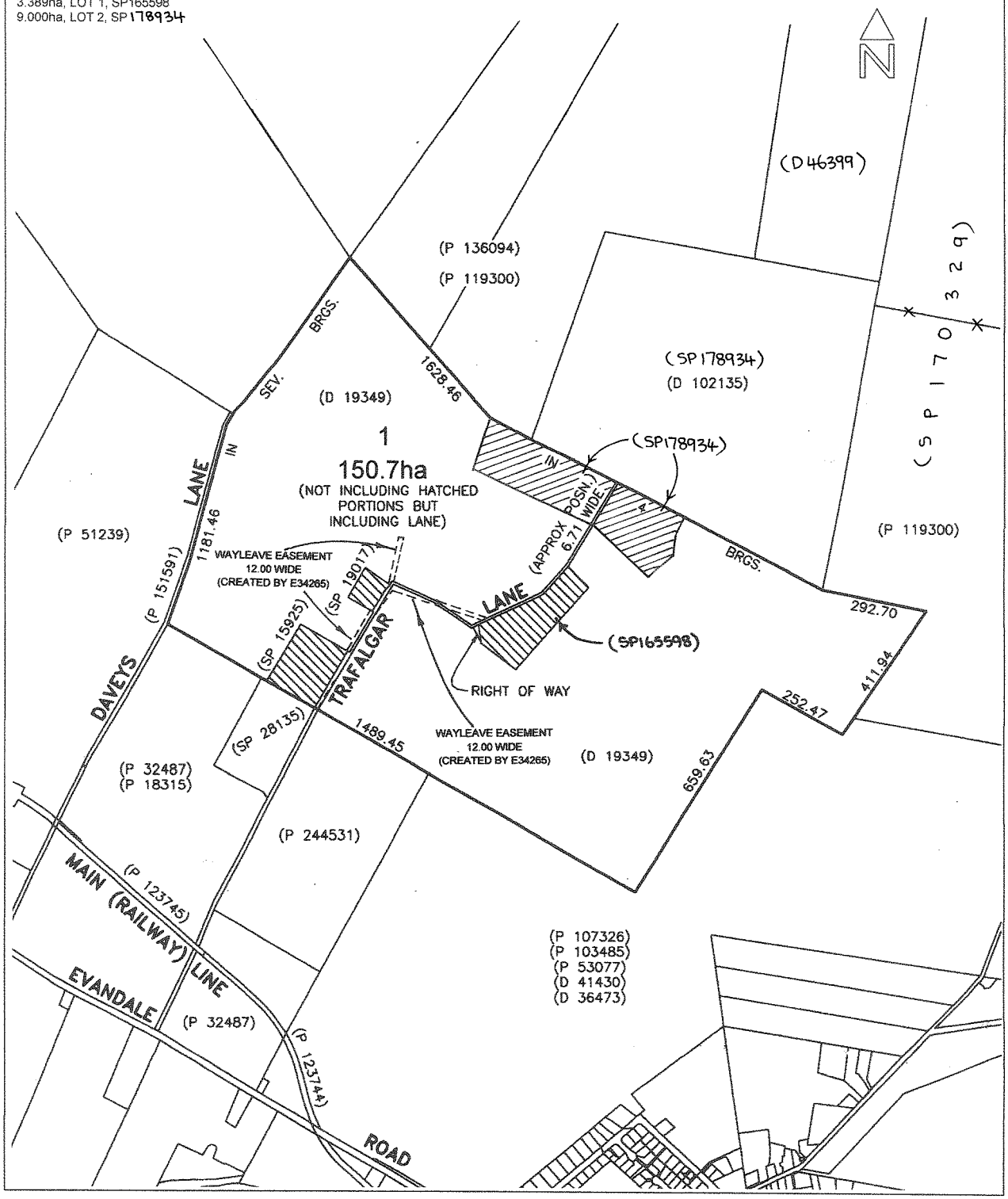
REGISTERED NUMBER
P178935

~~APPROVED~~
EFFECTIVE ~~FROM~~ 11 JUN 2020
Recorder of Titles

SKETCH BY WAY OF ILLSTRATION ONLY
"EXCEPTED LANDS"
2.739ha , LOTS 1 & 2, SP15925
7318m², LOTS 3 & 4, SP19017
3.389ha, LOT 1, SP165598
9.000ha, LOT 2, SP178934

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

BALANCE PLAN



Received
11.8.2026
Exhibited

OWNER: ~~OLA MARY HART~~
RICHARD CROMPTON HART

FOLIO REFERENCE: F/R 165599/1

GRANTEE: PART OF 500 ACRES LOCATED TO ANDREW BARCLAY

PLAN OF TITLE

LOCATION
LAND DISTRICT OF CORNWALL
PARISH OF EVANDALE

CONVERTED BY PLAN No. D19349

COMPILED BY DJ.McCULLOCH SURVEYING

NOT TO SCALE LENGTHS IN METRES

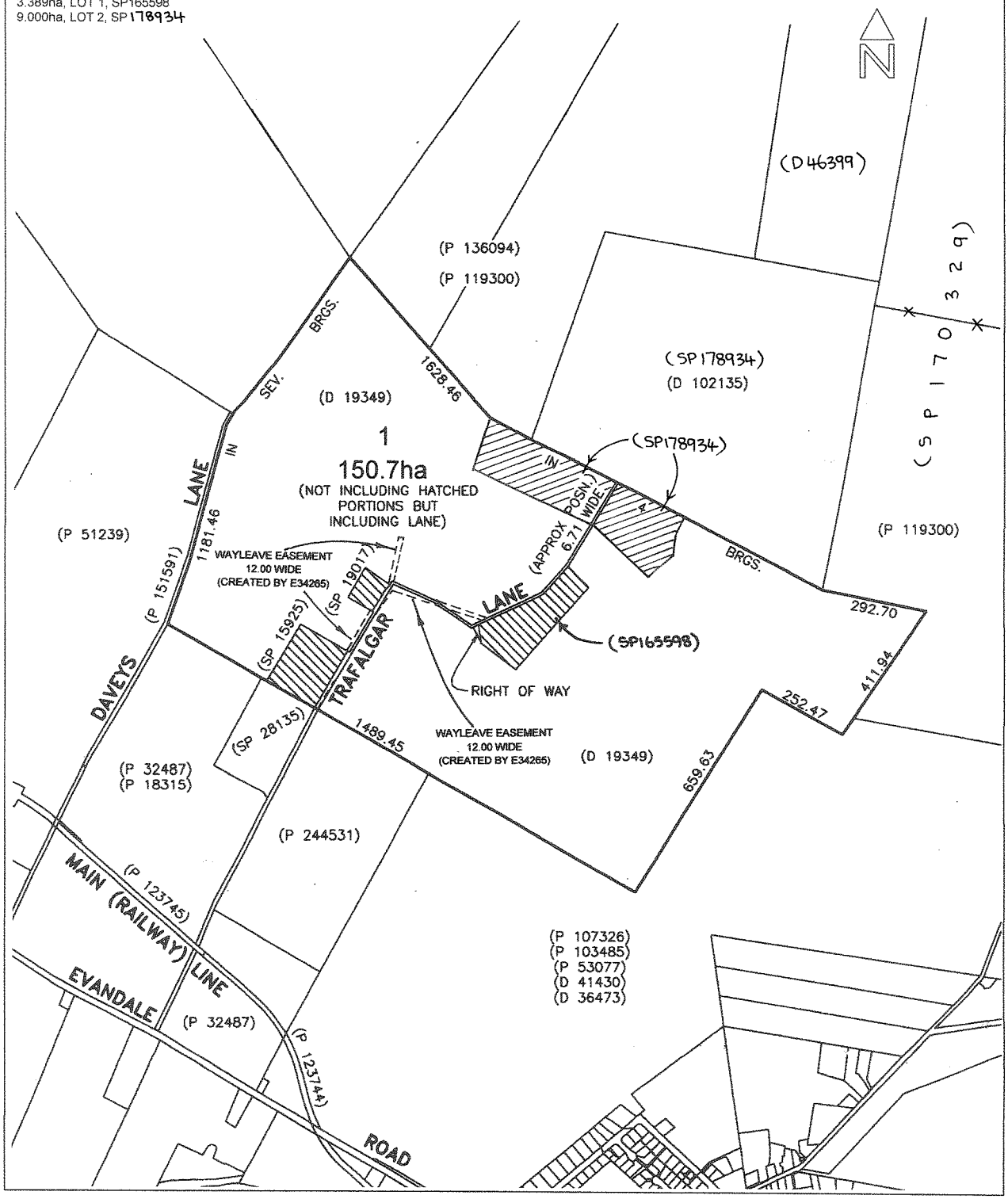
REGISTERED NUMBER
P178935

~~APPROVED~~
EFFECTIVE ~~FROM~~ 11 JUN 2020
Recorder of Titles

SKETCH BY WAY OF ILLSTRATION ONLY
"EXCEPTED LANDS"
2.739ha , LOTS 1 & 2, SP15925
7318m², LOTS 3 & 4, SP19017
3.389ha, LOT 1, SP165598
9.000ha, LOT 2, SP178934

ALL EXISTING SURVEY NUMBERS TO BE CROSS REFERENCED ON THIS PLAN

BALANCE PLAN



Exhibited

24 July 2025

Paul Godier
Northern Midlands Council
13 Smith Street
Longford, Tasmania 7301

Natural Values Assessment – Waterway and Coastal Protection Area
Proposed Works – Stormwater Outfall at 778 White Hills Road, Evandale (PID 3398202)

A 110-lot subdivision is proposed at 43 Cambock Lane, Evandale, PID 3061474 (the proposed development). The proposed development's stormwater network plans to discharge stormwater from both the subdivision and Council stormwater assets into an unnamed tributary of Rose Rivulet. Stormwater is to be conveyed from the proposed development via a DN900 pipe and discharged ~1km downstream of the development at 778 White Hills Road, Evandale, PID 3398202 (Figure 1). The unnamed tributary is mapped as a 'waterway and coastal protection area' under Tasmanian Planning Scheme (the Planning Scheme) and triggers assessment against the Natural Assets Code.

Elgin have undertaken an assessment of the stormwater outfall associated with the proposal against P1.1 (a), (c), (l), and (m) of the Planning Scheme, with the remaining Performance Criterion assessed by Enviro-Dynamics Pty Ltd and addressed in a separate letter.

C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area

Objective: That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets.

P1.1 Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to:

- *a) Impacts caused by erosion, siltation, sedimentation and runoff;*
- *c) Maintaining natural streambank and streambed condition, where it exists;*
- *l) Minimising the need for future works for the protection of natural assets, infrastructure and property;*
- *m) The environmental best practice guidelines in the Wetlands and Waterways Works Manual.*

Exhibited

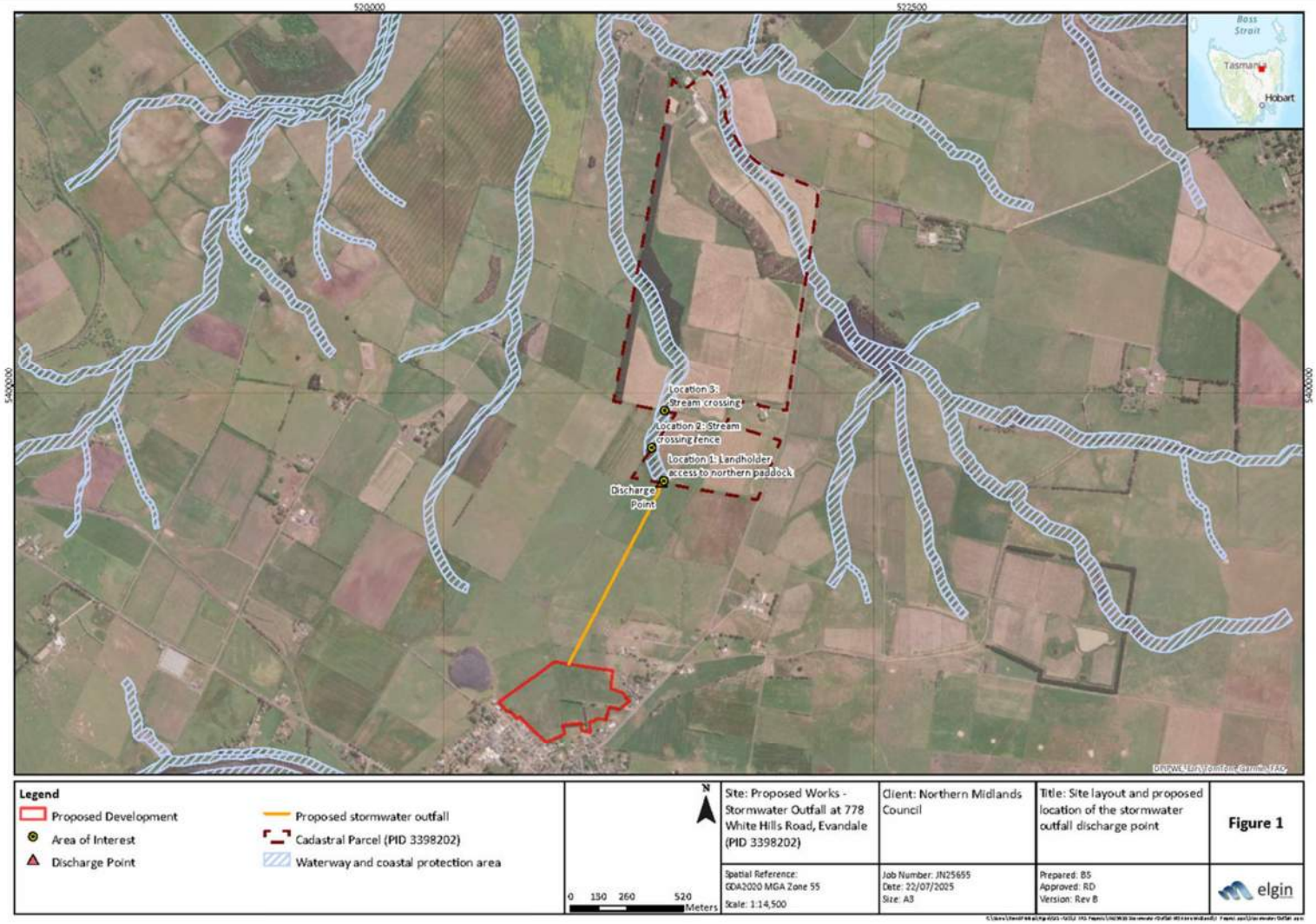


Figure 1. Site layout and proposed location of the stormwater outfall discharge point.

Exhibited

Performance Criterion	a) Impacts caused by erosion, siltation, sedimentation and runoff

The proposed stormwater outfall and associated works should only be approved with an appropriate, site-specific Soil and Water Management Plan that details management measures for each activity and includes best practice guidelines as outlined in the *Wetlands and Waterways Works Manual,* specifically:

- Module 2. *Environmental Best Practice Guidelines 2. Construction Practices in Waterways and Wetlands.*
- Module 3. *Environmental Best Practice Guidelines 3: Excavating in Waterways*
- Module 5. *Environmental Best Practice Guidelines 5: Siting and Designing Stream Crossings*

Additional information on soil and water management on building and construction sites can be found on the NRM South website (https://nrmsouth.org.au/wp-content/uploads/2021/01/Soil-and-Water-factsheets_combined.pdf).

Modifications to Receiving Environment

Approximately 30 m of the unnamed tributary (referred to as an open drain in proposed development documentation) north of the discharge point will be lowered to allow water from the outfall to drain from the outlet.

Proposed Stormwater Outfall Discharge Point

The outfall will require an energy dissipation structure that accounts for the stormwater discharge rates and velocities modelled by IPD Consulting Pty Ltd. The following is recommended:

- Installation of appropriate scour protection at the pipe outlet, such as appropriately sized riprap rock armouring. Where geotextile fabric underlying rock armouring is used it must be installed in such a manner that the geotextile does not become exposed overtime (e.g. from erosion and movement of rock scour protection).
- Installation of a detention basin designed to diffuse flow (and not concentrate flow) and allow for controlled, steady-state discharge into the unnamed tributary.
- Fencing of the detention basin to prevent access and disturbance by livestock.
- Revegetating the perimeter of the detention basin and 40 m downstream of the discharge point and detention basin to stabilise the streambank and reduce erosion potential in the receiving environment. Species selection should be guided by a suitably qualified person.

Landholder Access (Location 1 on Figure 1)

The landholder accesses the southern-most paddock along the southern boundary fence, which is the proposed location of the stormwater outfall (Figure 2). Detailed design of the detention basin must ensure landholder access to the paddock is maintained. A stream crossing may be required and should be negotiated with the landholder. Should a stream crossing be installed, best practice guidelines as outlined in the *Wetlands and Waterways Works Manual* (specifically Modules 2, 3, and 5) should be implemented.

Exhibited

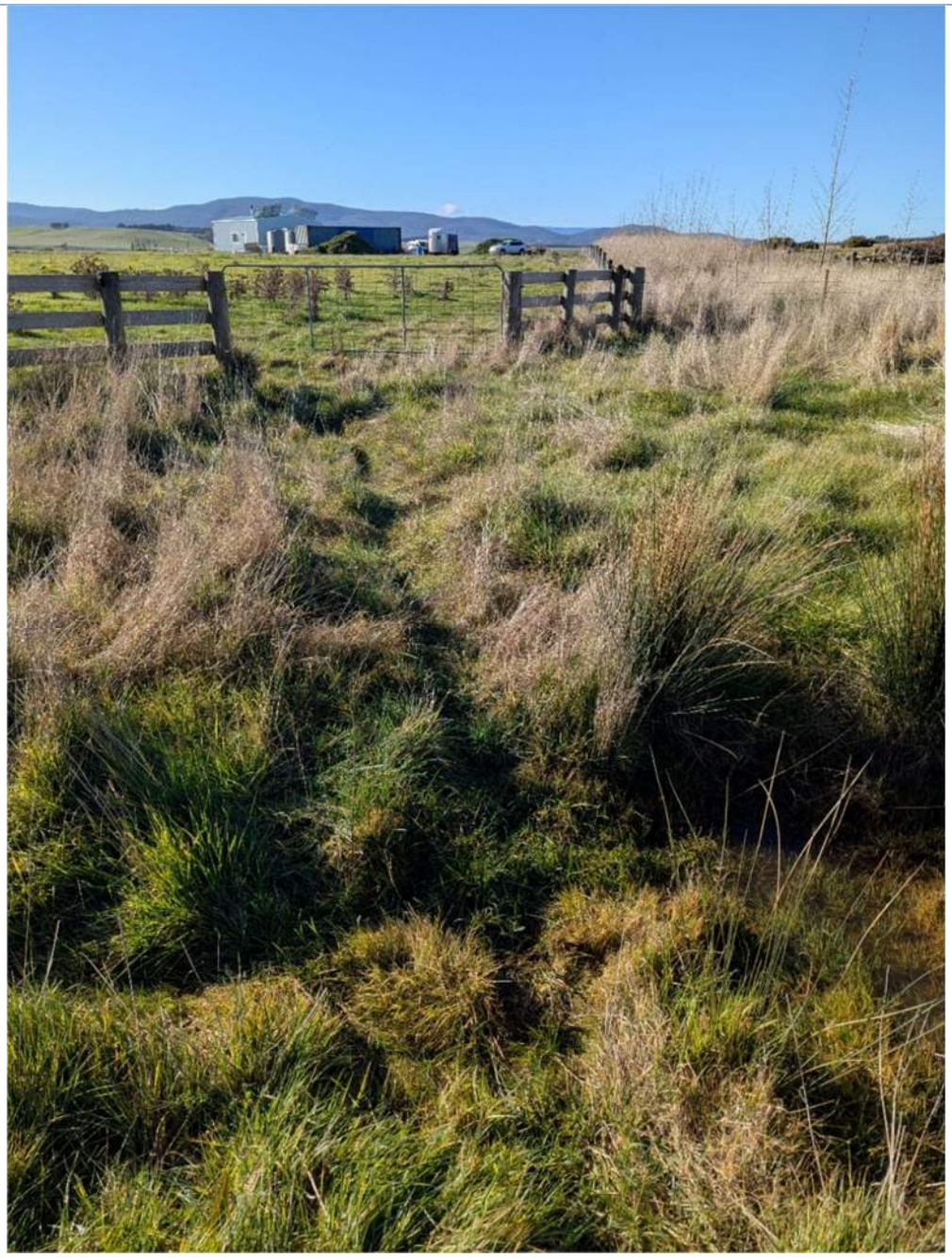


Figure 2. Landholder access to the southern-most paddock at the location of the proposed stormwater outfall.

Stream crossing fence (Location 2 on Figure 1)

The downstream culvert at the fence boundary between 778 White Hills Road, Evandale and a neighbouring property should be removed and replaced with a stream crossing fence/flood gate that allows downstream movement of debris (Figure 3). This will minimise the risk of backwater flooding that could reduce the efficacy of controls implemented at the discharge point.



Figure 3. Downstream culvert at fence boundary.

Exhibited

Stream crossing (Location 3 on Figure 1)

IPD Consulting Pty Ltd determined that the crossing over the unnamed tributary, downstream of the proposed stormwater outfall, is undersized and requires replacement (Figure 4). A new stream crossing should implement best practice guidelines as outlined in the *Wetlands and Waterways Works Manual* (specifically Modules 2, 3, and 5).



Figure 4. Crossing of unnamed tributary.

Performance Criterion	c) Maintaining natural streambank and streambed condition, where it exists

Modification to approximately 30m of streambank and deepening of approximately 30m of streambed in the unnamed tributary will be required for the installation of the stormwater outfall. Modification to the streambank and/or streambed will also be required for upgrades to fencing and river crossing/s.

The following is recommended:

- Implementation of best practice guidelines as outlined in the *Wetlands and Waterways Works Manual,* specifically Modules 2, 3, and 5.
- Modified streambanks graded to no steeper than 1H:3L.
- No geotextile fabric is used on the banks or in the streambed.
- Disturbed streambank is revegetated, with species selected by a suitably qualitied person.

Exhibited

Performance Criterion	l) Minimising the need for future works for the protection of natural assets, infrastructure and property
It is assumed that where the stormwater control and dissipation measures detailed in this report are applied, no further works to manage streambank and streambed erosion or loss of function will be required. Regular monitoring and maintenance of revegetation and implementation of weed management will be required, as well as occasional maintenance for the detention basin and culverts. To prevent biosecurity incursions and further weed incursions, strict washdown protocols should be implemented for all vehicles, machinery, and equipment used during the work.	
Performance Criterion	m) The environmental best practice guidelines in the Wetlands and Waterways Works Manual;
See (a) and (c) above.	

Closing

Should you have any questions please contact Ruginia on 0401 257 552.

Kind regards,





Ruginia Duffy
Senior Environmental Scientist
Elgin Associates
28 Letitia Street, North Hobart
TAS, 7000

Tim Smith
Principal Environmental Geologist
Elgin Associates
28 Letitia Street, North Hobart
TAS, 7000

Exhibited

envirodynamics
environmental solutions for a changing world

Natural Values Assessment of 778 White Hills Road, Evandale to address the waterway and coastal protection area overlay.

Date: August 2025

Attention: Paul Godier – Senior Planner Northern Midlands Council

---

Dear Paul,

This advice is provided in response to a request from the Northern Midlands Council regarding the proposed stormwater discharge associated with a subdivision at Cambock Lane, Evandale. The stormwater is intended to discharge into an unnamed waterway located on 778 White Hills Road, Evandale. This waterway is subject to a Waterway and Coastal Protection Area overlay, as defined under the Tasmanian Planning Scheme – Northern Midlands Local Provisions Schedule (Figure 1).

A site inspection was conducted on 15 July to assess the natural values of the waterway at the proposed discharge point and further north along the waterway. The surrounding landscape is primarily agricultural, and the riparian vegetation is largely composed of introduced species. Dominant species along the banks include gorse (*Ulex europaeus*), blackberry (*Rubus fruticosus* agg.), willows (*Salix* spp.), and hawthorn (*Crataegus monogyna*). Only two native species were recorded in the area: a species of *Juncus* and a solitary *Eucalyptus ovata* (swamp gum). No threatened flora or fauna species, nor any potential habitat for such species, were observed during the assessment.

At the southern end of the waterway, where the stormwater will be discharged, the land is relatively flat, with ground cover consisting mainly of pasture grasses and some large willows. Progressing northward, the waterway becomes more incised, with steeper banks and increasingly dense vegetation along the margins.

Exhibited

Natural Assets Code

C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area.

Response: Acceptable solutions cannot be met; therefore, performance criteria must be addressed.

P1.1 - Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to:

a) impacts caused by erosion, siltation, sedimentation and runoff;

Response: Outside of the scope of this assessment.

b) impacts on riparian or littoral vegetation;

Response: The surrounding vegetation is predominantly introduced species. Weed species such as gorse, blackberry, willow and hawthorn dominate the bank edges. There are no native vegetation communities present.

c) maintaining natural streambank and streambed condition, where it exists;

Response: Outside of the scope of this assessment.

d) impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation;

Response: There will be no impacts to the in-stream habitat.

e) the need to avoid significantly impeding natural flow and drainage;

Response: Outside of the scope of this assessment.

f) the need to maintain fish passage, where known to exist;

Response: N/A

g) the need to avoid land filling of wetlands;

Response: No wetlands are present.

h) the need to group new facilities with existing facilities, where reasonably practical;

Response: N/A

Exhibited

i) minimising cut and fill;

Response: N/A.

j) building design that responds to the particular size, shape, contours or slope of the land;

Response: N/A

k) minimising impacts on coastal processes, including sand movement and wave action;

Response: N/A

l) minimising the need for future works for the protection of natural assets, infrastructure and property;

Response: N/A

m) the environmental best practice guidelines in the Wetlands and Waterways Works Manual; and

Response: Best practise guidelines, as laid out in the Wetlands and Waterways Works Manual should be followed.

n) the guidelines in the Tasmanian Coastal Works Manual.

Response: N/A

P3 - Development within a waterway and coastal protection area or a future coastal refugia area involving a new stormwater point discharge into a watercourse, wetland or lake must avoid or minimise adverse impacts on natural assets, having regard to:

a) the need to minimise impacts on water quality; and

Response: Outside the scope of this assessment

b) the need to mitigate and manage any impacts likely to arise from erosion, sedimentation or runoff.

Response: Outside the scope of this assessment.

Exhibited

Conclusion and recommendations

The vegetation along the waterway proposed to receive stormwater discharge is predominantly composed of introduced species. Although non-native, this vegetation may provide shelter and habitat for native fauna. The proposed stormwater discharge is not anticipated to impact the existing vegetation, as no clearing or physical disturbance is required.

However, to improve the resilience of the waterway, it is strongly recommended that the southern section, where the stormwater will enter, be actively revegetated with locally appropriate native species (Figure 1). Targeted revegetation in this area would significantly reduce the risk of erosion and downstream sedimentation resulting from increased flows, while also contributing to improved habitat quality and long-term waterway health.

Should you require any further information please don't hesitate to contact me.

Fiona Walsh
Botanist / Environmental Consultant
Enviro-dynamics
fiona.walsh@enviro-dynamics.com.au

Exhibited



Figure 1: Study area and recommended revegetation area

Exhibited

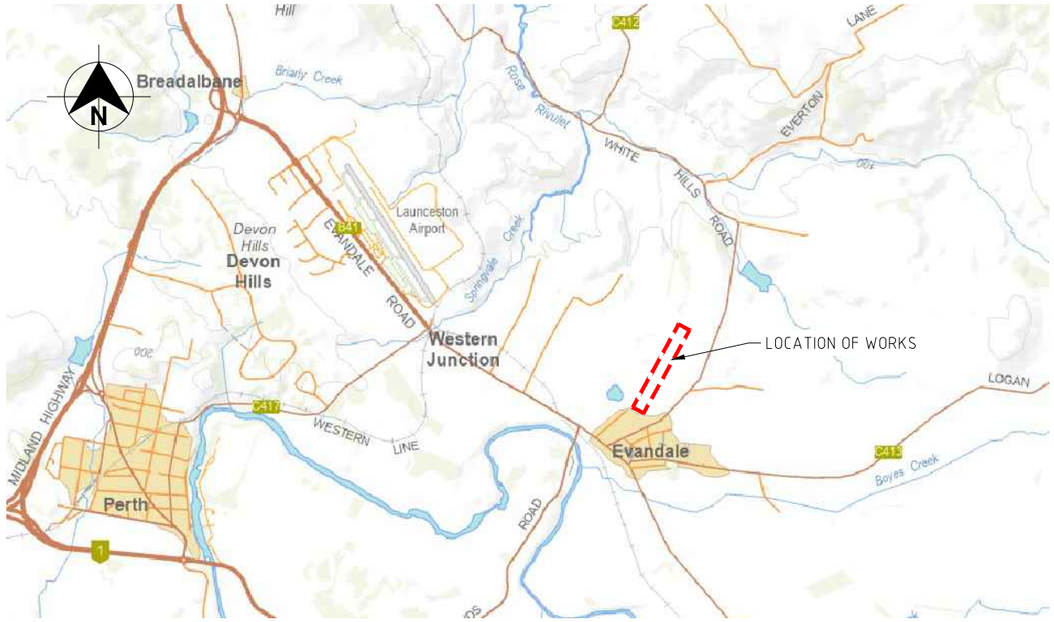
WHITE HILLS STORMWATER TRUNK MAIN

WHITE HILLS ROAD, EVANDALE, TAS, 7212

FOR

THE BAKER GROUP

OCTOBER 2025



LOCALITY PLAN

SCALE - N.T.S

DRAWING LIST		
DRAWING NUMBER	DRAWING TITLE	REVISION
1467-SW-001	COVER SHEET	A
1467-SW-010	GENERAL NOTES	A
1467-SW-020	KEY VIEW PLAN	A
1467-SW-030	LONGSECTION (1 OF 9)	A
1467-SW-031	LONGSECTION (2 OF 9)	A
1467-SW-032	LONGSECTION (3 OF 9)	A
1467-SW-033	LONGSECTION (4 OF 9)	A
1467-SW-034	LONGSECTION (5 OF 9)	A
1467-SW-035	LONGSECTION (6 OF 9)	A
1467-SW-036	LONGSECTION (7 OF 9)	A
1467-SW-037	LONGSECTION (8 OF 9)	A
1467-SW-038	LONGSECTION (9 OF 9)	A
1467-SW-050	TRENCH DETAILS	A
1467-SW-060	OUTLET DETAILS (1 OF 2)	A
1467-SW-061	OUTLET DETAILS (2 OF 2)	A
1467-SW-070	TYPICAL MANHOLE DETAILS	A

WARNING

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REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

DO NOT SCALE
DIMENSIONS IN MILLIMETRES
DRAWING PRACTICES TO AS1100 - 1992
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THE BAKER GROUP

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

DRAWING TITLE
COVER SHEET

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
N.T.S	1467-SW-001	1 OF 1	CI	A

I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD (PIPELINE)\DRG\1467 - DISCHARGE PIPELINE_REV A

PLOTTED: 18.11.2025

Exhibited

GENERAL NOTES:

1. THESE NOTES SHALL BE READ IN CONJUNCTION WITH OTHER ENGINEERING DRAWINGS, SPECIFICATIONS AND OTHER WRITTEN INSTRUCTIONS ISSUED FOR THIS PROJECT.
2. IN THE CASE OF DISCREPANCY BETWEEN DOCUMENTS, REFER TO SUPERINTENDENT FOR DIRECTION BEFORE PROCEEDING WITH WORKS.
3. DETAILS OF REQUIRED ON-SITE CHANGES ARE TO BE SUBMITTED FOR APPROVAL BEFORE PROCEEDING. APPROVAL DOES NOT AUTHORISE A VARIATION TO THE CONTRACT.
4. WORKS TO BE UNDERTAKEN IN A SAFE MANNER IN ACCORDANCE WITH WORK HEALTH AND SAFETY ACT 2012 AND THE RELEVANT REGULATIONS (WORK HEALTH AND SAFETY REGULATIONS 2022) AND CODES OF PRACTICE.
5. THE CONTRACTOR IS REMINDED OF THEIR RESPONSIBILITY FOR OCCUPATIONAL HEALTH AND SAFETY OF SITE PERSONNEL AND GENERAL PUBLIC IN ACCORDANCE WITH THE WORK HEALTH AND SAFETY ACT 2012, LEGISLATIVE REQUIREMENTS, ASSOCIATED REGULATIONS AND CODES OF PRACTICE, INDUSTRIAL AGREEMENTS AND ACCEPTED INDUSTRY PRACTICE.
6. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D).
7. ALL CO-ORDINATES ARE TO GDA2020 MGA55.
8. DIMENSIONS FOR THE WORKS SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.
9. ANY SETTING OUT DIMENSIONS SHALL BE VERIFIED BY A LICENSED SURVEYOR BEFORE COMMENCEMENT OF WORKS.
10. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED, IMPLIED OR ANY OTHER DIMENSION.
11. NOT ALL DETAILS ARE SHOWN ON DRAWINGS; CONTRACTOR TO REFER TO RELEVANT STANDARDS AND CODES AS LISTED ON THIS DRAWING SET.
12. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENT OF THE CURRENT EDITIONS, INCLUDING AMENDMENTS, OF THE RELEVANT AUSTRALIAN STANDARDS AND AUSTRALIAN CODES OF PRACTICES.
13. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS.
14. OBTAIN NECESSARY PERMITS AND APPROVALS FROM RELEVANT AUTHORITIES PRIOR TO THE COMMENCEMENT OF WORKS. PROVIDE NOTICE TO RELEVANT AUTHORITIES PRIOR TO COMMENCING WORKS ON SITE.
15. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ANY SURPLUS MATERIAL OFF SITE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.
16. THE CONTRACTOR IS TO MAKE GOOD ANY DAMAGES TO EXISTING ELEMENTS AT THE COMPLETION OF THE WORKS.
17. THE CONTRACTOR SHALL BUILD, FABRICATE, CONSTRUCT AND PROCURE ONLY FROM 'FOR CONSTRUCTION' DRAWINGS.
18. TRENCHING AND BACKFILL NOTES HAVE BEEN PROVIDED AS A GUIDING SUMMARY OF AS2566.1 AND WSA 03. WHERE THERE IS CONFLICT BETWEEN STANDARDS AS2566 TAKES PRECEDENCE OVER WSA. THE DESIGNER SHALL PROVIDE A DESIGN THAT IS IN ACCORDANCE WITH THE REQUIRED STANDARDS AND PERMITS.
19. THIS PROJECT IS WITHIN 5 PROPERTIES. ACCESS TO SITE WILL BE AS NEGOTIATED WITH COUNCIL AND THE LANDOWNER.

AS CONSTRUCTED DRAWINGS:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR PRODUCING "AS CONSTRUCTED" DRAWINGS TO THE STANDARD REQUIRED BY THE NORTHERN MIDLANDS COUNCIL. THE DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY EITHER A CIVIL ENGINEER OR SURVEYOR.

STORMWATER:

1. GENERAL

1.1. ALL STORMWATER WORKS TO BE IN ACCORDANCE WITH THE TASMANIAN SUBDIVISION GUIDELINES 2013, TASMANIAN STANDARD DRAWINGS VERSION 3 (LGAT), TASMANIAN STANDARD SPECIFICATIONS 2020 AND DEPARTMENT OF STATE GROWTH SPECIFICATIONS AND GUIDELINES.

1.2. ANY DEPARTURES FROM THESE STANDARDS, SPECIFICATIONS AND GUIDELINES REQUIRES THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT AND THE DESIGN ENGINEER.

2. TRENCHING AND BACKFILL

2.1. ALL TRENCHES ARE TO BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH THESE DESIGN DRAWINGS AND THE TASMANIAN MUNICIPAL STANDARD DRAWINGS AND SPECIFICATIONS.

3. MANHOLES

3.1. MANHOLES ARE TO BE DN1500. PRECAST CONCRETE INSTALLED TO TASMANIAN STANDARD DRAWINGS (LGAT), GUIDELINES AND SPECIFICATIONS UNLESS NOTED OTHERWISE.

3.2. ALL MANHOLES IN TRAFFICABLE AREAS ARE TO BE FITTED WITH HEAVY DUTY 'CLASS D' GATIC COVERS AND SURROUNDS.

3.3. BENCHING TO BE IN ACCORDANCE WITH TSD-SW03-v3.

4. INSPECTIONS & TESTING

4.1. ALL STORMWATER WORKS SHALL BE VISUALLY INSPECTED BY THE DESIGN ENGINEER PRIOR TO BACKFILLING INCLUDING BUT NOT LIMITED TO THE ITEMS OUTLINED IN THE TABLE BELOW.

4.2. THE CONTRACTOR SHALL CCTV ALL PIPES INCLUDING JETTING AND FLUSHING OF MAINS. THE CCTV FOOTAGE AND REPORT SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.

4.3. A MINIMUM 48 HOURS NOTICE MUST BE PROVIDED TO THE SUPERINTENDENT AND COUNCIL PRIOR TO INSPECTIONS & TESTING.

4.4. ANY DISCREPANCIES FOUND MUST BE RECTIFIED BY THE CONTRACTOR AT THEIR OWN COST.

EARTHWORKS:

1. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL SHORING, PLANKING AND STRUTTING, DEWATERING DEVICES, BARRICADES, SIGNS, LIGHTS ETC. NECESSARY TO KEEP WORKS IN A SAFE AND STABLE CONDITION AND FOR THE PROTECTION OF THE PUBLIC.
2. ALL AREAS SHOWN ON THE DRAWINGS TO BE CUT OR FILLED ARE TO BE STRIPPED OF TOPSOIL TO A DEPTH OF 200 mm. UPON COMPLETION OF THE BULK EARTHWORKS, THE TOPSOIL IS TO BE SPREAD TO A DEPTH OF 100 mm OVER THE AREA AND GRADED TO FINISHED LEVELS SHOWN ON THE DRAWINGS WITH A MINIMUM SLOPE OF 1 IN 200 FOR DRAINAGE. ANY LOCALISED PONDING SHALL BE RECTIFIED AS DIRECTED BY THE DESIGN ENGINEER.
3. ALL FILLING IS TO BE COMPACTED IN 150 mm EQUAL LAYERS TO MINIMUM 95% STANDARD DRY DENSITY (SDD) WITH APPROVED MATERIAL.
4. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF SURPLUS TOP SOIL, CUT MATERIAL AND UNSUITABLE MATERIAL OFF SITE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.

INSPECTIONS & TESTING SCHEDULE FOR COUNCIL INFRASTRUCTURE

NO.	TITLE	DESCRIPTION	CONTRACTOR	CERT. ENG.	COUNCIL	DATE
G1	PRE-START MEETING	A MEETING WITH COUNCILS REPRESENTATIVE, CONTRACTOR & CERTIFYING ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.				
G2	PRACTICAL COMPLETION	A FINAL SITE INSPECTION WITH COUNCILS REPRESENTATIVE, CONTRACTOR & CERTIFYING ENGINEER.				
SW1	PIPEWORKS	A VISUAL INSPECTION TO CONFIRM INSTALLED PIPE AS REQUIRED.				
SW2	PIPE BEDDING	A VISUAL INSPECTION (WITH MEASUREMENT WHERE PRACTICAL) OF BEDDING MATERIAL AND DEPTH.				
SW3	TRENCH BACKFILL	A VISUAL INSPECTION OF TRENCHING BACKFILL IN TRAFFICABLE AND NON-TRAFFICABLE LOCATIONS AS APPLICABLE.				
SW4	MANHOLES & BENCHING	A VISUAL INSPECTION OF MANHOLES & BENCHING TO ENSURE COMPLIANCE.				
SW5	CCTV	CCTV AS DESCRIBED IN STORMWATER NOTE 4.2.				

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		DATE
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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

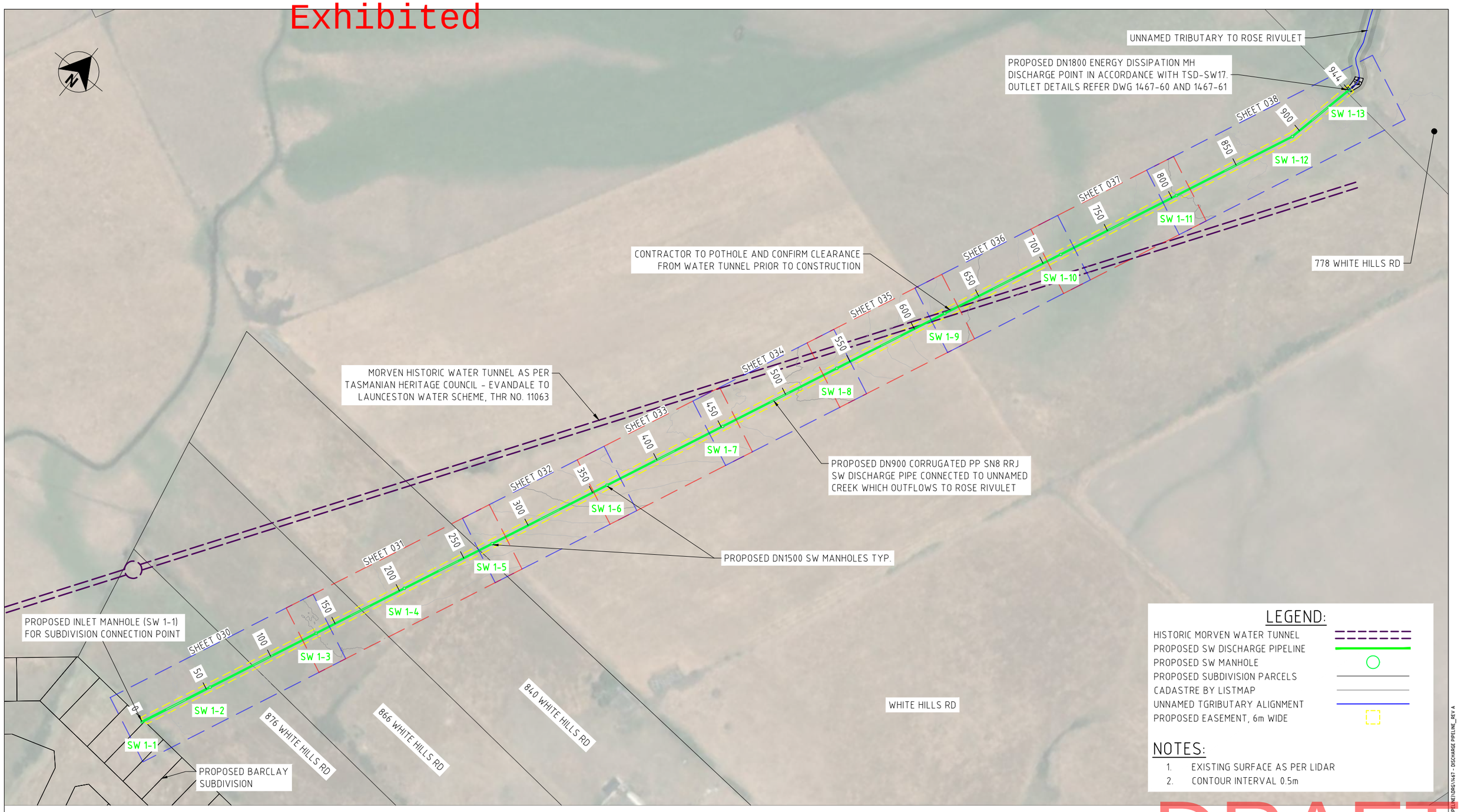
DRAWING TITLE
GENERAL NOTES

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
N.T.S	1467-SW-010	1 OF 1	CI	A

I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD (PIPELINE)\DRG\1467 - DISCHARGE PIPELINE_REV A

PLOTTED: 18.11.2025

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LEGEND:

- HISTORIC MORVEN WATER TUNNEL
- PROPOSED SW DISCHARGE PIPELINE
- PROPOSED SW MANHOLE
- PROPOSED SUBDIVISION PARCELS
- CADASTRE BY LISTMAP
- UNNAMED TGRIBUTARY ALIGNMENT
- PROPOSED EASEMENT, 6m WIDE

NOTES:

1. EXISTING SURFACE AS PER LIDAR
2. CONTOUR INTERVAL 0.5m

WARNING
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KEY VIEW PLAN

SCALE - 1:2500

0 25 50 75 100 125 METRES
SCALE 1:2500

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

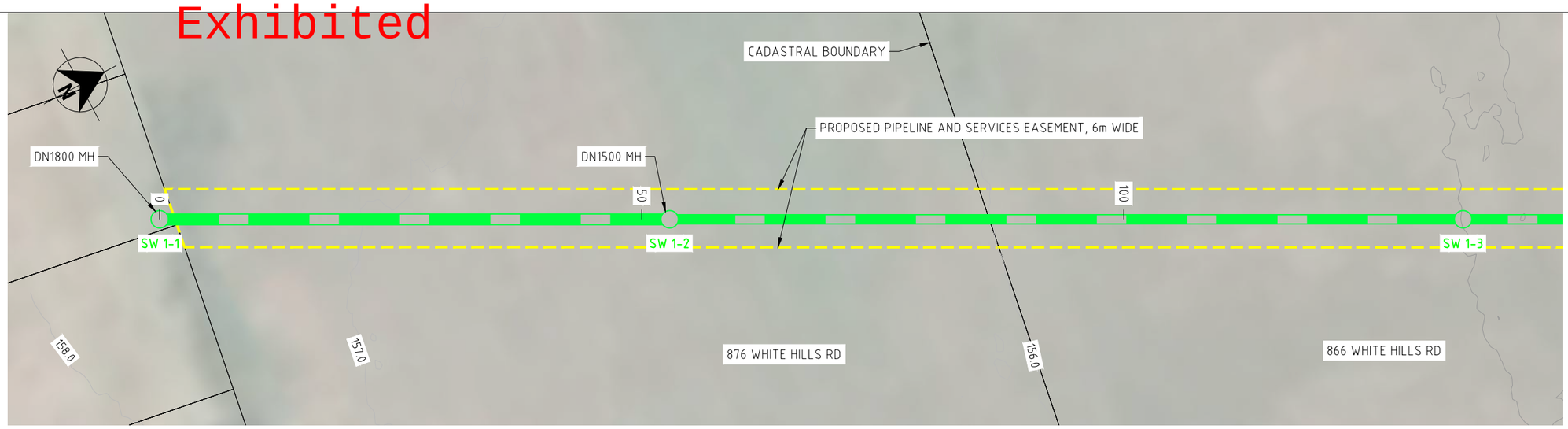
DRAWING TITLE
KEY VIEW PLAN

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
1:2500	1467-SW-020	1 OF 1	CI	A

I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD\PIPELINE\DRG\1467 - DISCHARGE PIPELINE_REV A

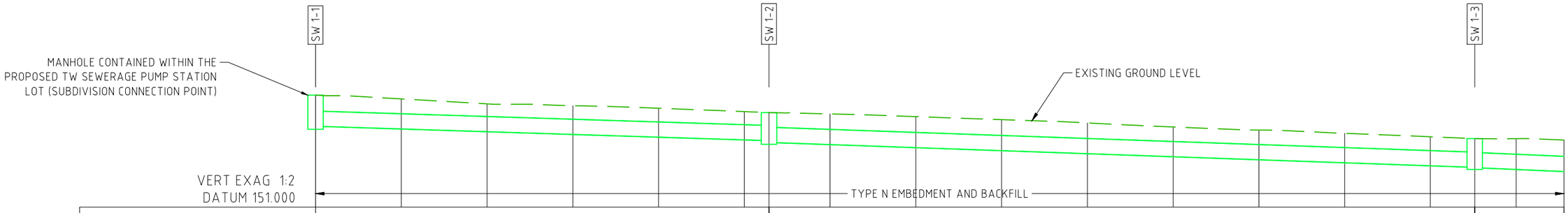
PLOTTED: 18.11.2025

Exhibited



PLAN - SHEET 1

SCALE 1:500



GRADE %	1.60%	1.77%	2.15%
PIPE DETAILS	DN1050 CORRUGATED POLYPROPYLENE SN8 RRJ	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	157.53 / 156.52	155.00	
INVERT LEVEL	155.64 / 154.79	154.77 / 153.31	153.29 / 151.82
COVER	0.82 / 0.64	0.83 / 0.76	0.78 / 0.76
DEPTH TO INVERT	1.90 / 1.72	1.75 / 1.68	1.70 / 1.68
CHAINAGE	0.00 / 52.88	135.17	
LENGTH	52.88m	82.29m	68.62m

LONGITUDINAL SECTION - SHEET 1

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

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REV	DATE	DESCRIPTION	DRN	CHK
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		DATE
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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

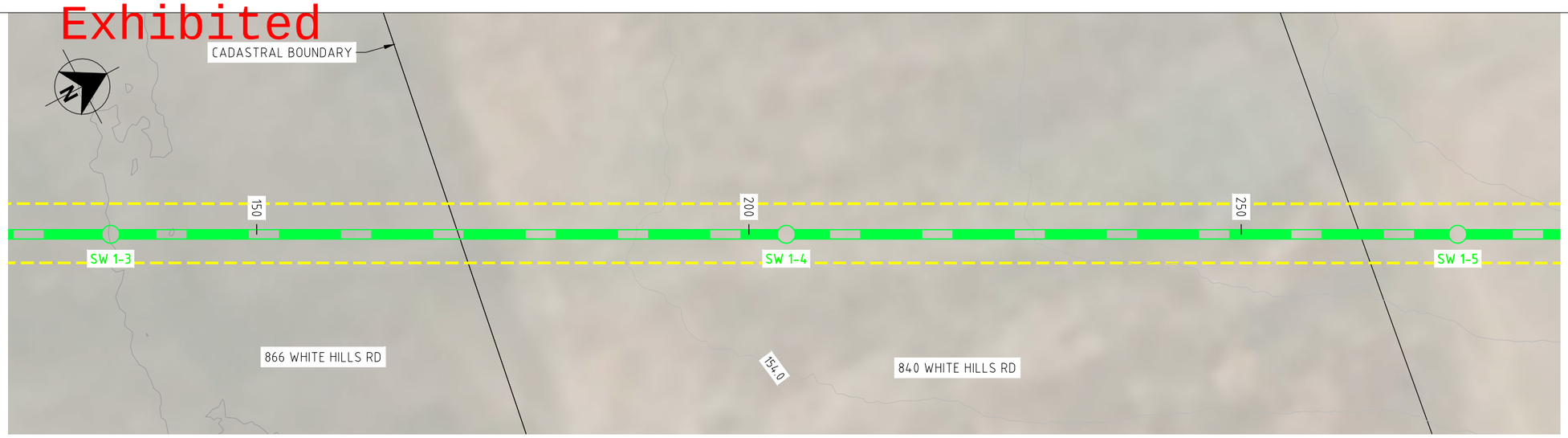
DRAWING TITLE
LONGSECTION (1 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-030	1 OF 9	CI	A

PLOTTED: 18.11.2025

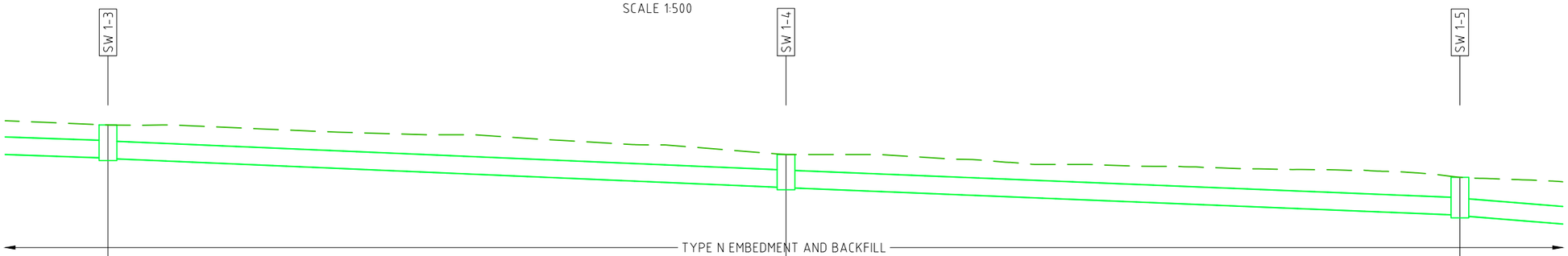
I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD (PIPELINE)\DRG\1467 - DISCHARGE PIPELINE_REV A

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PLAN - SHEET 2

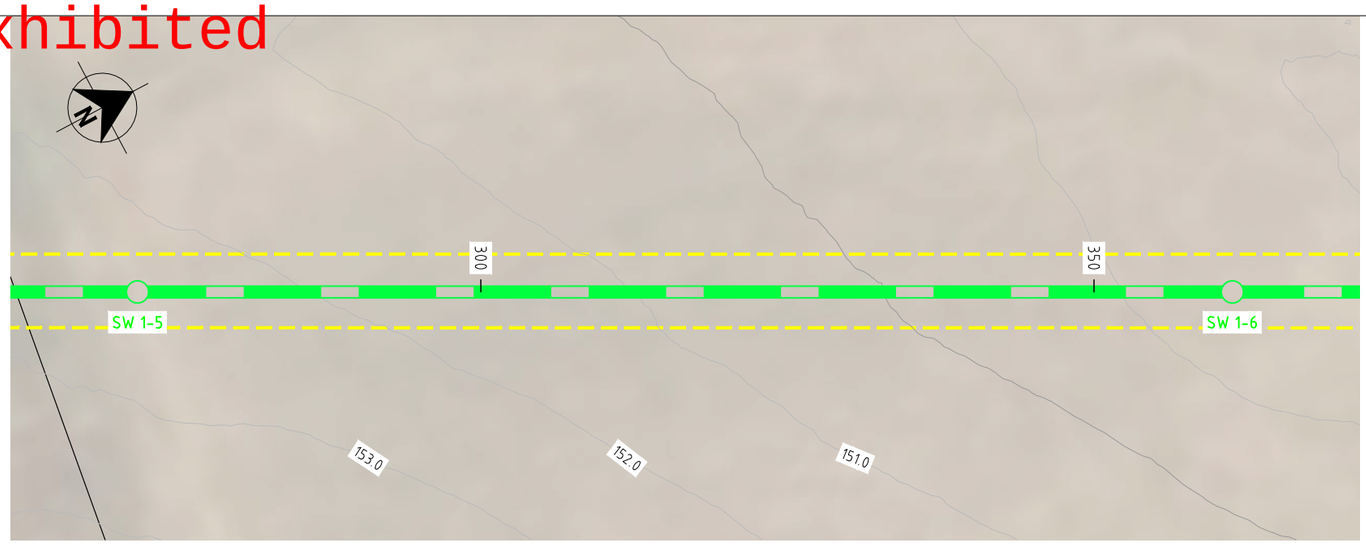
SCALE 1:500



VERT EXAG 1:2
DATUM 148.0

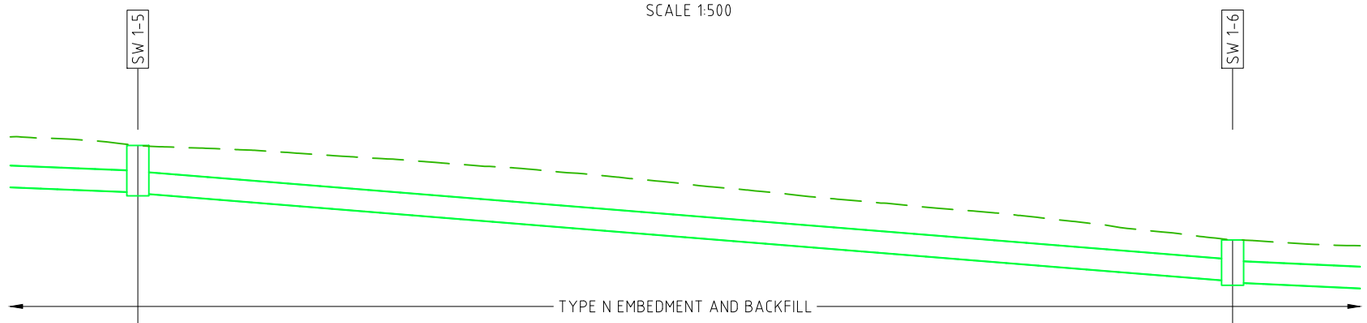
| | | |

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PLAN - SHEET 3

SCALE 1:500



VERT EXAG 1:2
DATUM 145.0

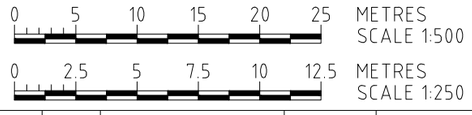
GRADE %	2.04%	4.02%	2.29%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	152.35	148.50	
INVERT LEVEL	151.82 / 150.43	150.40 / 146.81	146.75 / 144.70
COVER	0.76 / 1.00	1.03 / 0.77	0.82 / 0.80
DEPTH TO INVERT	1.69 / 1.92	1.95 / 1.69	1.75 / 1.72
CHAINAGE	272.00	361.28	
LENGTH	68.21m	89.28m	89.80m

LONGITUDINAL SECTION - SHEET 3

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

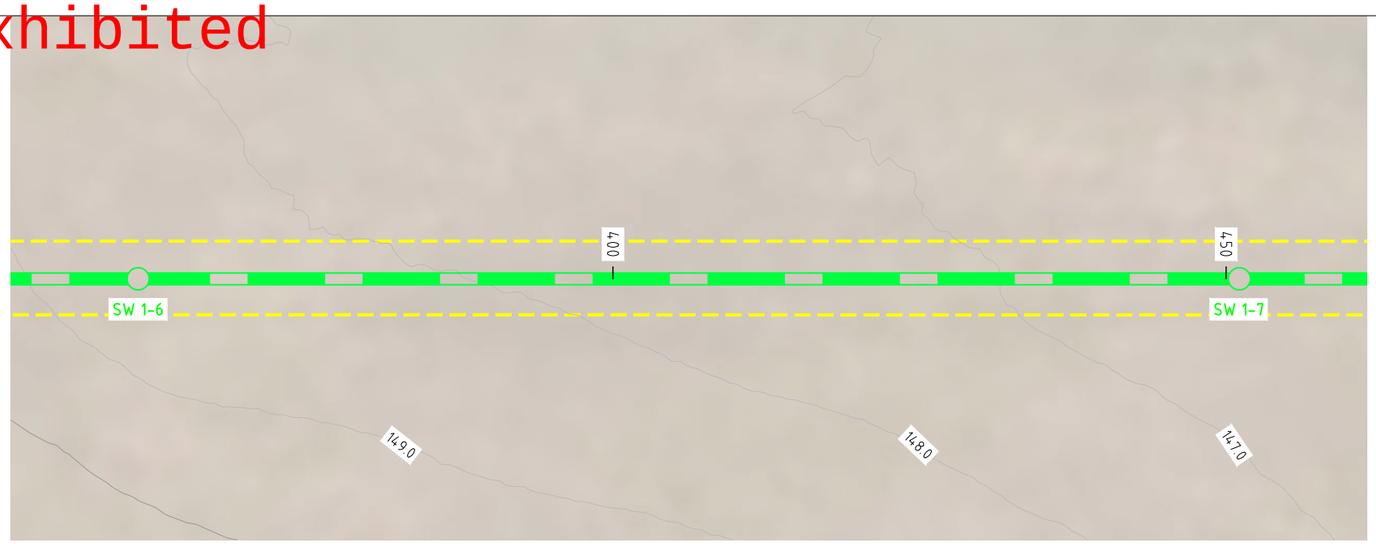
DRAWING TITLE
LONGSECTION (3 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-032	3 OF 9	CI	A

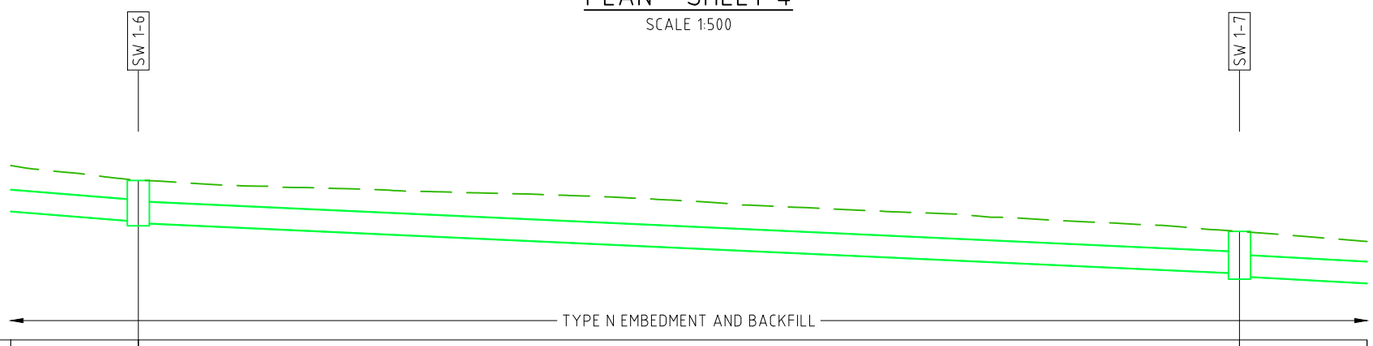
PLOTTED: 18.11.2025

I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD\PIPE NETWORKS\1467 - DISCHARGE PIPELINE_REV A

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PLAN - SHEET 4
SCALE 1:500



VERT EXAG 1:2
DATUM 142.0

TYPE N EMBEDMENT AND BACKFILL

GRADE %	4.02%	2.29%	2.72%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	148.50	146.42	
INVERT LEVEL	150.40 / 146.81	146.75 / 144.70	144.58 / 142.17
COVER	1.03 / 0.77	0.82 / 0.80	0.92 / 0.81
DEPTH TO INVERT	1.95 / 1.69	1.75 / 1.72	1.84 / 1.74
CHAINAGE	361.28	451.08	
LENGTH	89.28m	89.80m	88.70m

LONGITUDINAL SECTION - SHEET 4
HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

DRAFT
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PROJECT NAME
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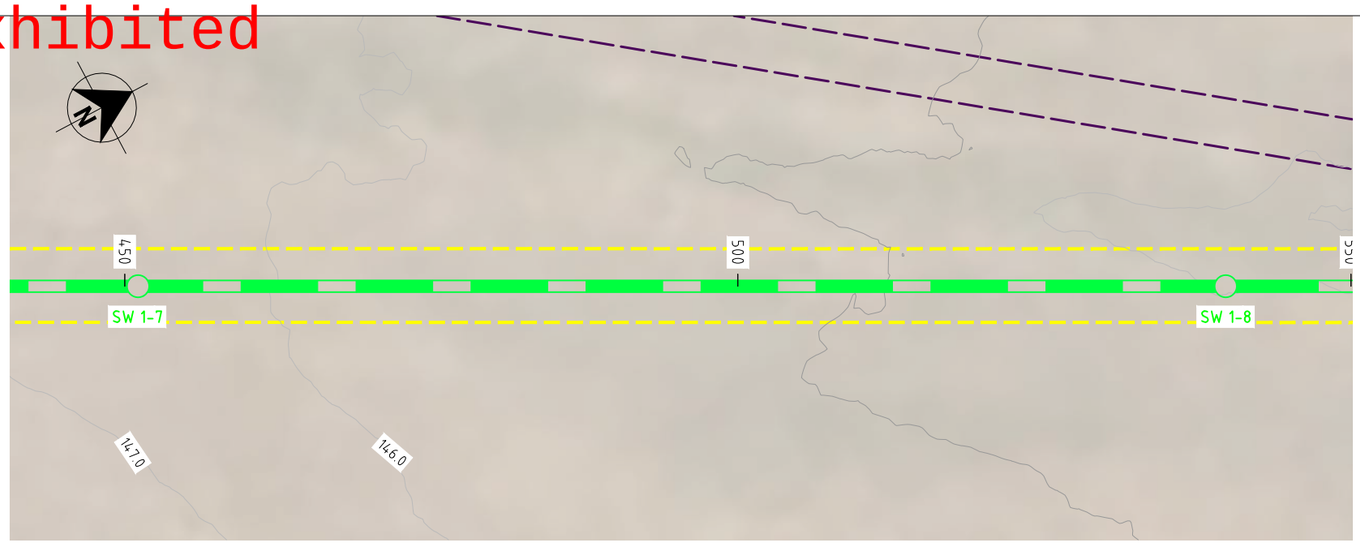
DRAWING TITLE
LONGSECTION (4 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-033	4 OF 9	CI	A

PLOTTED: 18.11.2025

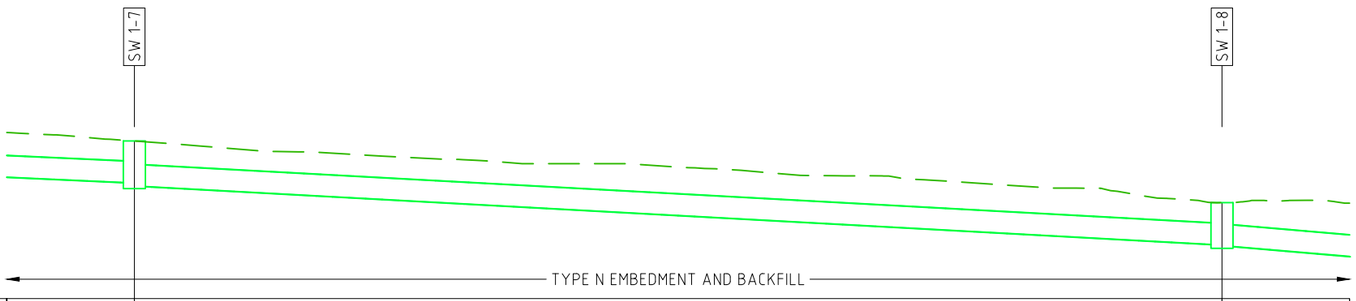
I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD (PP)\NETLDRG\1467 - DISCHARGE PIPELINE_REV A

Exhibited



PLAN - SHEET 5

SCALE 1:500



VERT EXAG 1:2
DATUM 140.0

GRADE %	2.29%	2.72%	4.27%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	146.42	143.91	
INVERT LEVEL	146.75 / 144.70	144.58 / 142.17	142.15 / 138.57
COVER	0.82 / 0.80	0.92 / 0.81	0.83 / 1.00
DEPTH TO INVERT	1.75 / 1.72	1.84 / 1.74	1.76 / 1.92
CHAINAGE	451.08	539.78	
LENGTH	89.80m	88.70m	83.85m

LONGITUDINAL SECTION - SHEET 5

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

WARNING
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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

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DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

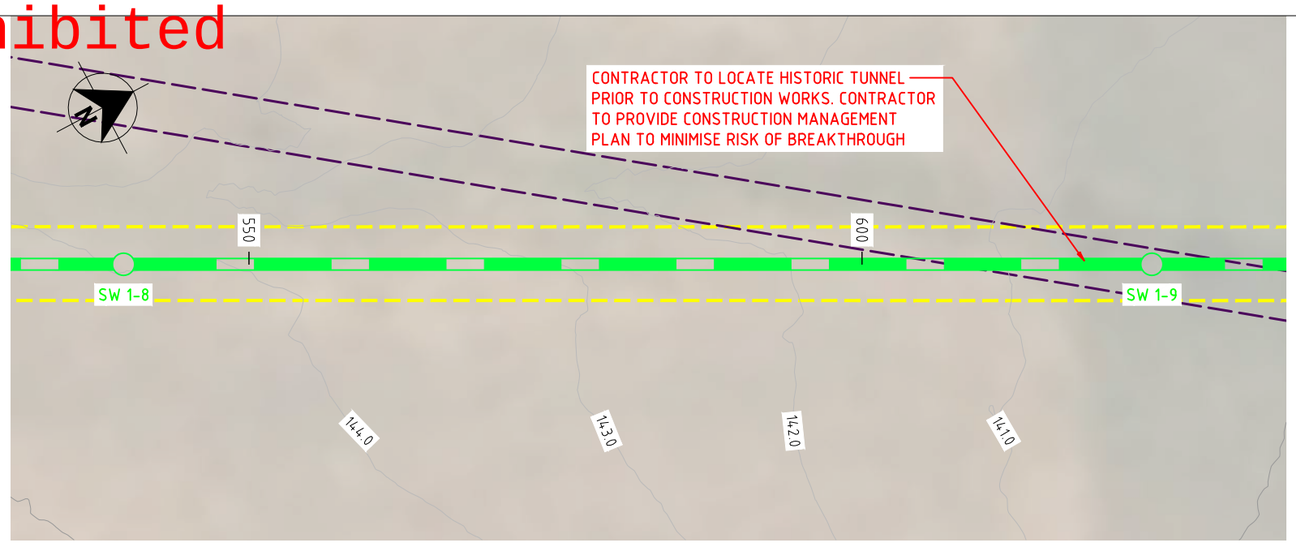
DRAWING TITLE
LONGSECTION (5 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-034	5 OF 9	CI	A

PLOTTED: 18.11.2025

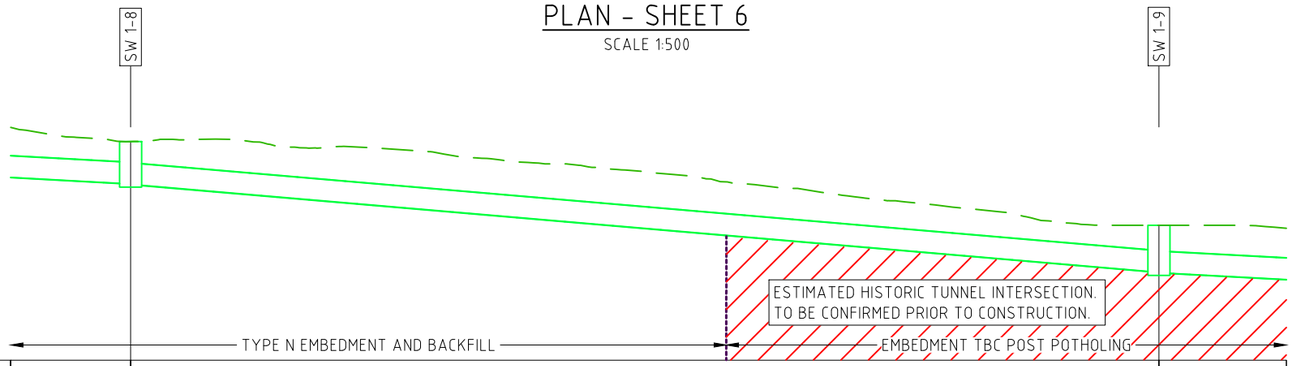
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PLAN - SHEET 6

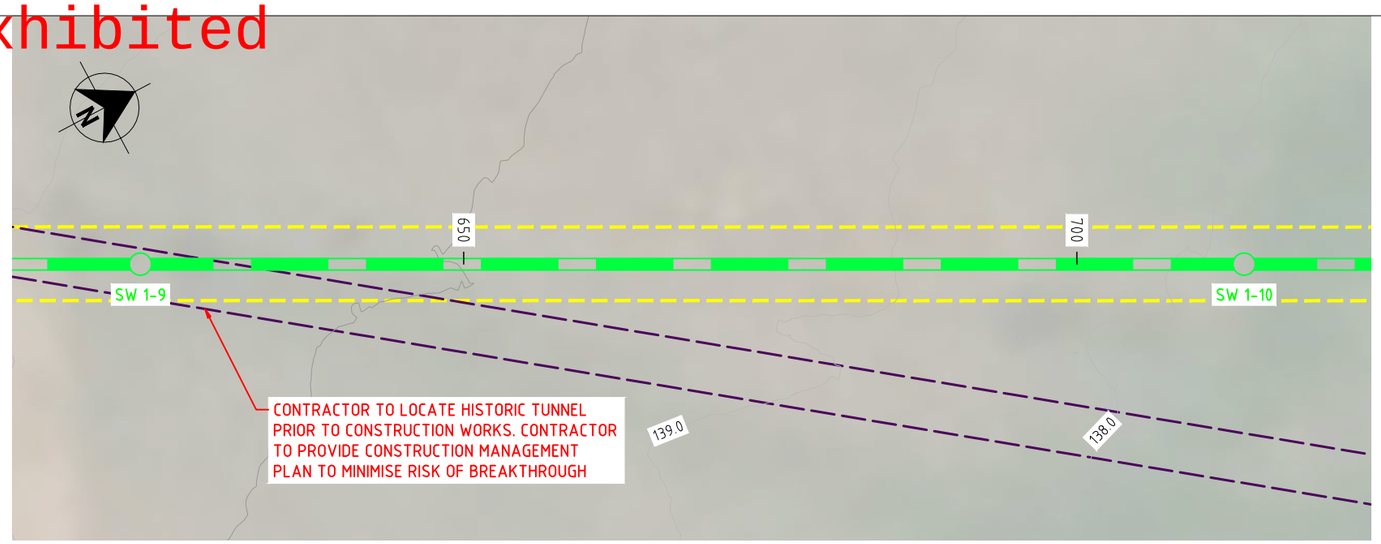
SCALE 1:500



VERT EXAG 1:2
DATUM 135.0

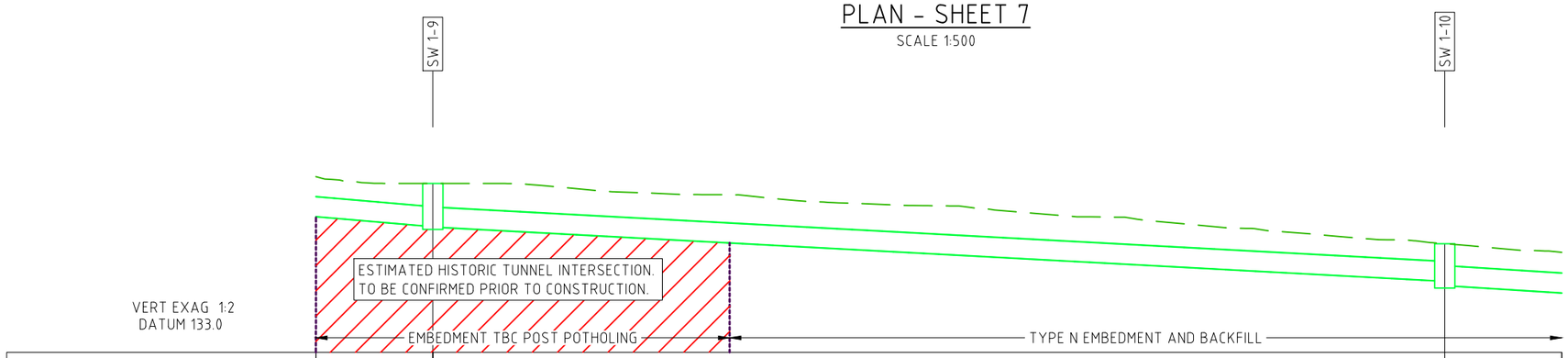
| | | |

Exhibited



PLAN - SHEET 7

SCALE 1:500



GRADE %	4.27%		2.68%		3.14%
PIPE DETAILS			DN900 CORRUGATED POLYPROPYLENE SN8 RRJ		
FINISHED SURAFCE LEVEL		140.50	137.82		
INVERT LEVEL	142.15	138.57	138.56	136.14	135.95	133.12
COVER	0.83	1.00	1.02	0.75	0.94	0.96
DEPTH TO INVERT	1.76	1.92	1.94	1.68	1.87	1.88
CHAINAGE		623.63	713.63		
LENGTH	83.85m		90.00m		90.00m

LONGITUDINAL SECTION - SHEET 7

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

DRAFT
DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

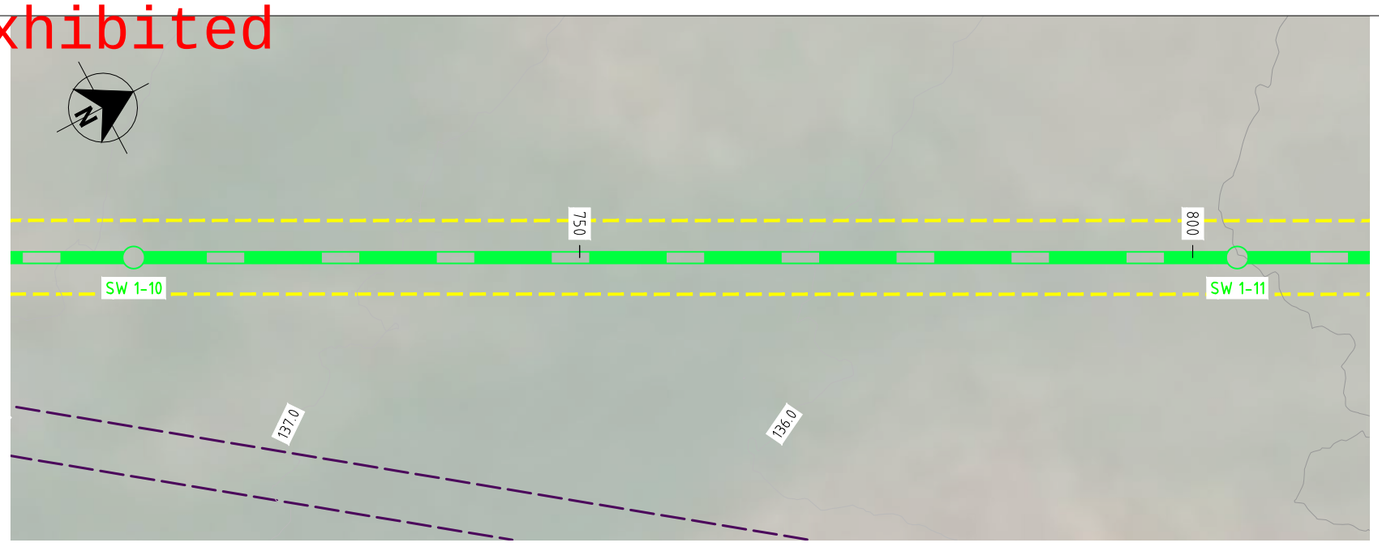
DRAWING TITLE
LONGSECTION (7 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-036	7 OF 9	CI	A

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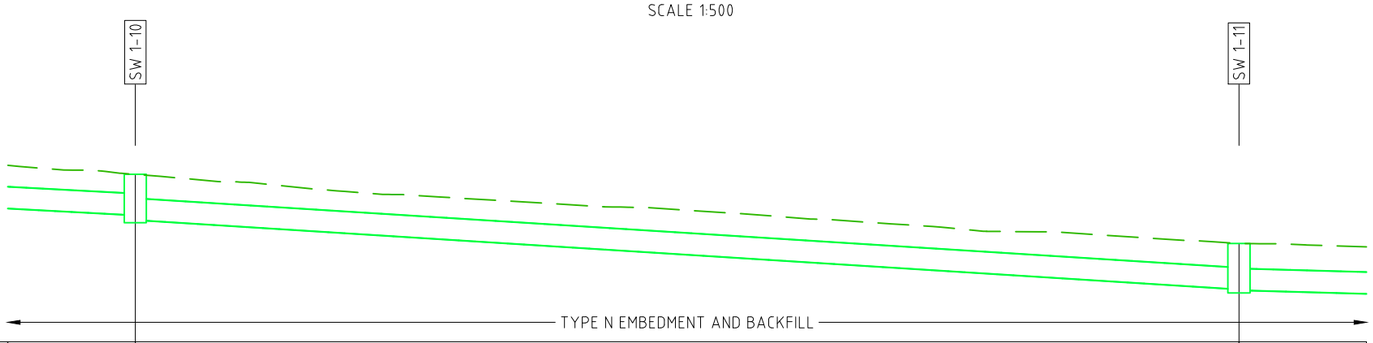
PLOTTED: 18.11.2025

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PLAN - SHEET 8

SCALE 1:500



GRADE %	2.68%	3.14%	1.38%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	137.82	135.01	
INVERT LEVEL	138.56 136.14	135.95 133.12	133.09 131.85
COVER	1.02 0.75	0.94 0.96	0.99 0.73
DEPTH TO INVERT	1.94 1.68	1.87 1.88	1.92 1.65
CHAINAGE	713.63	803.63	
LENGTH	90.00m	90.00m	90.00m

LONGITUDINAL SECTION - SHEET 8

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

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DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
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DESIGNED	DM	17.09.25
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APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

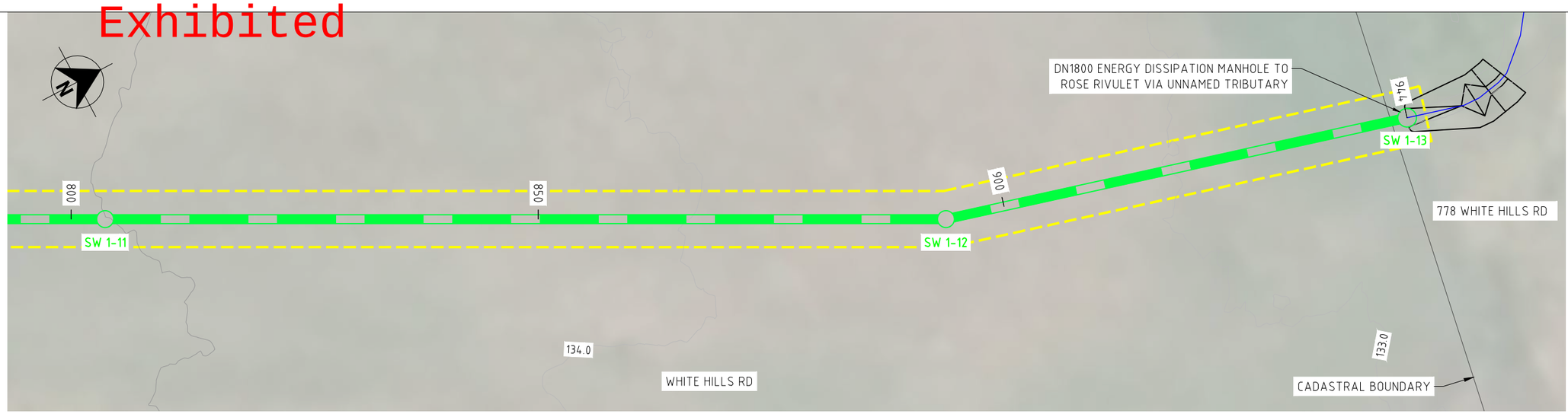
DRAWING TITLE
LONGSECTION (8 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-037	8 OF 9	CI	A

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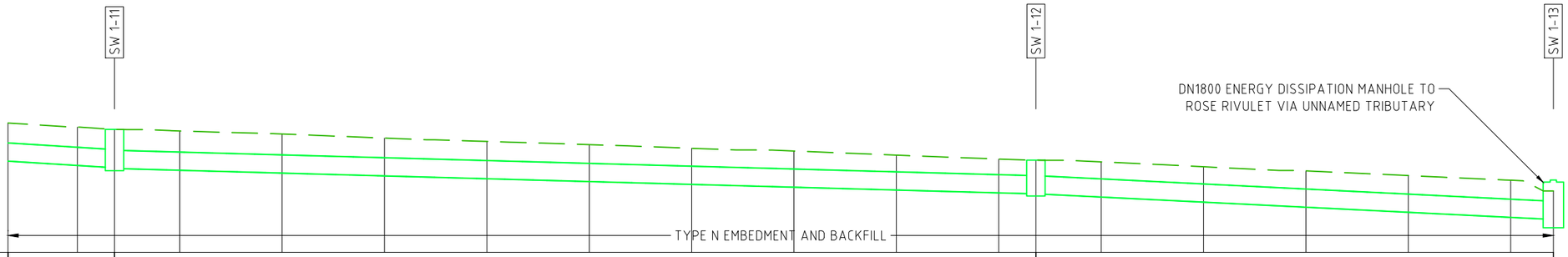
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PLAN - SHEET 9

SCALE 1:500



VERT EXAG 1:2
DATUM 129.000

GRADE %	3.14%	1.38%	2.48%
PIPE DETAILS	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ
FINISHED SURAFCE LEVEL	135.01	133.50	132.54
INVERT LEVEL	135.95 / 133.12	133.09 / 131.85	131.85 / 130.60
COVER	0.94 / 0.96	0.99 / 0.73	0.73 / 0.47
DEPTH TO INVERT	1.87 / 1.88	1.92 / 1.65	1.65 / 1.40
CHAINAGE	803.63	893.63	944.17
LENGTH	90.00m	90.00m	50.54m

LONGITUDINAL SECTION - SHEET 9

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

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DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

DRAWING TITLE
LONGSECTION (9 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-038	9 OF 9	CI	A

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PLOTTED: 18.11.2025

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GENERAL NOTES:

A. SIDES OF EXCAVATION TO BE KEPT VERTICAL TO AT LEAST 150 ABOVE THE PIPE.
B. ALL ROCK INTRUSIONS OUT OF TRENCH WALL MUST BE REMOVED PRIOR TO ANY PIPE LAYING OPERATIONS.
C. ANY FOREIGN MATTER SUCH AS VEGETATION OR LITTER SHALL BE REMOVED FROM THE TRENCH PRIOR TO PIPE LAYING AND BACKFILL.
D. MARKER TAPE IS REQUIRED WHERE THE STORMWATER IS NOT THE DEEPEST SERVICE.
E. PLACE MARKER TAPE AT 1.5M DEEP OR ON FIRST BACKFILL LAYER, WHICHEVER IS SHALLOWER.

TABLE 201-D: TRENCH DIMENSIONS

STORMWATER SIZE (DN)	L b :BEDDING DEPTH		L c :OVERLAY	L c :SIDE SUPPORT	
	MINIMUM	MAXIMUM	(MINIMUM)	MINIMUM	MAXIMUM
> 900	150	250	200[2]/ 300[3]	300	550

TRENCH DIMENSION NOTES:

1. IF MAXIMUM BEDDING DEPTH IS EXCEEDED, FILL OVER EXCAVATION WITH SPECIAL EMBEDMENT AS PER MRWA-S-202
2. THE FIRST MINIMUM OVERLAY FIGURE IS THE MINIMUM OVERLAY REQUIRED WHEN WALK BEHIND TRENCH BACKFILL COMPACTION EQUIPMENT IS TO USED.
3. THE SECOND MINIMUM OVERLAY FIGURE IS THE MINIMUM REQUIRED WHEN:
   a. RIDE ON TRENCH BACKFILL EQUIPMENT IS USED; OR
   b. THE SEWERAGE PIPE IS IN A ROAD CARRIAGEWAY. THIS ASSUMES THAT THE FIRST BACKFILL LAYER WILL BE AT LEAST 200 THICK (WHEN COMPACTED) SO THAT THERE IS A TOTAL COVER >500 DURING MECHANICAL COMPACTION.

TABLE 201-C: MINIMUM COVER (H)

LOCATION	MINIMUM COVER (mm)
NON TRAFFICABLE AREAS	700

MINIMUM COVER NOTES:

1. MINIMUM COVER BASED ON TASMANIAN IRRIGATION MINIMUM COVER THROUGH AGRICULTURAL AREAS.

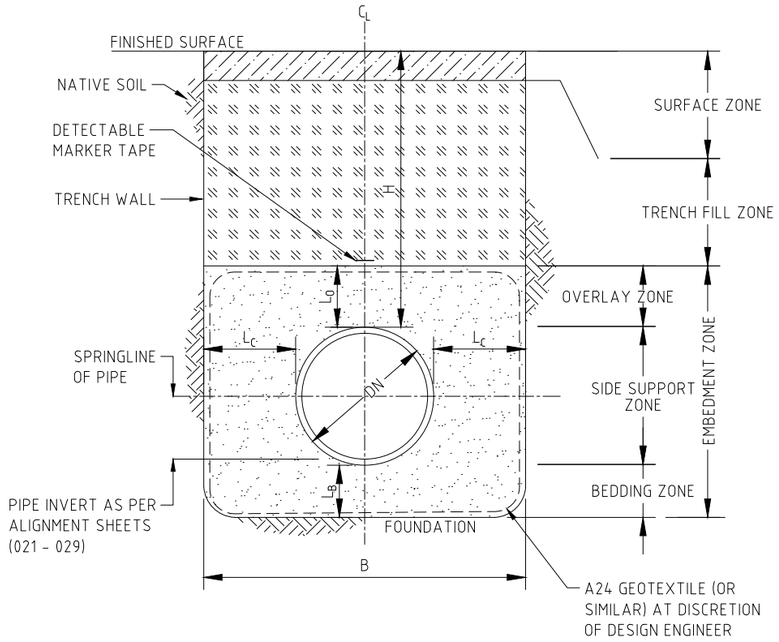


TABLE 201-B: NON TRAFFICABLE AREAS (TYPE N)

TRENCH ZONE	PREFERRED MATERIALS	METHOD OF PLACEMENT	MIN. COMPACTION REQUIREMENT
SURFACE ZONE	CoL: TOPSOIL NOMINALLY 100mm THICK. REINSTATE WITH GRASS OR AS NOMINATED BY LANDOWNER		90% R_D
TRENCH FILL ZONE	REFER TO BACKFILL SPECIFICATION - MRWA SPECIFICATION 04.03. - FOR BACKFILL < 1.5m DEEP, SELECTED OR ORDINARY FILL. A. SELECTED FILL. MATERIAL THAT IS FREE FROM ORGANIC OR OTHER DELETERIOUS MATERIAL, OBTAINED FROM EXCAVATION OR IMPORTED, WITH A PARTICLE SIZE OF ROCK NOT GREATER THAN 20mm, OR FOR OTHER THAN ROCK NOT GREATER THAN 75mm (REFER AS2566.2-2002). B. ORDINARY FILL. MATERIAL OBTAINED FROM EXCAVATION OR IMPORTED THAT CONTAINS NOT MORE THAN 20% BY MASS OF ROCK FRAGMENTS WITH SIZE BETWEEN 75mm AND 150mm, WITH NO ROCK OR CLAY FRAGMENTS GREATER THAN 150mm (REFER AS2566.2-2002). - FOR BACKFILL > 1.5m DEEP, AS PER PROJECT SPECIFIC BACKFILL SPECIFICATION.	REFER TO BACKFILL SPECIFICATION - MRWA SPECIFICATION 04.03. - FOR BACKFILL < 1.5m DEEP, SELECTED OR ORDINARY FILL PLACED AS REQUIRED TO MEET THE NOMINATED COMPACTION DENSITY. - FOR BACKFILL > 1.5m DEEP, PLACE AS SPECIFIED IN THE PROJECT SPECIFIC BACKFILL SPECIFICATION. PLACE AND COMPACT IN LAYERS AND MOISTURE CONDITION AS REQUIRED. WHERE HAND HELD OR WALK BEHIND COMPACTION EQUIPMENT IS USED IN THE BACKFILL ZONE, AVOID COMPACTION WITHIN 300MM OF TOP OF PIPE. WHERE HEAVIER COMPACTION IS USED IN THE BACKFILL ZONE, AVOID COMPACTION WITHIN 500mm FROM THE TOP OF PIPE.	95% R_D TOP 600mm 90% R_D
EMBEDMENT ZONE	STORMWATER: - EMBEDMENT MATERIAL COMPLYING WITH MRWA-W-203 TABLE 203-B AND LGAT TSD-G01 - SELECTED MATERIALS SHALL BE WORKED AROUND THE PIPE TO ENSURE ALL VOIDS AT HAUNCHES ARE FILLED AND THE PIPE IS PROVIDED WITH GOOD SUPPORT ALONG ITS ENTIRE LENGTH. - EMBEDMENT TO BE PLACED UNDER THE HAUNCHES BY SHOVEL OR FORK AND COMPACTED TO THE REQUIRED DENSITY.		60% $_b$

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A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

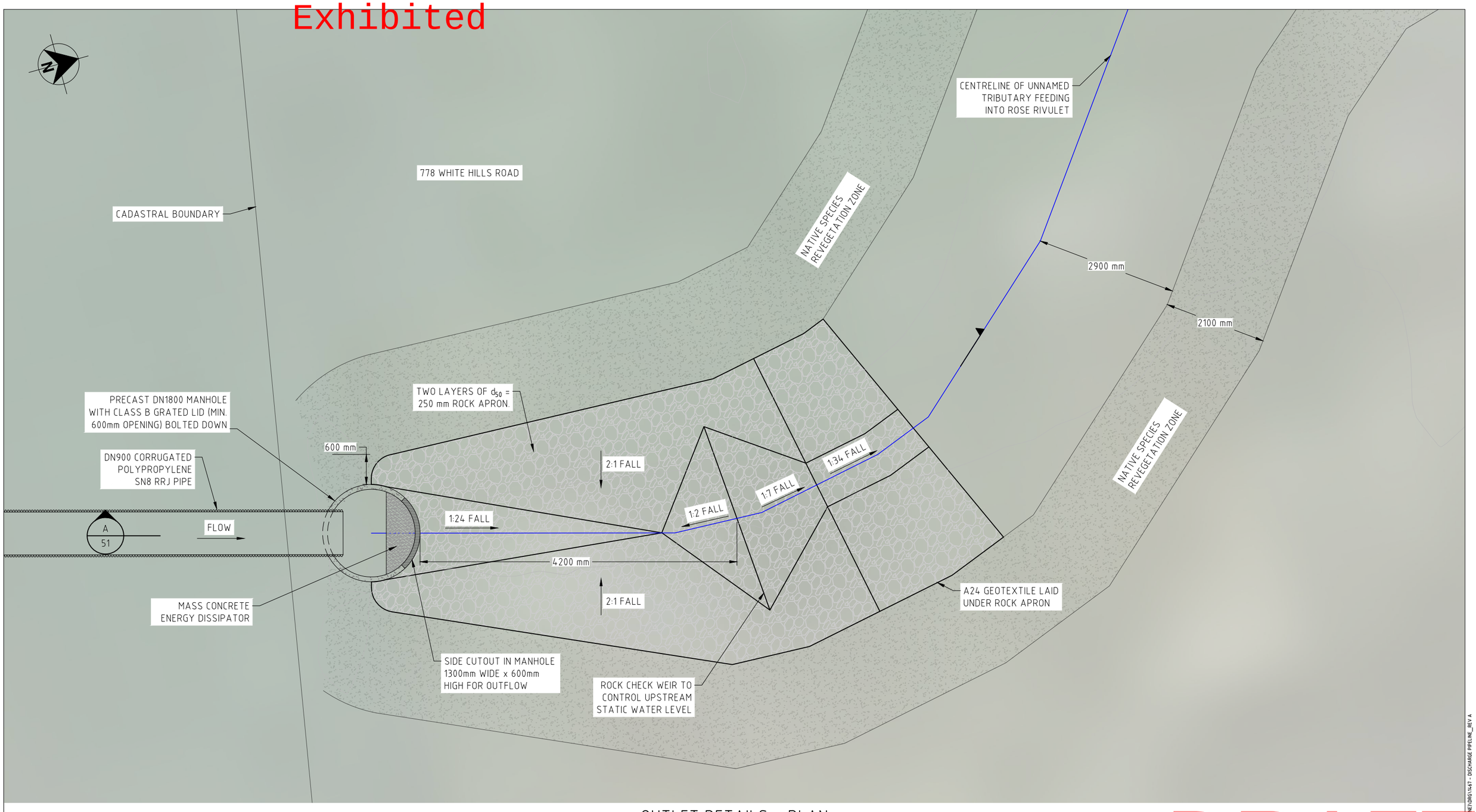
DRAWING TITLE
TRENCH DETAILS

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
-	1467-SW-050	1 OF 1	CI	A

PLOTTED: 18.11.2025

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OUTLET DETAILS - PLAN

SCALE - 1:75

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0 0.75 1.5 2.25 3.0 3.75 METRES
SCALE 1:75

NOTES:

1. MINIMUM CONCRETE GRADE - N25

DRAFT
DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
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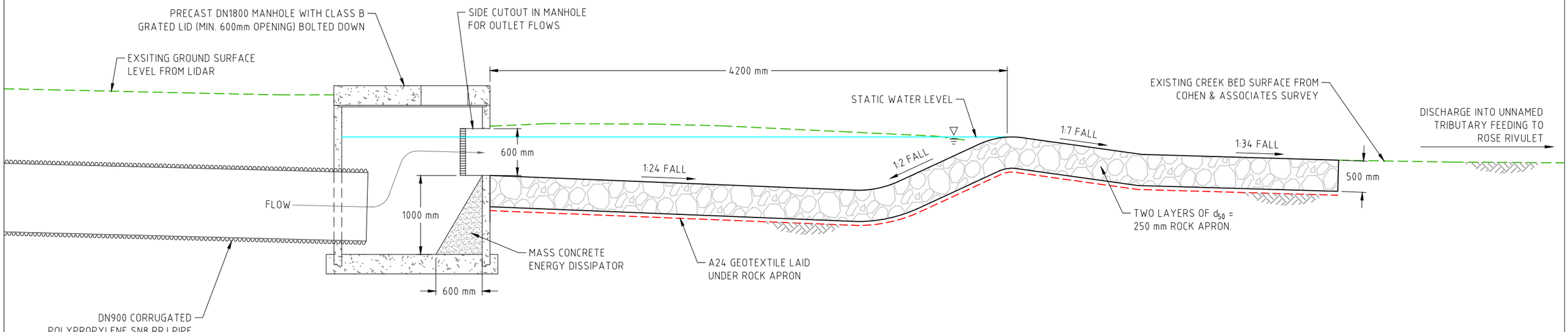
DRAWING TITLE
OUTLET DETAILS (1 OF 2)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-060	1 OF 2	CI	A

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OUTLET DETAILS - SECTION

SCALE 1:50

A 50

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0 0.5 1 1.5 2 2.5 METRES
SCALE 1:50

NOTES:
1. MINIMUM CONCRETE GRADE - N25

DRAFT
DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
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		DATE
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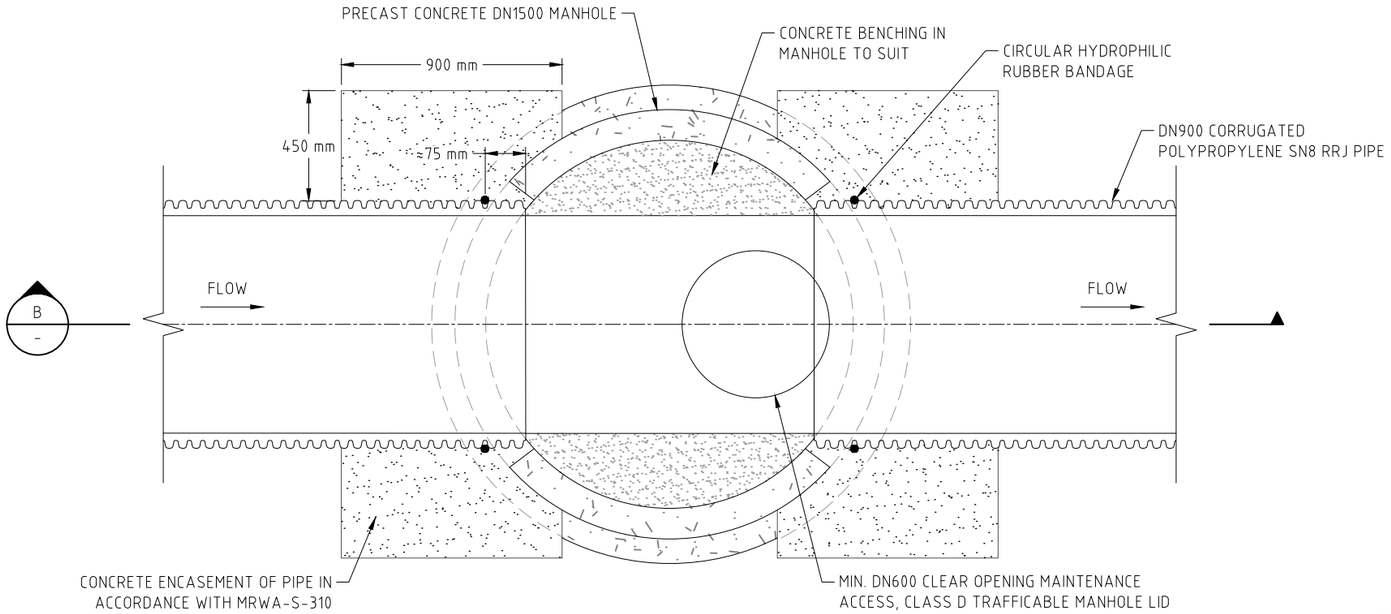
DRAWING TITLE
OUTLET DETAILS (2 OF 2)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-061	2 OF 2	CI	A

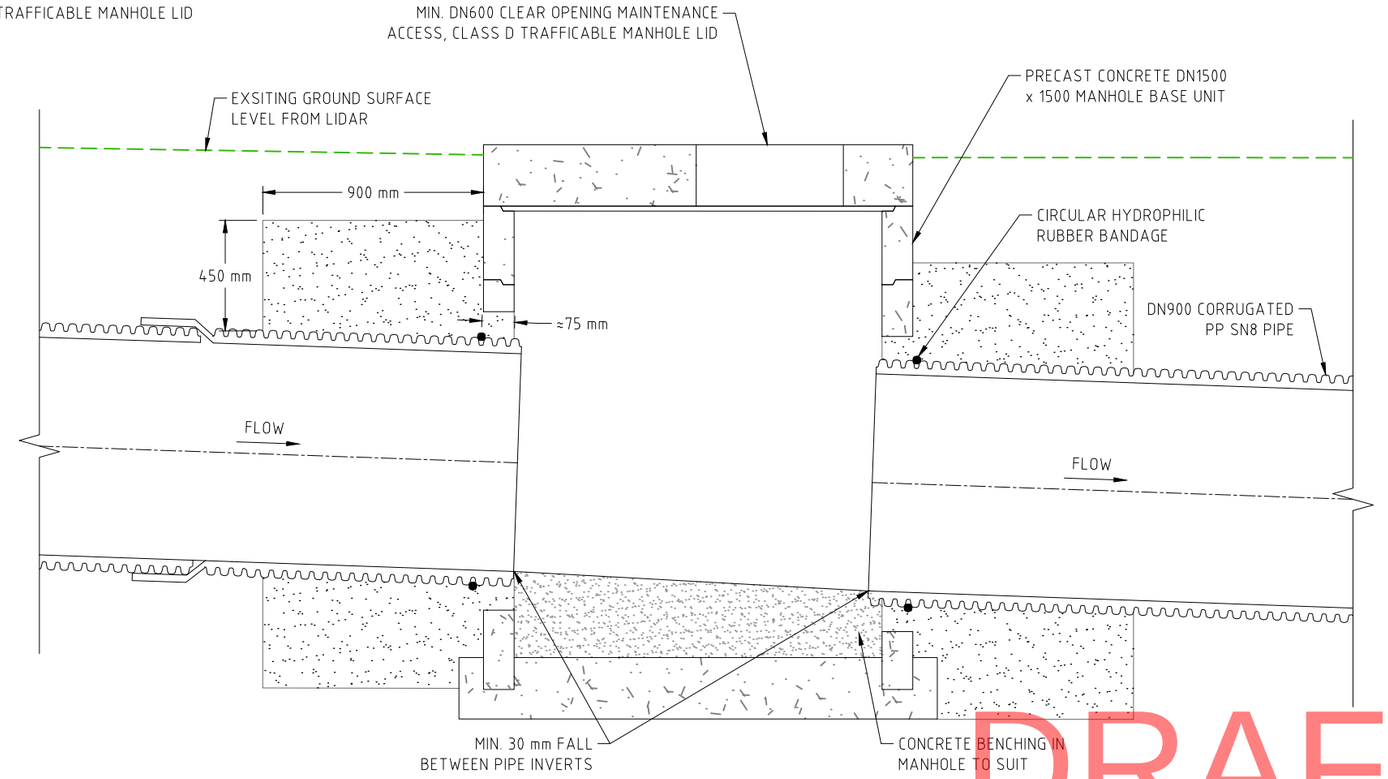
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PLAN VIEW
SCALE - 1:25



SECTION
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B
-

MANHOLE GENERAL NOTES:

CONCRETE:
1. MINIMUM CONCRETE GRADE - N25.

MANHOLES:
1. JOINTS - APPLY EPOXY/NON SHRINK GROUT TO FORM WATER TIGHT JOINT.
2. INTERNAL SURFACE - REMOVE MORTOR OR CONCRETE SPLASHES AND FILL AIR POCKETS AND CAVITIES WITH GROUT.

ACCESS COVER:
1. POSITION ACCESS OPENING CENTRAL TO PIPE ALIGNMENT.
2. LIGHTLY GREASE LID CONTACT SURFACE.

ENCASEMENT:
1. CONCRETE ENCASEMENT AROUND PIPE CONNECTION IN ACCORDANCE WITH MRWA-S-310.

BACKFILL:
1. ALL BACKFILL AROUND MANHOLES TO BE AS PER TRENCH SPECIFICATION.

MANHOLE FALL:
1. FALL THROUGH MANHOLES TO BE A MINIMUM OF 30mm BETWEEN PIPE INVERTS.

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

BEFORE YOU DIG www.byda.com.au

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DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

DRAWING TITLE
TYPICAL MANHOLE DETAILS

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
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Barclay Subdivision, Evandale, Tasmania - Statement of Historical Archaeological Potential (SHAP) and Archaeological Method Statement (AMS)

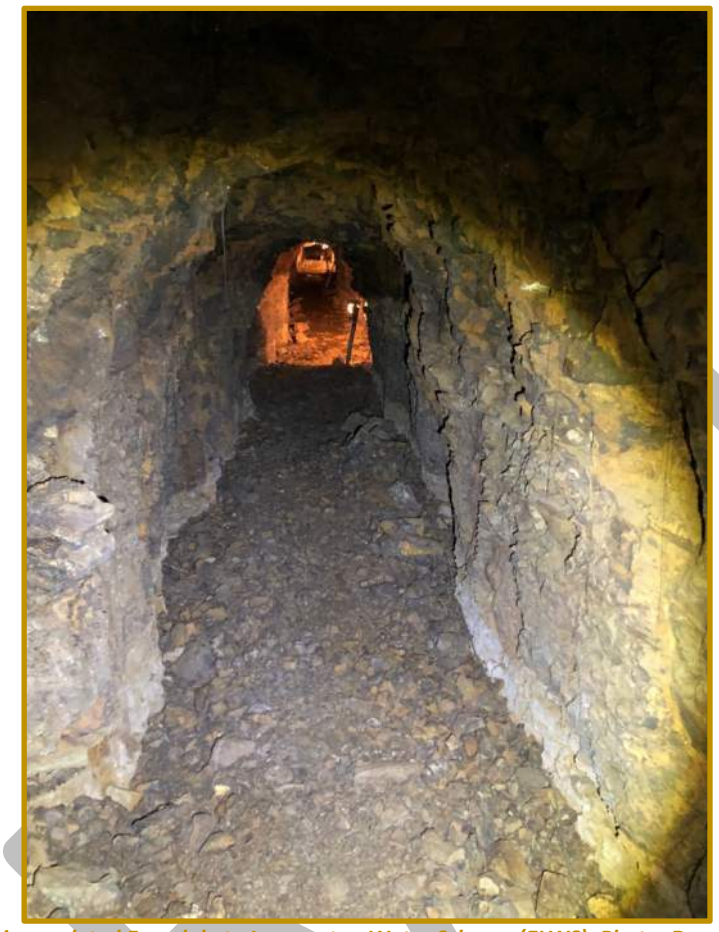


Figure 1: Section of semi-completed Evandale to Launceston Water Scheme (ELWS). Photo: Darren Watton 2019.

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9 Hudson Fysh Dr,
Western Junction TAS 7212

Author: Darren Watton

Date: 04st September 2019

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1 Executive summary

1.1 Overview

Southern Archaeology (SA) has been contracted by the Baker Group to prepare a Statement of Archaeological Potential (SHAP) and Archaeological Method Statement (AMS) for the proposed subdivision at 43 Cambock Lane, Evandale, Tasmania (the study area). This subdivision is known as the Barclay Subdivision. The location of the study area is shown in **Figure 2** below.

The study area contains a section of the Evandale to Launceston Water Scheme, an ambitious project conceived in 1834 (and partly constructed between 1836 and 1838), to supply fresh water from the South Esk, at Evandale, to Launceston. This scheme was built using convict labour and involved a planned system of tunnels, canals, aqueducts, ventilation shafts and other infrastructure. Convict stations were purpose-built along the route of the scheme, to house convicts during construction works, and a series of mills were planned along the route to utilise the available water. The scheme was never finished, primarily due to disputes between the colonial government and local residents over taxation (water rates) on the scheme to compensate landowners whose property was affected by the works. The Evandale to Launceston Water Scheme has been described as the largest convict-built engineering feat in the southern hemisphere (Trafalgar Productions 2009, ELWS Datasheet Pl. No. 11063). The Evandale to Launceston Water Scheme (and some of the remaining associated infrastructure) is permanently listed on the Tasmanian Heritage Register (THR listing Pl. Id. 11063 - See ELWS Datasheet in **Appendix 1**).

The study area contains sections of the tunnel complex (approx. 160m) associated with the scheme and a ventilation shaft (Shaft 6 – approx. 1100mm wide). This section of the scheme runs through nine planned house blocks (six from stage 1 (Lots 1-6) and three from stage four (Lots 34 to 36) of the subdivision (**Figure 3**). Shaft 6 is currently located in the centre of Lot 4 of the proposed subdivision plan (**Figure 4**). The THR listing (listing Id. 11063) protects a six-metre-wide section of the tunnel alignment (about 1 km long) and a 12m diameter around each shaft. However, Shaft 6 appears to have possible associated infrastructure, probably dating to the time of its construction (**Figure 6**). One element presents as a depression (possibly a well or reservoir) around 2.5 metres to the north east of Shaft 6 (**Figure 6**). This depression is noted on the THR Listing (Listing Id. 11063) although its purpose and association to the scheme is not definitively known. There are also artefacts on the surface around the site and brick and stone alignments visible at the surface. These brick and stone alignments are of unknown depth or purpose and around three to four metres to the east of Shaft 6 (**Figure 6**). These alignments are not noted on the THR Listing (Pl. Id. 11063).

This Statement of Historical Archaeological Potential (SHAP) and Archaeological Method Statement (AMS) has been requested by the developer (the Baker Group) and represents due diligence on their part and will inform the development process.

The SHAP provides a background to the project and the history of the site (based on the THR, ELWS datasheet Pl. Id. 11063) and assesses the disturbance, archaeological potential and archaeological significance of the site. The AMS is informed by the SHAP and details the process for any further archaeological work that may be recommended for the site. As this is a Tasmanian Heritage Register (THR) listed site of very high significance, archaeological excavation is recommended for the study area to further understand the extent and integrity of the site, especially in regard to Shaft 6 and the associated features. There are also safety considerations associated with this site (Shaft 6 is currently

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uncapped and being accessed by cattle agisted at the property). The AMS details the methodology to be employed in the preferred and recommended option of controlled archaeological excavation and provides a set of Archaeological Research Design (ARD) questions in line with usual archaeological practices.

This SHAP and AMS has been prepared with consideration of the requirements of the significance of the site, The *Burra Charter* 2013 and the *Historic Cultural Heritage (HCH)* Act 1995. A search of the Aboriginal Heritage Register (AHR) has also been conducted and an assessment (with recommendations) under the *Aboriginal Heritage Act* (1975) is included. No Aboriginal heritage is registered on the Aboriginal Heritage Register but an Aboriginal heritage survey and an Aboriginal Heritage Assessment Report (AHAR) is recommended as a risk management measure due to the proximity of the study area to the South Esk River.

1.2 Special Considerations

Background investigation has indicated a strong community response to the subdivision development and the heritage associated with the site.

This assessment represents due diligence on the part of the Baker Group. The Baker Group understand the potential archaeological and heritage significance of the site and the community concern regarding the assessment of this important place. The Baker Group have engaged Southern Archaeology early in the process in order to understand any potential obligations or protection needs with regard to the ELWS and in particular Shaft 6 and the associated infrastructure identified at the site.

1.3 Acknowledgements

As part of the background research of this project the following local community members and groups have been consulted:

- Laurie Wotherspoon (local historian and member of the Evandale Historical Society) - Background history and community liaison.
- John Cheek (previous landowner and farmer) – Background history and community liaison.
- Evandale Historical Society (Evandale Community Centre) – Background history.
- Rod Summers (local farmer and adjoining landowner) – Community liaison.
- Caleb Pedder (Aboriginal Heritage Officer) – Area specific Aboriginal consultation and advice.
- Stephanie Dean – access to Morven property (Morven convict Station site and Tunnel site).
- Pasqualina Bergamin – Tour and background of Shaft 2 at 24 High Street, Evandale.

Southern Archaeology would also like to acknowledge the contribution of:

- Annita Waghorn and Ian Boersma of Heritage Tasmania for advice regarding the study area and associated infrastructure.
- John Dent for background history and advice regarding the Evandale to Launceston Water Scheme.
- Ian Edmondson – Southern Archaeology (Project Archaeologist).
- Aboriginal Heritage Tasmania – supply of Aboriginal Heritage Register information.

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1.4 Location

Evandale is a small town in the north of Tasmania about 19.7 kilometres south of Launceston. The town was established as a military outpost around 1811 and named Evandale in 1836. The Barclay Subdivision is located at on the north eastern side of Evandale at the end of Cambock Lane West. It is named after Capt. Andrew Barclay who established the property, Trafalgar, in 1816 (to the north east of the subdivision) and was granted the land where the subdivision is located in 1825. Here he built Cambock, a large house about 200-300m south of Shaft 6. Cambock House has since been demolished but archaeological features can be seen around the site.

The address of the Barclay Subdivision is 43 Cambock Lane, Evandale, Tasmania. **Figure 2** shows the location of the 43 Cambock Lane subdivision (Barclay Subdivision) and **Figure 3** is a copy of the proposed subdivision works. **Figure 4** shows the location of the Evandale to Launceston Water Scheme relative to the subdivision and **Figure 5** shows the wider alignment of the Evandale to Launceston Water Scheme. **Figure 6** shows the location of the archaeological features around Shaft 6 located on the proposed subdivision land.

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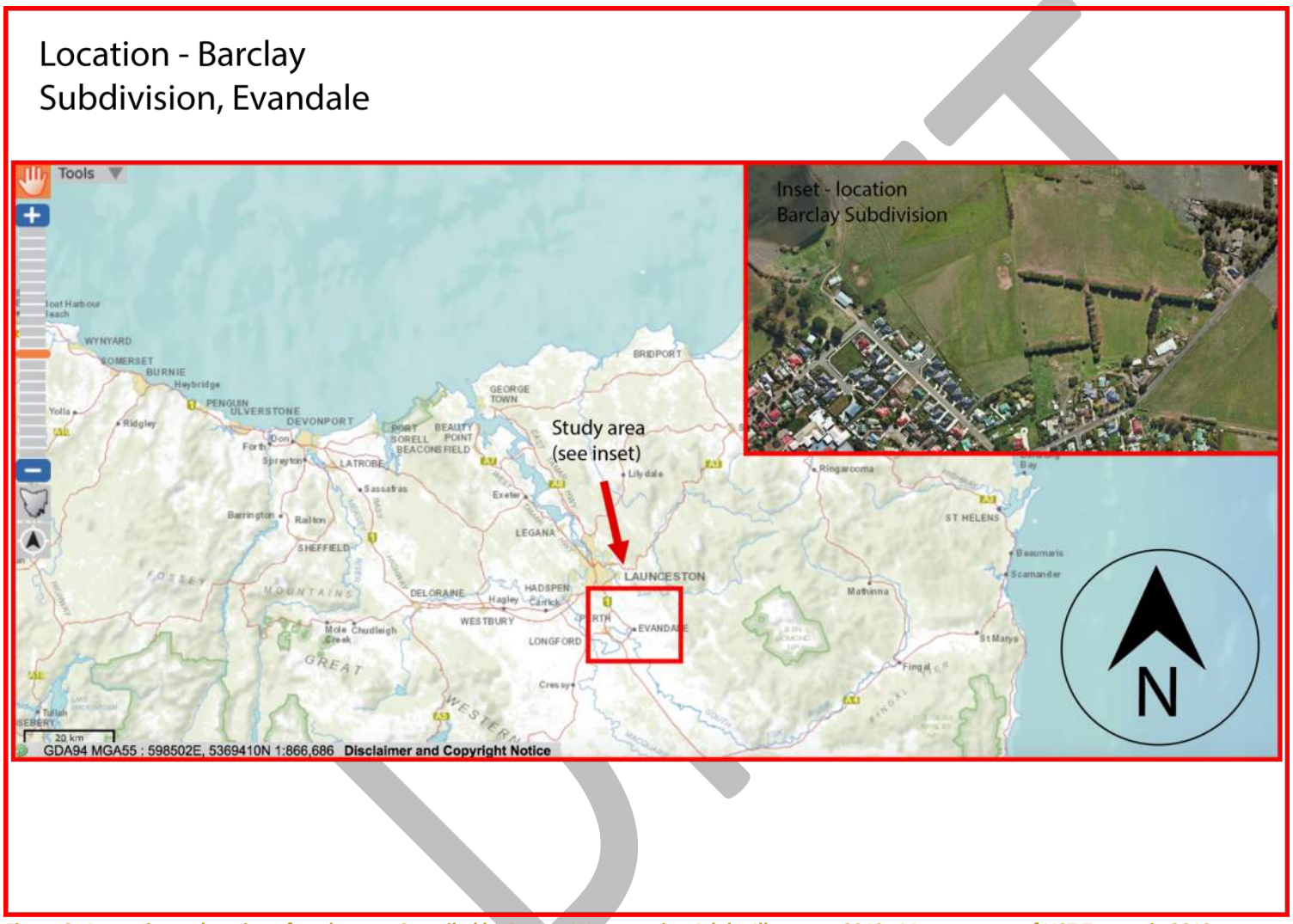


Figure 2: Approximate location of study area. Compiled by Darren Watton using Adobe Illustrator 2019. Map courtesy of LIST Tasmania 2019.

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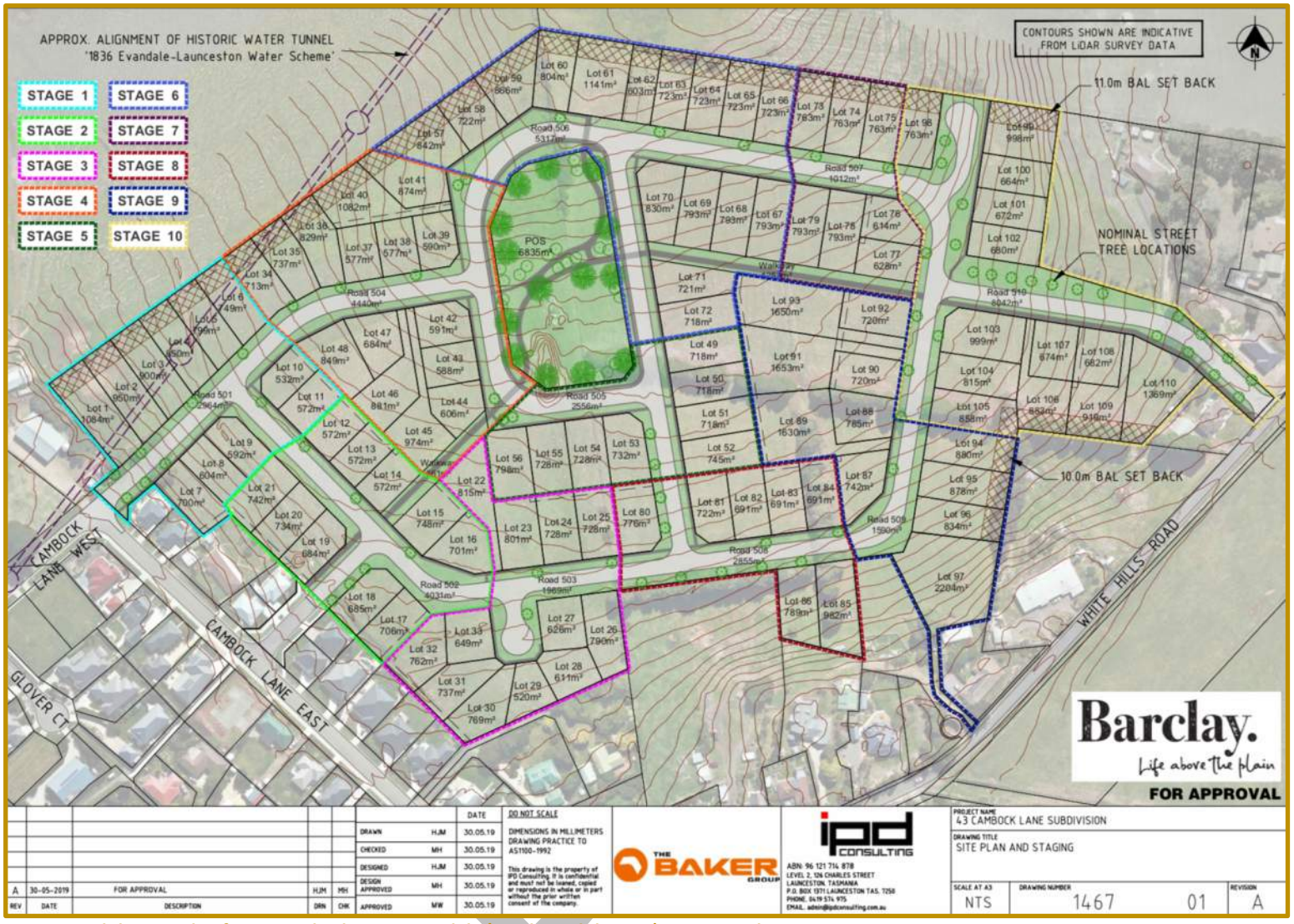


Figure 3: Subdivision plan for 43 Cambock Lane, Evandale (Barclay Subdivision). Source: Baker Group 2019.

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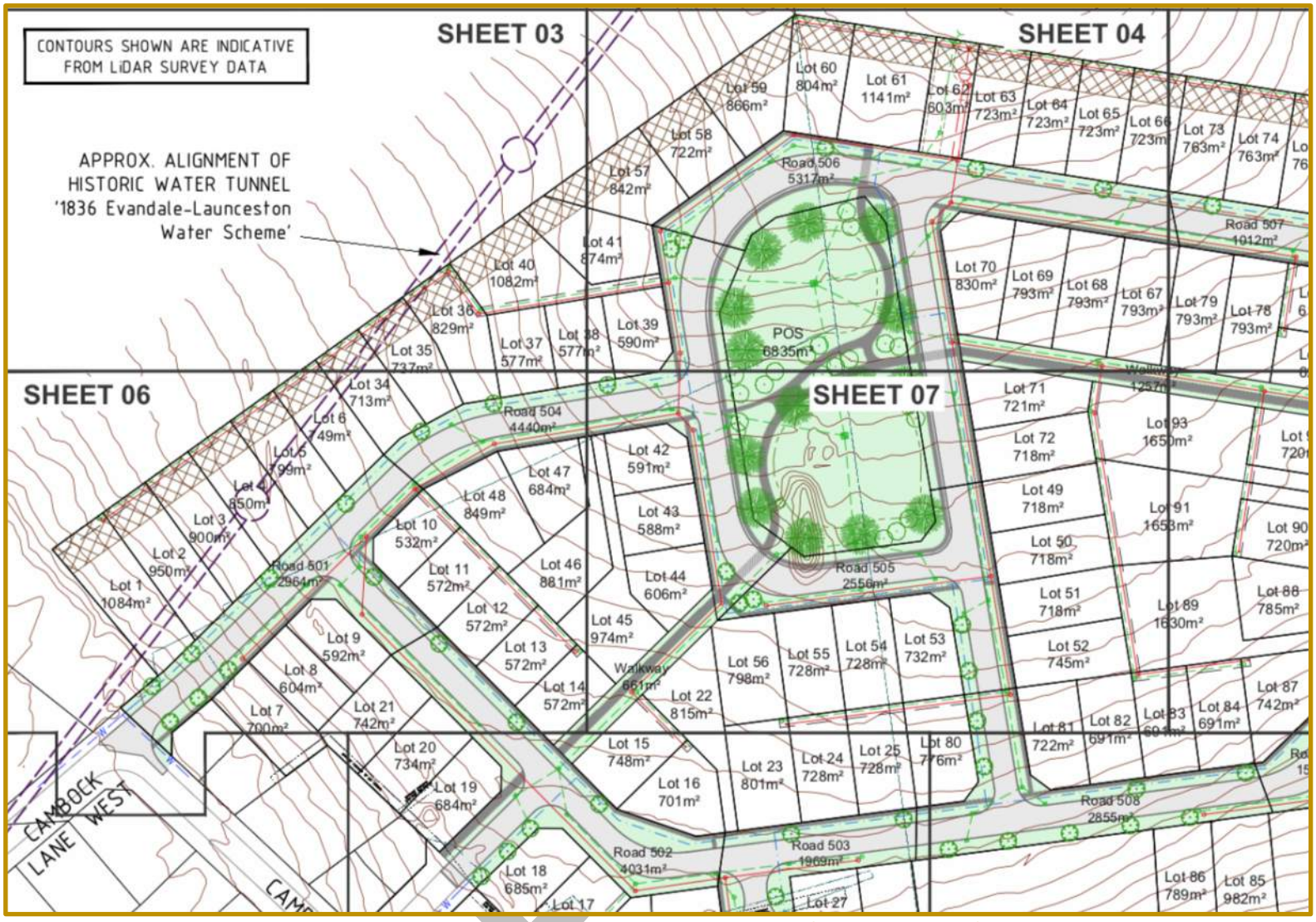


Figure 4: Location of Evandale to Launceston Water Scheme at the 43 Cambock Lane Subdivision (Barclay Subdivision).

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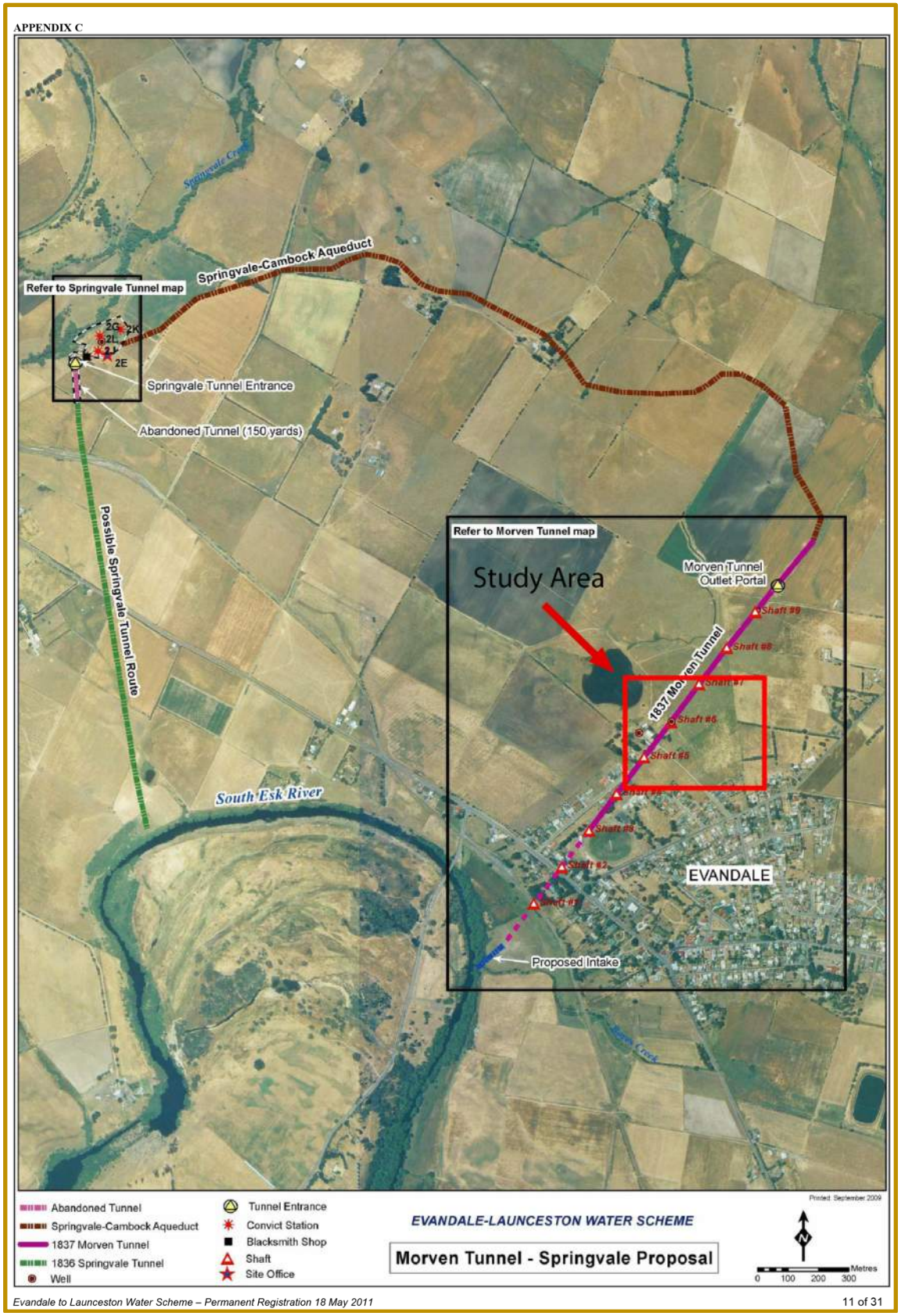


Figure 5: Location of study area in relation to Evandale to Launceston Water Scheme. Compiled by Darren Watton using Adobe Illustrator. Map courtesy of ELWS Datasheet (Id no. 11063) 2019.

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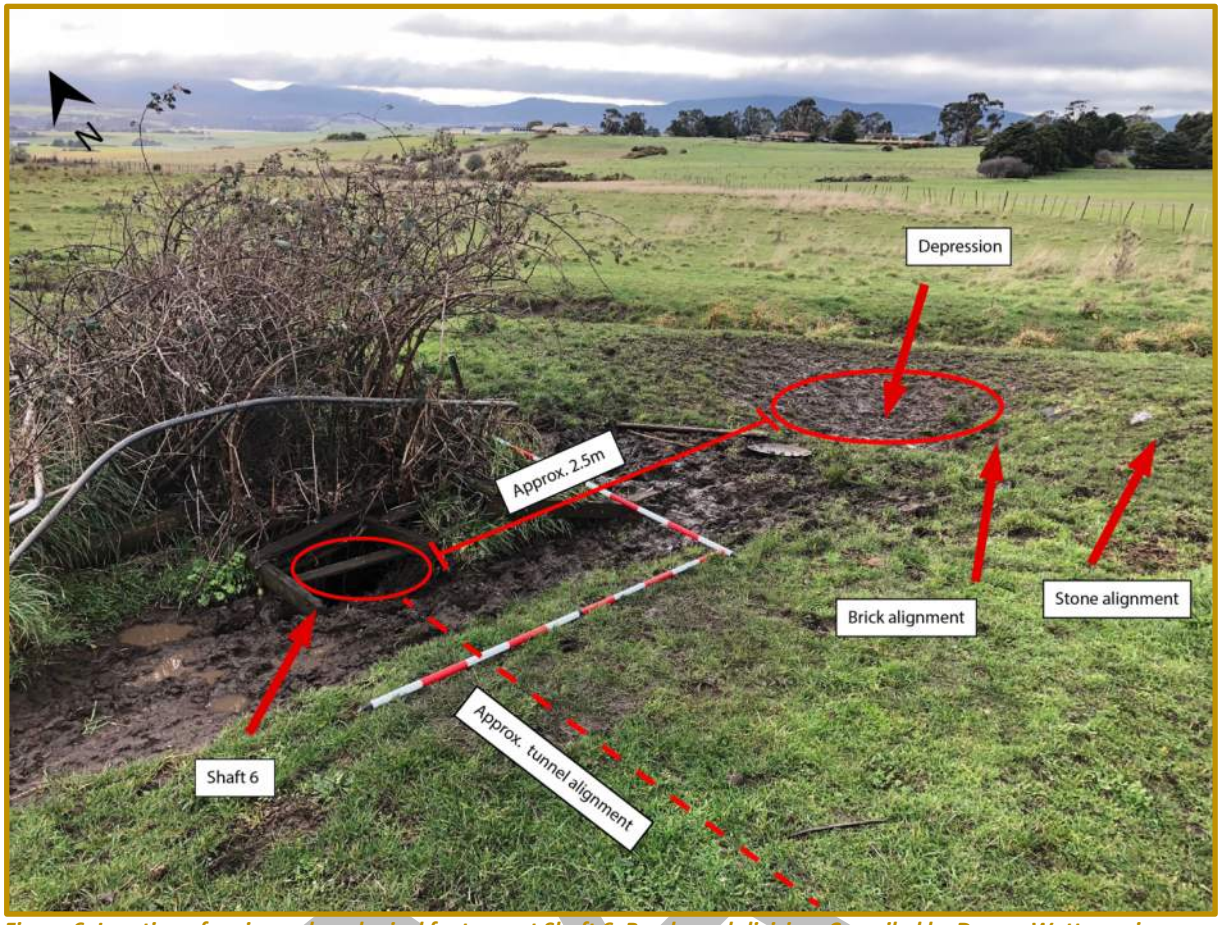


Figure 6: Location of major archaeological features at Shaft 6, Barclay subdivision. Compiled by Darren Watton using Adobe Illustrator 2019. Photo by Darren Watton 2019.

1.5 Statement of Historical Archaeological Potential (SHAP)

A SHAP has been prepared for the proposed Barclay Subdivision works. The background history and significance of the site is detailed within the THR Evandale to Launceston Water Scheme Datasheet (Pl. Id. 11063 **Appendix 1**). This information guides this SHAP. Also included in the SHAP is:

- An overview of the purpose of the SHAP.
- A summary of the background of the site.
- An overview of the legislation relevant to historical and Aboriginal heritage in Tasmania.
- A creation of and assessment of Potential Historical Archaeological Sensitivity (PHAS) Zones to inform the excavation process proposed in the AMS and an identification of areas that may have specific archaeological potential.
- An Assessment of Disturbance (AoD), Assessment of Archaeological Potential (AoAP) and an Assessment of Archaeological Significance (AoAS) relevant to the study area and in accordance with general SHAP and AMS report structure.
- Recommendations for further archaeological work at the site (if required) to progress the development proposal.

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1.6 The Archaeological Method Statement (AMS)

An AMS is required for this project because controlled archaeological excavation (test pitting) has been recommended in the SHAP.

The AMS comprises:

- An overview of the purpose of an AMS.
- The requirements of the AMS.
- The archaeological methods used in the preferred archaeological test pitting proposed in the AMS.
- An overview of the archaeological monitoring proposed in the AMS.
- The recording methods to be employed at the study area.
- Details about the preparation of the report for the study area.
- The Archaeological Research Design (ARD) questions for the study area.
- Archaeological Strategy and Methods.

The following archaeological strategy and methods have been adopted in regard to this development:

- **Archaeological excavation** - To determine the extent and integrity of archaeological features or material present at the site and to adopt an archaeological response which best preserves the site in regard to its significance and with consideration of the impact of the proposed development.
- **Documenting archaeology**- Accurately document and account for any archaeological or historical remains or features on the site.
- **Retrieving, analysing and cataloguing** of any remains or artefacts from the site that may be impacted by the development.
- **Archaeological reporting-** Provide a report on the site, which documents the works and the findings of the archaeological work.

1.7 Summary of archaeological potential, disturbance and significance

The ELWS datasheet (Pl. Id. 11063) provides detail regarding the assessment of significance of the ELWS. This addressed in **Section 10.4** and in **Appendix 1.**

Archaeological potential, disturbance and significance of a site are usually assessed by an archaeologist in a SHAP. The assessment of archaeological potential, disturbance and significance has been addressed in this report to inform the archaeological excavation and to create Potential Historical Archaeological Sensitivity (PHAS) Zones (**Figure 7**). These assist in knowing where potential archaeology may exist and where archaeological excavation may be required or focused at the site.

The following points summarise Southern Archaeology's assessment of archaeological potential, disturbance and significance at the study area:

Archaeological significance summary:

The study area provides a rare opportunity to understand and investigate infrastructure associated with the ELWS, a major engineering feat in Tasmania with associations to convict labour. This scheme was undertaken in the 1830s and represents a complex and ambitious project (over 22kms of

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infrastructure) by the colonial government to supply water to Launceston. There have been no previous (formal) opportunities to archaeologically investigate the scheme. Further archaeological investigation has the ability to add to knowledge of engineering techniques in the early 1800s, wider understanding of the ELWS, inform future development proposals and contribute to research opportunities and knowledge at a state and national level.

This project represents a unique opportunity to archaeologically investigate and research aspects of the ELWS with the benefits of:

- Understanding the early history of the colony and the north of Tasmania.
- Understanding a major project with convict associations.
- Providing information about engineering methods and construction techniques from the 1830s.
- Establishing relationships and associations of unidentified infrastructure associated with the construction of the ELWS.
- Relatively cost effectively and non-invasively extracting rare information and materials on a relatively unknown aspect of history in Tasmania and the north of Tasmania.
- Contribute to knowledge about historical development, engineering and research in the north of Tasmania, throughout Tasmania and Australia and, possibly, at an international level.
- Informing future development proposals associated with the ELWS.

Furthermore:

- Southern Archaeology assesses the study area as having **very high archaeological potential** around the area where Shaft 6 and the associated features and material are located (red zone – 0-12m diameter around shafts) (**Figure 7** - PHAS zones). The orange zone is the area considered to have medium archaeological potential (12-30m diameter around shafts) and the yellow zone (30-50m diameter around shafts and 6 metre wide alignment over ELWS tunnel) is thought to be of low archaeological potential (**Figure 7**). There is a high level of archaeological intactness based on an Assessment of Disturbance (AoD) and an Assessment of Archaeological Potential (AoAP).
- Southern Archaeology has assessed the disturbance in the vicinity of the development to be low. There has been farming activities at the site but there is clear evidence of features at the surface and these appear to be *in situ* with some relatively undisturbed, such as the shaft, which can be seen to be intact sub-surface.
- Southern Archaeology assesses any possible individual sites (historical and archaeological) within the study area as having **very high archaeological significance** at a Tasmanian State and possibly a National level (due to convict associations, engineering and construction techniques and rarity).
- Southern Archaeology recommends further archaeological excavation of the study area based on its significance (see **Figure 8** below).

Feature	Disturbance	Archaeological Potential	Archaeological Significance	Comments
Shaft 6	low	Very high	Very high	Surface disturbance but appears intact below surface,

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				needs clearing off and to be made safe
Depression and other associated infrastructure	low	Very high	Very high	Surface disturbance but features visible at surface
Tunnel	low	Very high	Very high	Probably up to 20 metres below surface

Table 1 summarises the disturbance, archaeological potential and archaeological significance of the study area. **Figure 7** shows the PHAS zones associated with the study area.

Feature	Disturbance	Archaeological Potential	Archaeological Significance	Comments
Shaft 6	low	Very high	Very high	Surface disturbance but appears intact below surface, needs clearing off and to be made safe
Depression and other associated infrastructure	low	Very high	Very high	Surface disturbance but features visible at surface
Tunnel	low	Very high	Very high	Probably up to 20 metres below surface

Table 1: Summary Disturbance, Archaeological Potential and Archaeological Significance.

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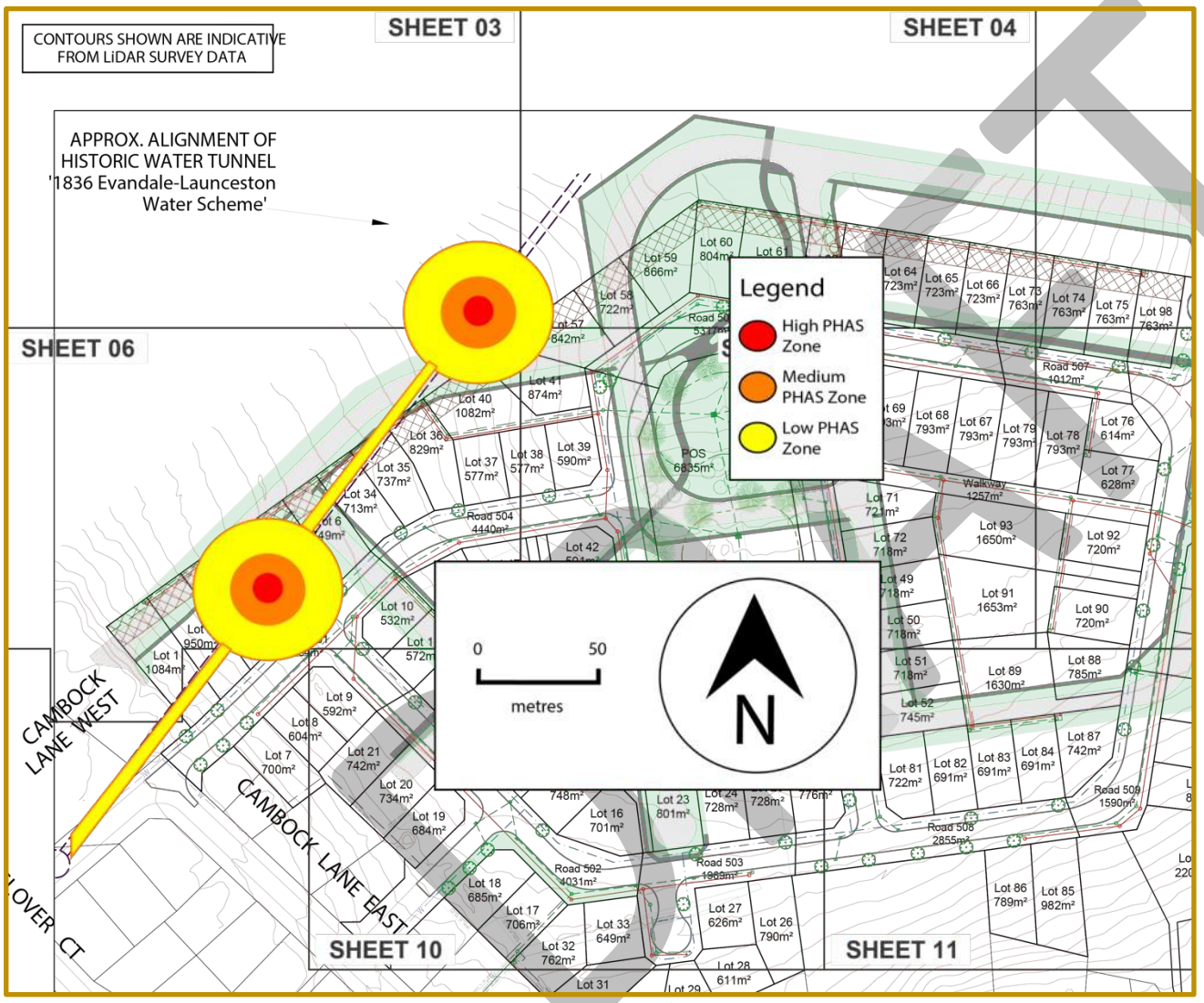


Figure 7: Overlay for Potential Historical Archaeological Sensitivity (PHAS) Zones. Compiled by Darren Watton, 2019. Base plan supplied by Baker Group 2019.

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1.8 Options regarding the Evandale to Launceston Water Scheme and the Barclay subdivison

1.8.1 Introduction

The following options are presented regarding the study area site. They are assigned a preference (one to three) by Southern Archaeology based upon the best possible outcomes for the site with consideration of the landowner, the proposed development, legislative and THR register requirements, the future management of the site, contribution to understanding of the scheme, protection of the heritage values of the site and community interest in the site. These options have been assessed using a SWOT analysis (Strength, weaknesses, threats and opportunities) which assist in informing the preferred recommendation of archaeological excavation of the site. Details of the SWOT analysis are provided in **Section 11** of this report.

Note: Only option 1 is recommended at this time.

The three options are (in order of preference):

1. Controlled archaeological excavation (test pitting) be conducted at the site – see **Section 1.9 and 11**.
2. Avoid the site - **Section 11.**
3. Destroy the site – **Section 11**.

1.9 Option 3 – Preferred option

The preferred option is Option One – Controlled Archaeological Excavation. It offers the best scenario for Shaft 6 and the associated infrastructure because it (see SWOT analysis in **Section 11.2**):

1) Supports establishment of new knowledge regarding the water scheme and its construction
2) Protects and maintains the significant heritage with minimal impact – controlled excavation is sensitive to the risk of impact to the archaeology and is conducted accordingly. This is particularly critical given that Shaft 6 has associated features (the depression and brick and stone alignments – see **Figure 6**) that are poorly understood and not known at other shafts.
3) Helps gain a clear understanding regarding the extent of the site and aids the establishment of curtilage (site boundaries).
4) Best addresses community concerns regarding the risk to heritage.
5) Best supports future management of the site, which may include site interpretation.
6) Informs the wider understanding of the ELWS and establishes knowledge which contributes to future development proposals associated with the scheme.
7) Satisfies recommendations within the ELWS Development Guidelines (THC 2014) for further archaeological investigation (see **Section 9.4**).

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1.10 Options 2 and 3 – Not Preferred

Options 2 and 3 are likely to be more costly and involve unforeseen issues and generate additional management requirements (See **Sections 11.3 and 11.4**). Any time delays might impact other development activity. The alternative options 2 and 3 are more likely to cause community concern, with the scheme highly regarded by local historians and community members.

There is greater potential for impacting the archaeology (irreversible damage) with option 3. Understanding and interpretation of the archaeology is severely lessened with option 2. Opportunity to understand and appreciate the site over time is lost with the destructive option 3. Opportunity to understanding the site better is lost under the avoidance option 2.

The development offers a chance to find out more about this unusual and rare archaeological site. Shaft 6 is one of several relatively intact shafts along the scheme's alignment. Archaeological exploration, with minimal intervention (controlled archaeological investigation by test pitting) is an ideal option with this particular shaft (shaft 6), particularly considering the damage already sustained to the upper courses through farming activity over time, and deliberate backfilling over time.

This would be the first archaeological excavation of one of the ELWS shafts and would mean there would be reduced need to impact other shafts in the future.

ELWS Development Guidelines state that there has been 'no formal archaeological excavations of the ELWS and that this would be of benefit to all landowners and understanding of the scheme' (THC 2014) (**see Section 9.4**).

1.11 Recommendations

Based upon the above three options and further consideration of the site and its significance the following general recommendations are made in regard to the study area (see **Section 12** for more details):

- It is strongly recommended that Option 1 - controlled archaeological excavation (test pitting) (see **Section 1.8 and Section 11**) be conducted at the site as per the attached AMS document. The AMS for this option (**Option 1 – Section 1.8 and Section 11**) **ONLY** is included in **Section 13** due to its recommendation as the preferred option (see note below).
- A Discretionary Permit be applied for from Heritage Tasmania and approval be sought from the Heritage Council regarding the controlled archaeological excavation (test pitting).
- That structural engineering advice be sought for any building within the tunnel protected zone or over any tunnel alignments.
- That a safety barrier (fence) be erected around Shaft 6 (at a minimum of 12metres diameter) as soon as practicable to protect this significant heritage and to make the area safe.
- The excavation of the site be completed as soon as practical to avoid unnecessary delays.
- The excavation include a full excavation report (including management recommendations), and that analysis of any artefacts associated with the site be completed (as per attached AMS – **Section 13**).
- An Aboriginal Heritage Survey be completed for the site with associated Aboriginal Heritage Assessment Report (AHAR).

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Note: An alternative AMS for Options 2 and 3 can be provided at the request of the client.

In summary, the study area is considered to be of **very high significance archaeologically with very high archaeological potential,** within the area where the ELWS is located. This is at a state and national level. Any works (excavation/development) on this site should be undertaken with consideration of the significant nature of archaeological remains in the historical development of Launceston and Tasmania. Such work should be completed by a suitably qualified archaeologist, meeting the recommendations within this report.

1.12 Archaeological excavation plan

Figure 8 to **Figure 10** shows the proposed controlled archaeological excavation (test pitting) plan for the study area and the location of the ELWS in relation to the Barclay Subdivision.

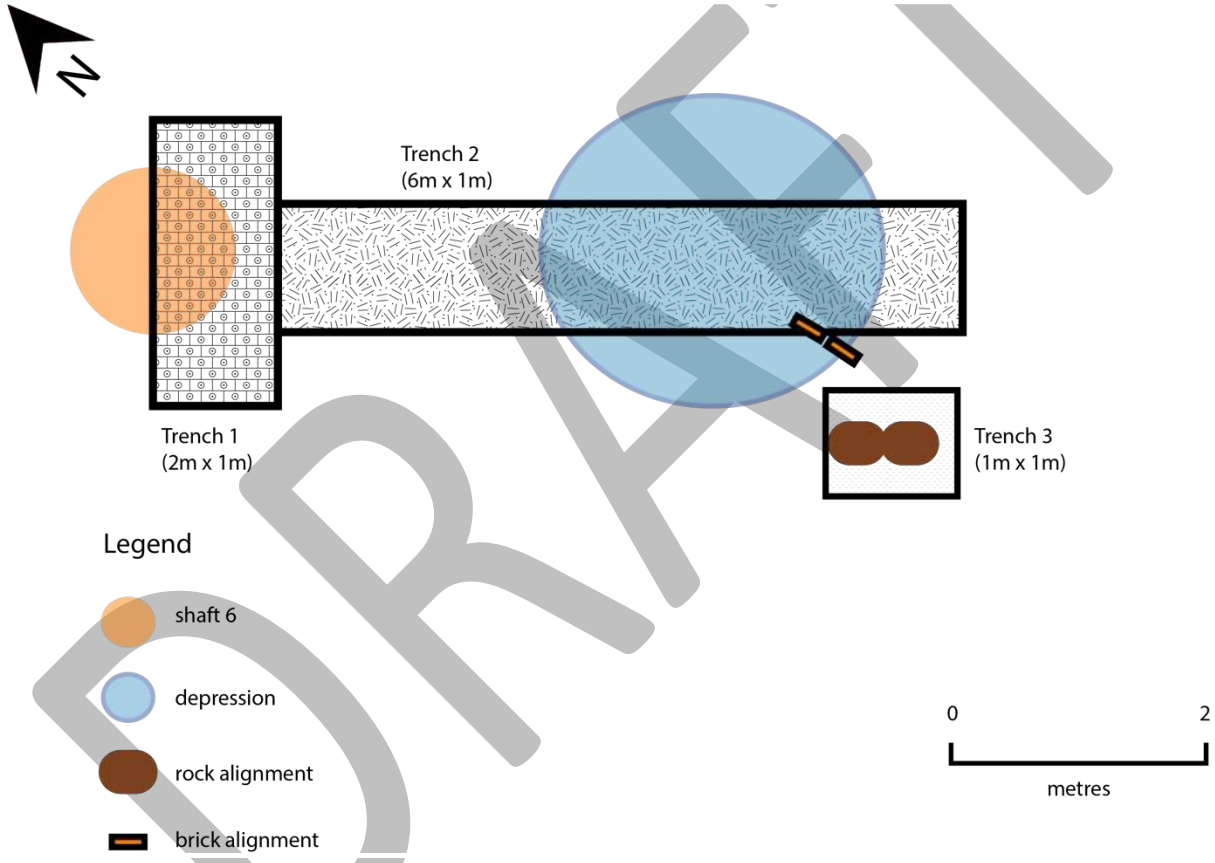


Figure 8: Sketch map showing the controlled archaeological excavation plan (test pitting) for the Barclay subdivision.

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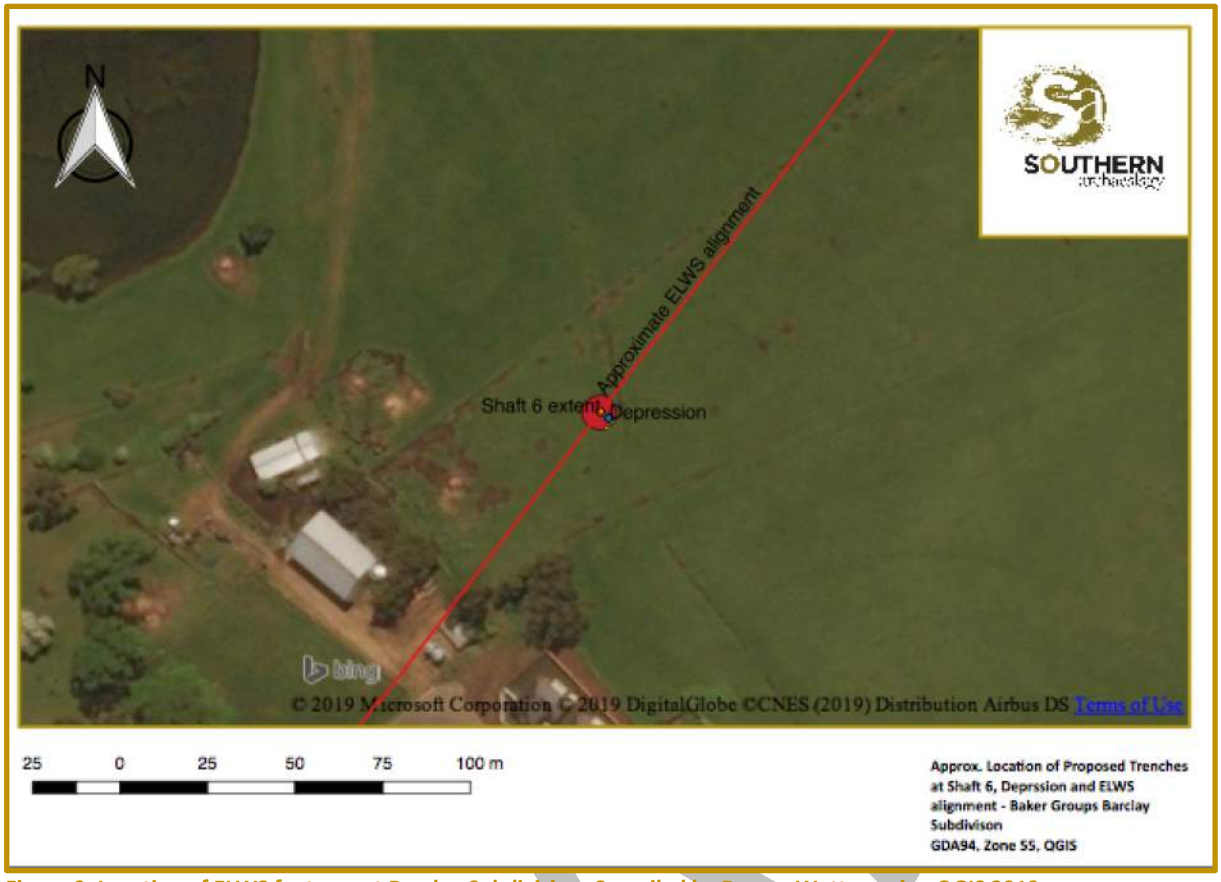


Figure 9: Location of ELWS features at Barclay Subdivision. Compiled by Darren Watton using QGIS 2019.

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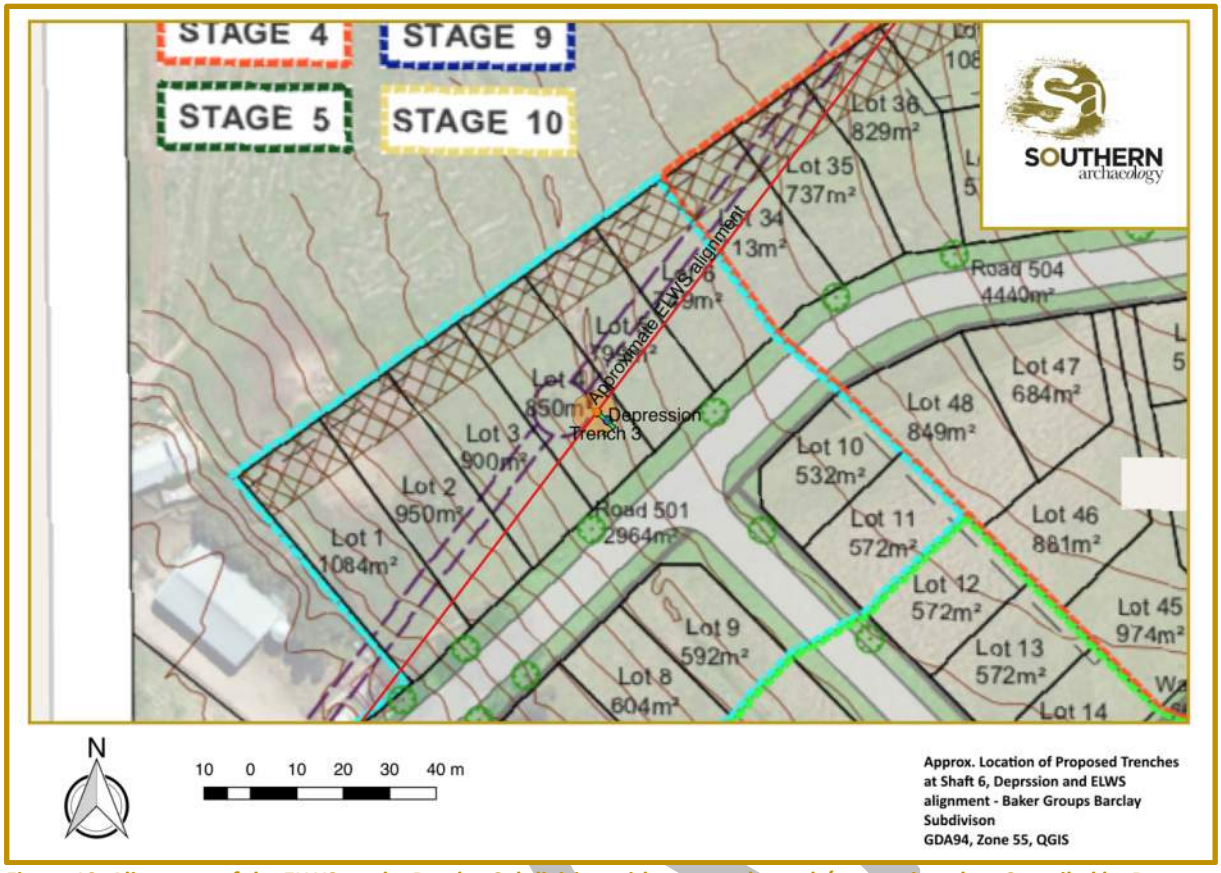


Figure 10: Alignment of the ELWS on the Barclay Subdivision with proposed trench/excavation plan. Compiled by Darren Watton using QGIS 2019.

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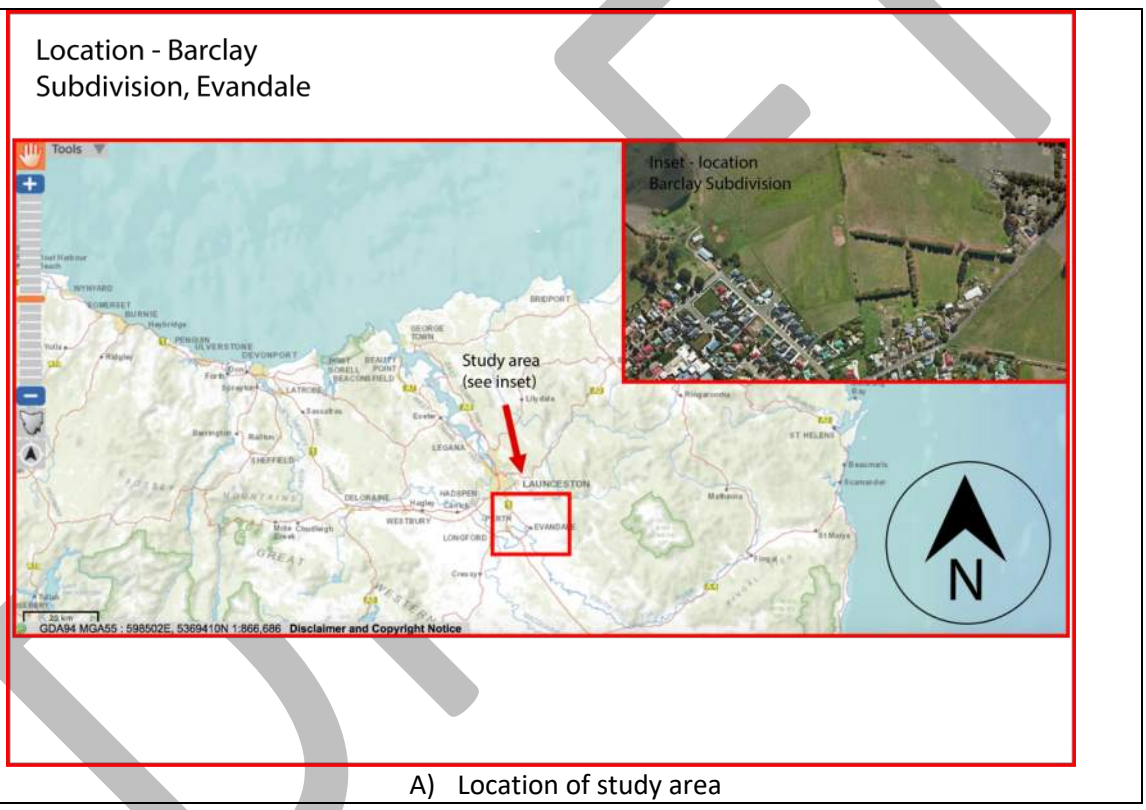
2 Location and development

2.1 Location, development and site description

Evandale is a small historical village with a population of around 1350 people. It is located on the South Esk River approximately 19.7 kilometres south of Launceston and about 8 kilometres south east of Perth Tasmania.

The Baker Group proposes to build a 110-lot subdivision at the property known as 43 Cambock Lane, Evandale (**Figure 11**).

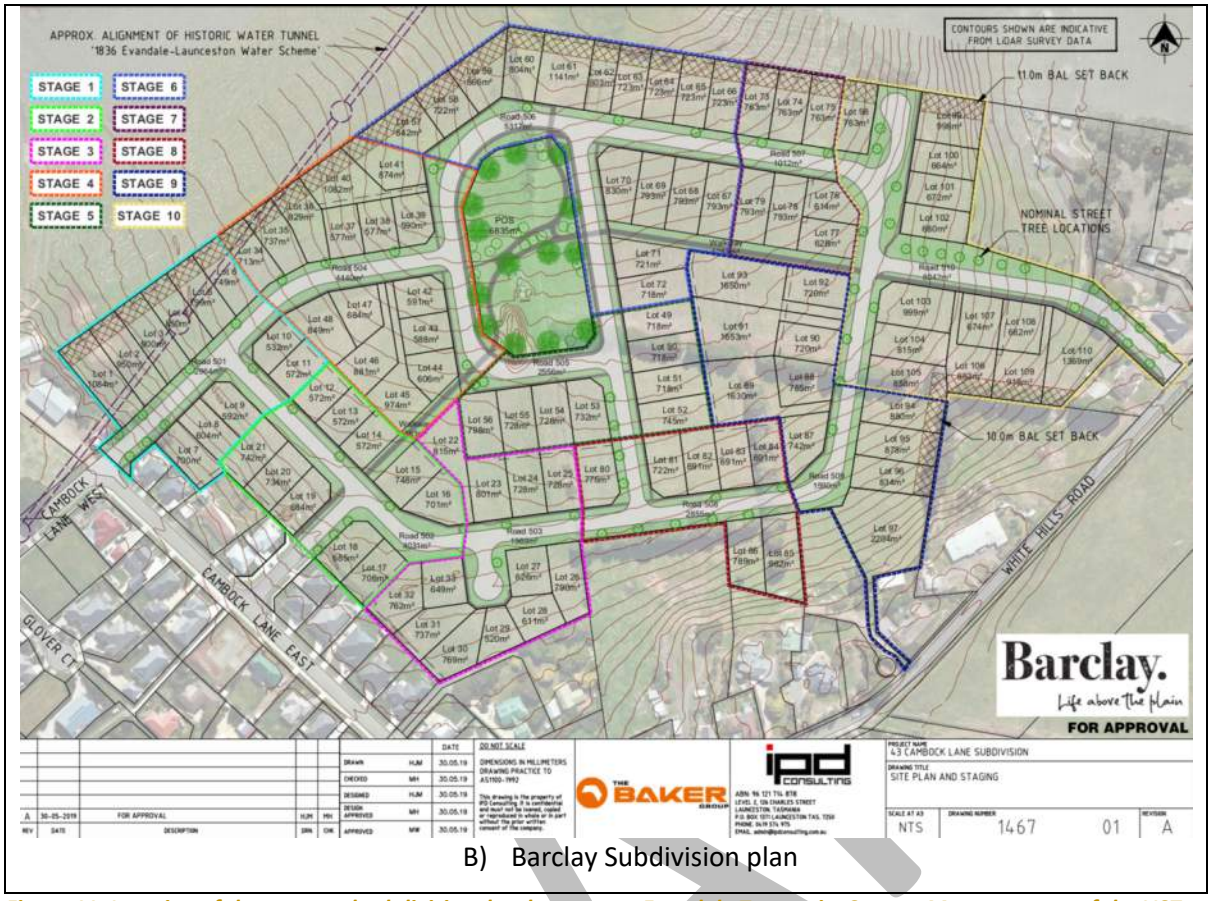
The proposed subdivision at 43 Cambock Lane, is located on the north western side of Evandale, Tasmania. **Figure 11** below shows the location of the proposed works.



A) Location of study area

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B) Barclay Subdivision plan

Figure 11: Location of the proposed subdivision development at Evandale Tasmania. Source: Maps courtesy of the LIST 2019, The Baker Group 2019 and the THR ELWS Datasheet (Id. No. 11063).

Figure 12 shows the study area at 43 Cambock Lane, Evandale and some site photos showing the archaeological features at the site detailed as follows.

The study area contains sections of the tunnel complex (approx. 160m) associated with the scheme and a ventilation shaft (Shaft 6 – approx. 1100mm wide). This section of the scheme runs through nine planned house blocks (six from stage 1 (Lots 1-6) and three from stage four (Lots 34 to 36) of the subdivision. Shaft 6 is currently located in the centre of Lot 4 of the proposed subdivision plan. The THR listing (listing Id. 11063) protects a six-metre-wide section of the tunnel alignment (about 1 km long) and a 12m diameter around each shaft. However, Shaft 6 appears to have possible associated infrastructure, probably dating to the time of its construction. One element presents as a depression (possibly a well or reservoir) around 2.5 metres to the north east of Shaft 6. This depression is noted on the THR Listing (Listing Id. 11063) although its purpose and association to the scheme is not definitively known. There are also artefacts on the surface around the site and brick and stone alignments visible at the surface. These brick and stone alignments are of unknown depth or purpose and around three to four metres to the east of Shaft 6. These alignments are not noted on the THR Listing (Pl. Id. 11063).

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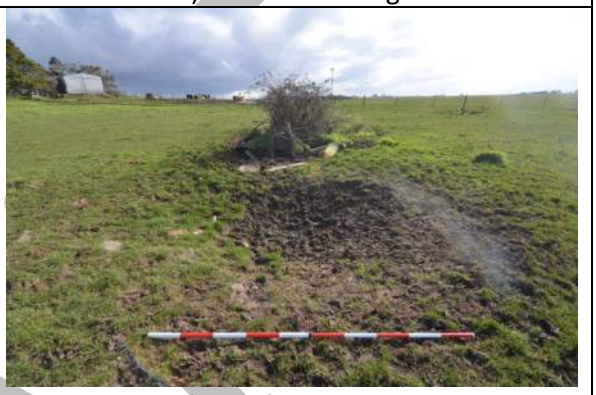
A) Shaft 6 looking north



B) Shaft 6 looking east



C) Shaft 6 looking south



D) Shaft 6 looking west



E) Drainage channel looking south with marked bricks



F) Depression, possible well, in foreground with shaft 6 in background (looking west)



G) Shaft 6 and depression looking north west



H) Brick and rock alignment in vicinity of Shaft 6

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I) Shaft 6



J) Shaft 6



K) Convict 80-foot mark within ELWS tunnel

Figure 12: Photos showing the study area and features associated with the ELWS. Photos by Darren Watton 2019.

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3 Special considerations and due diligence

Background investigation has indicated a strong community response to the subdivision development and the heritage associated with the site.

This assessment represents due diligence on the part of the Baker Group. The Baker Group understand the potential archaeological and heritage significance of the site and the community concern regarding the assessment of this important place. The Baker Group have engaged Southern Archaeology early in the process in order to understand any potential obligations or protection needs with regard to the ELWS and in particular Shaft 6 and the associated infrastructure identified at the site

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4 Archaeological zoning

There are clear archaeological remains of the for the ELWS (in particular, Shaft 6) located at the study area (see **Figure 12** above). There are also other potential archaeological features within the vicinity of Shaft 6. These are recognised in the ELWS Datasheet (Pl. Id. 11063) as a potential well. This can be seen at the site as a depression about 2.5m to the north east of Shaft 6. There are also surface features south east of Shaft 6 which are consistent with a brick and stone alignment. The following map shows the location of the archaeological sensitivity zones associated with Shaft 6 and the ELWS (**Figure 13**). This is described in more detail in **Section 10.1.3**.

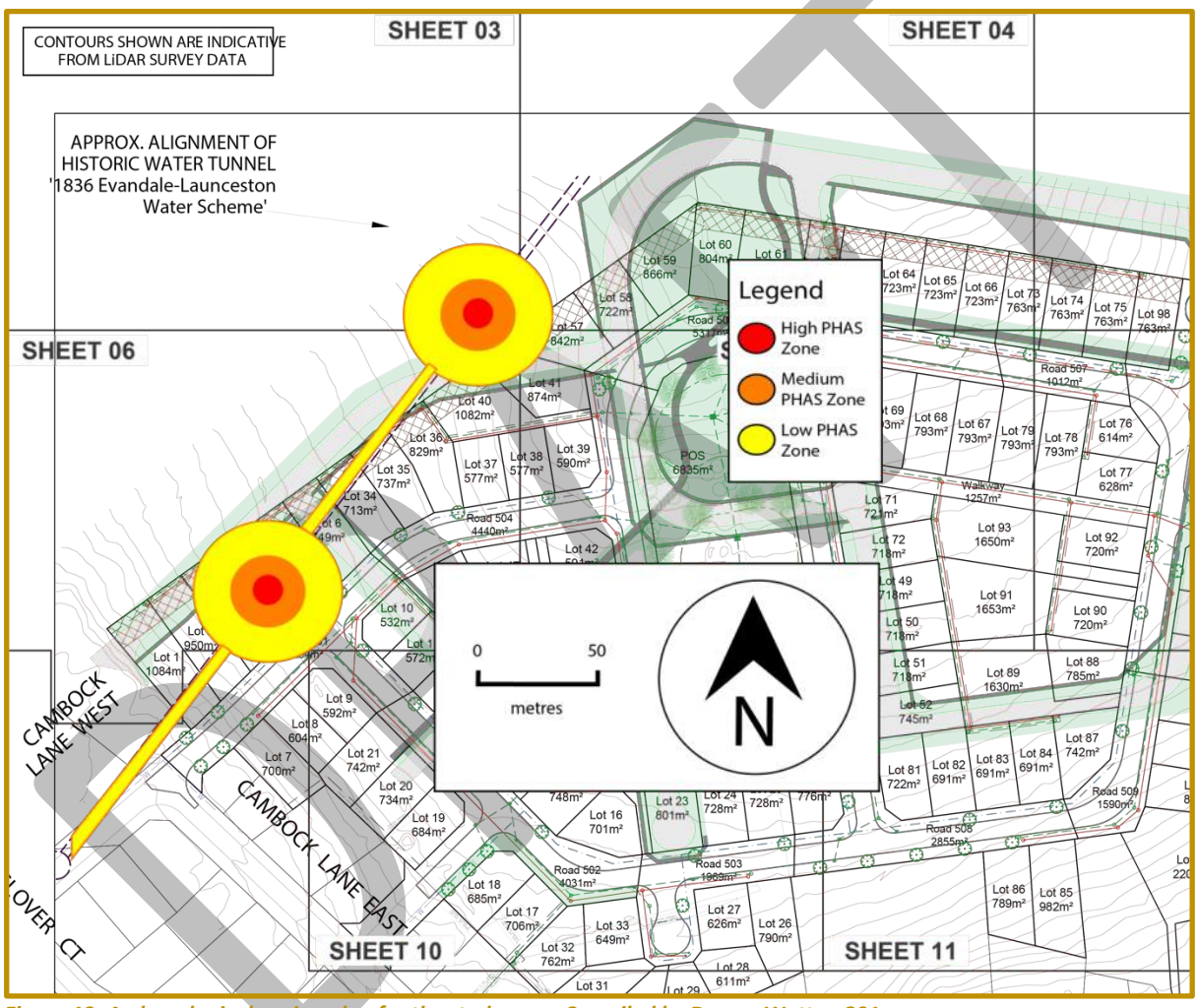


Figure 13: Archaeological zoning plan for the study area. Compiled by Darren Watton 201

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5 The contents of this report

5.1 The SHAP

5.1.1 The SHAP aim

The outcomes of the SHAP include the following components (THC 2014):

- An illustrated site and disturbance history (AoD);
- An evaluation/assessment of historical archaeological potential (AoAP);
- An assessment of archaeological significance (AoAS), with (if applicable):

    1. The nature of information that may be derived from a study of the place
    2. A summary of the current information available in the particular research area, and
    3. A statement which clearly identifies the contribution, or the potential contribution, the information may make to an understanding of Tasmania's history (criteria [c])

- Places identified as having low historical significance.

The SHAP should be 'provided to the Heritage Council for endorsement as part of the application process, even if the place is identified as having low historical significance' and 'due to the predictive nature of assessment, there is always the possibility of unexpected finds being made after the works have commenced' (THC 2014). The AMS report considers and compliments the outcomes of the SHAP but also considers the nature of the development within the archaeologically sensitive zones (**Figure 13 above**).

5.1.2 The SHAP objectives

The objectives of a SHAP report are to:

- Establish the impact of the proposed development on archaeological features that may persist within the study area;
- To contribute to the understanding of the development and the social structure of the site and the surrounding areas;
- To establish if there is any evidence of European use and development of the subject site from the time of British settlement in 1804;
- Detail any relevant legislative obligations;
- Undertake preliminary research into whether any Aboriginal sites or cultural material exist on the site and make recommendations accordingly, and;
- To produce a professional report and make recommendations about whether further archaeological monitoring or excavation of this site is required in anticipation of the re-development based on the subject area's sensitivity and significance.

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5.2 The Archaeological Method Statement (AMS)

5.2.1 AMS aim and objectives

The main aim of the AMS report is to provide an archaeological methodology for controlled archaeological excavation (test pitting) at the Baker Subdivision study area as the preferred option for the site (See **Section 11**). Methodology will consider the archaeological potential, disturbance and significance of the site, based on requirements outlined by the SHAP and Heritage Tasmania (HT).

The AMS also aims to:

- Provide an archaeological methodology based on recommendations outlined within the SHAP report and to tailor these to suit the requirements of the current development.
- Collect, record and document the site and any artefacts associated with the site.
- Create a set of research questions (ARD questions) for the site which can be answered during archaeological investigation of the site.

5.2.2 Limitations and constraints

This AMS report considers historical archaeological values within the confines of the statutory requirements of the *Burra Charter* (2013), *Historical Cultural Heritage* Act 1995 and the *Aboriginal Heritage Act* (1975).

The proposed subdivision works within the ELWS THR listing area (Pl. Id. 11063 – **Appendix 1**) necessitates the establishment of Potential Historical Archaeological Sensitivity Zones (PHAS) as determined by Southern Archaeology (**Figure 13**). These established zones drive the methodological recommendations made in this report.

While Southern Archaeology makes every effort in its investigations to research all aspects of a site's historical development, it cannot be held accountable for previous work inaccuracies and limited accessibility to data leading to omissions or oversights in this report.

All maps orientate North to the top of the page unless otherwise stated.

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6 The Tasmanian environment

6.1 Introduction

In order to understand the location and characteristics of the study area it is necessary to provide a brief overview of the areas environmental and geographical setting. This includes an assessment of local geomorphology, geography, geology, flora and fauna and climatic factors. Historical sites tend to be located in areas of optimum environmental and geographical conditions. For example, homesteads were often located in elevated well-drained positions that afforded good views of the surrounding area and in positions that were close to fresh water. Analysis of the local environmental and geographical features may help to contextualize the location and position of the sites and help with a broader understanding of occupation of the area.

Tasmania has 'a modified marine Mediterranean climate, where heat absorption and storage by the surrounding ocean produces abnormally mild winters and cool summers' (Reid et al. 2005:14). On the coast, maximum temperatures rarely fall below 10°C but in the mountains (above 1000m) temperatures can fall below 10°C for greater than six months of the year (Reid et al. 2005:14). Tasmania lies near the upper margin of the zonal wind system, the 'Roaring Forties' and this produces a marked precipitation gradient from west to east (Reid et al. 2005:15). Mountains in both the east and the west produce a rain shadow effect for the midlands region with some areas in the west receiving over 3600mm of rain per year and some areas in the east receiving less than 500mm per year (**Figure 14**) (Reid et al. 2005:15). Rainfall in the east is highly variable, while in the west it is reliable (Reid et al. 2005:18). The study area is within some of the driest areas in Tasmania receiving less than 750mm per year. The mean annual temperature is around 10 to 11° (**Figure 14**).

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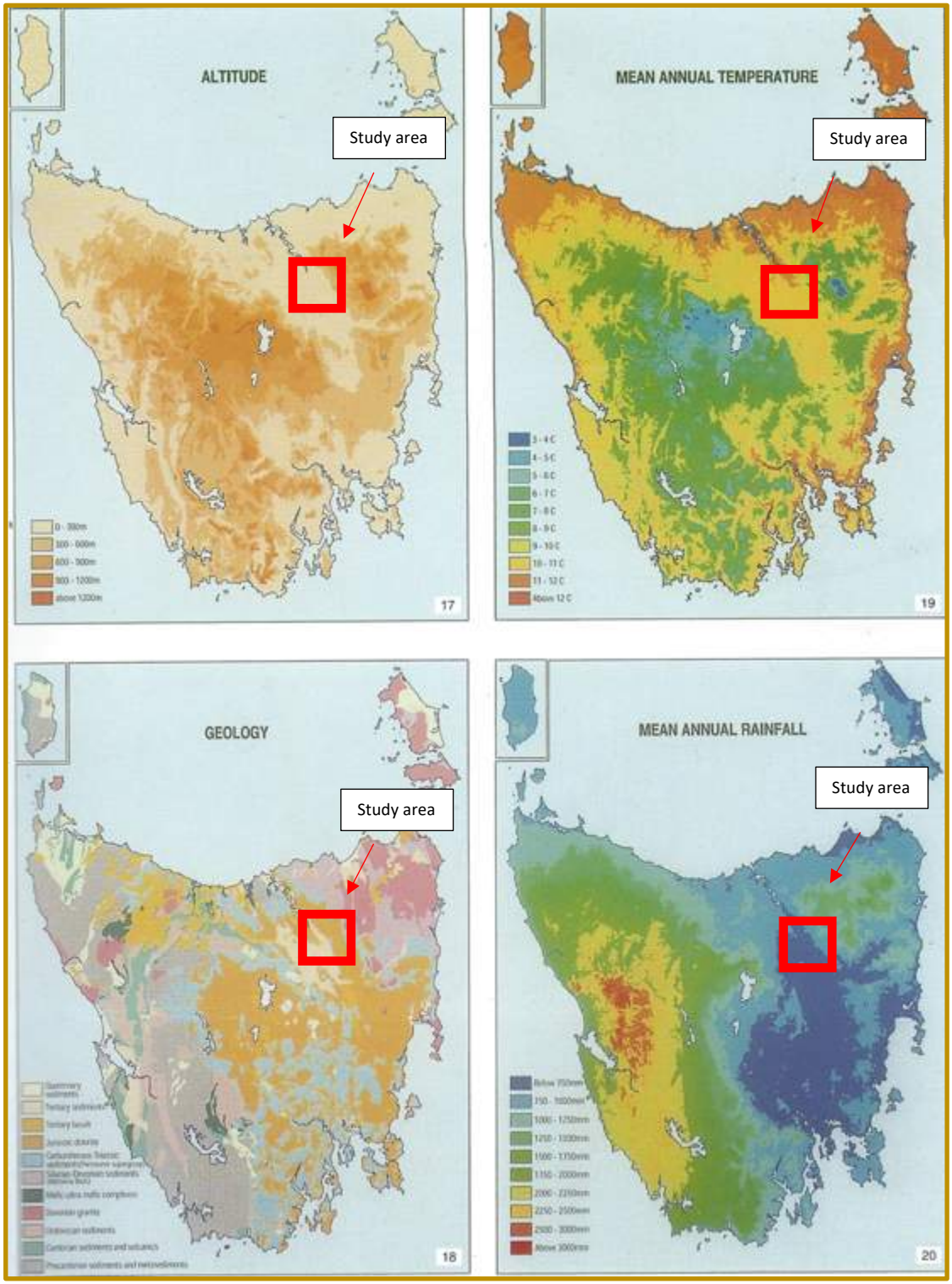


Figure 14: Geology, altitude, mean annual temperature and mean annual rainfall within the study area. Source: Reid et al., 2005.

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6.2 Geology

Figure 15 shows the geology of the study area in more detail. The study area is located on a plain of undifferentiated Paleogene – Neogene sequences. These are divisions (Paleogene – early division and Neogene – later division) of the Tertiary period and relate to the time that these deposits were laid down. The Paleogene period spans 43 million years (from 66 mya to 23.03 mya) and the Neogene spans 20.45 million years (from (23.03 mya to 2.58 mya).

To the east and north west are large areas of Tasmanian dolerite. The Springvale Creek valley (to the north) and the South Esk Valley (to the south) contains early tertiary deposits and Holocene alluvial (river), lacustrine (lake) and littoral (sea) deposits. There are patches of conglomerate gravel and grit associated with the Springvale Creek Valley, likely also deposited in the early tertiary period.

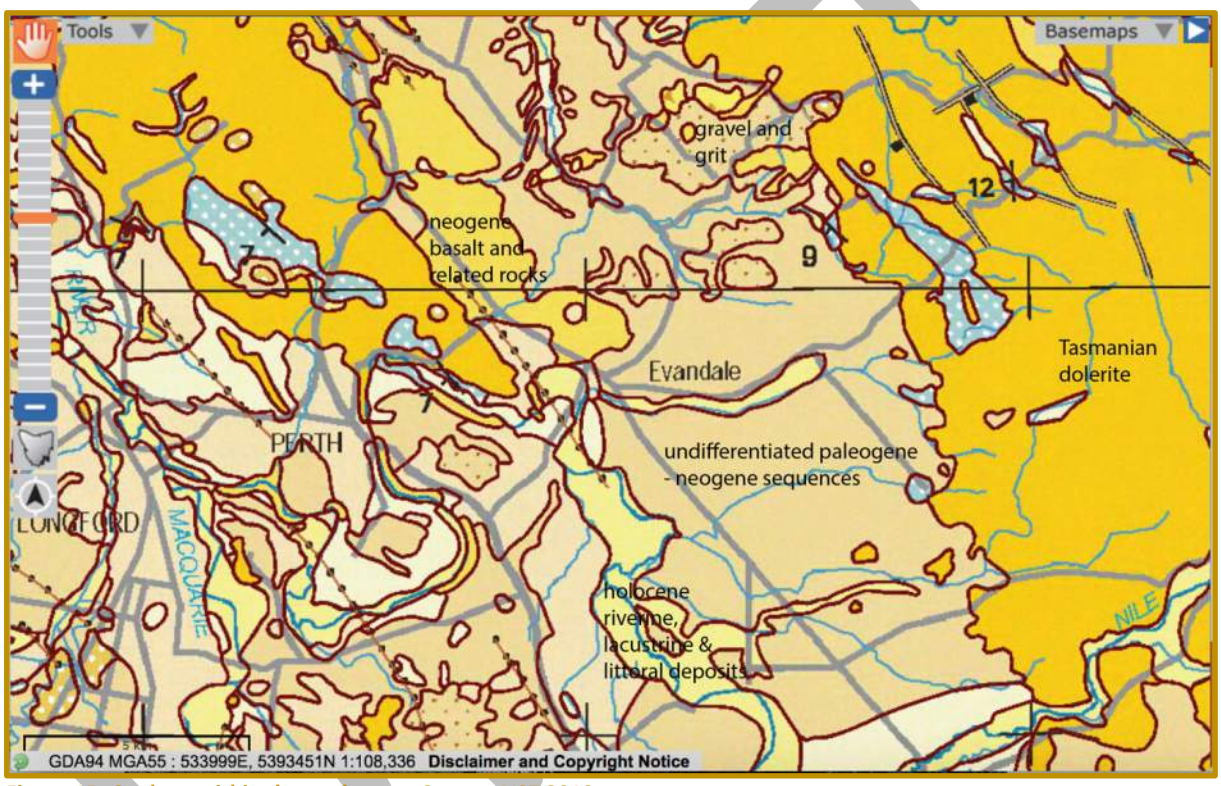


Figure 15: Geology within the study area. Source: LIST 2019.

6.3 Soils

Figure 16 shows the soil types in the region of the study area. The region contains a diversity of soil types formed in response to varying geology and environmental factors. Specifically, the study area contains chromosols as the dominant soil type.

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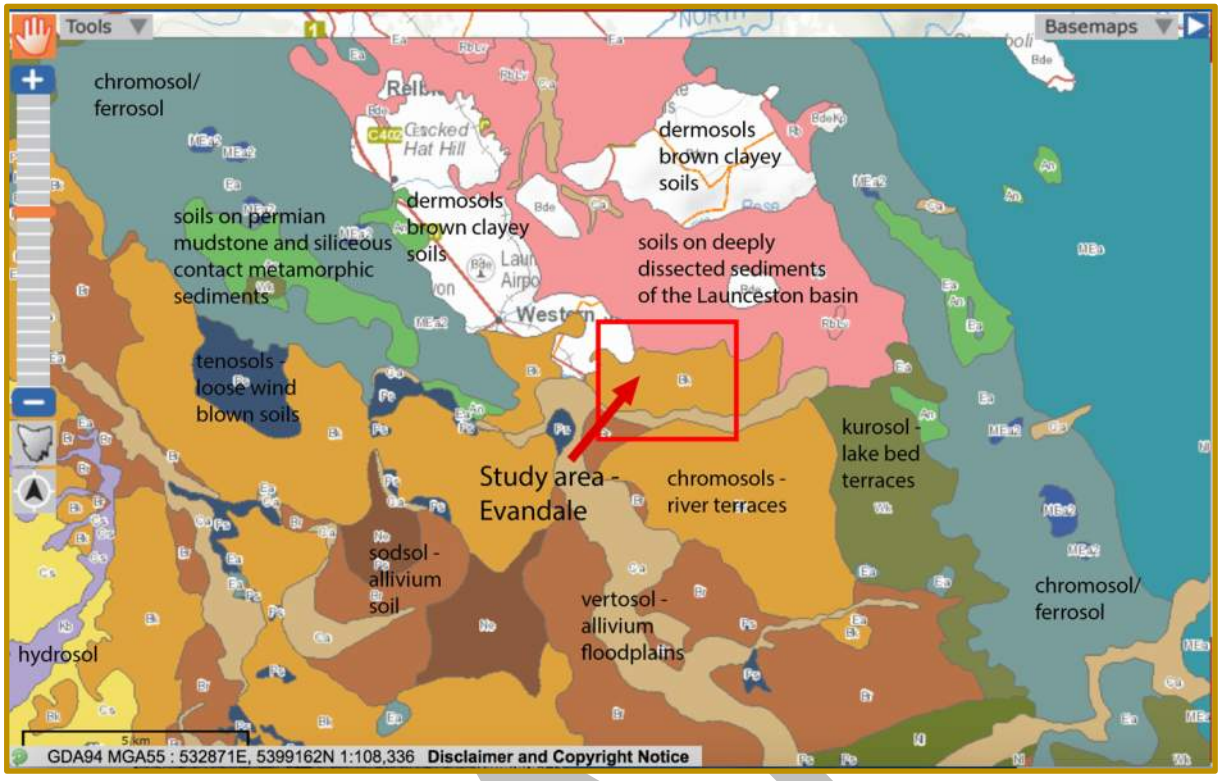


Figure 16: Soils in the region of the study area. Source: LIST 2019.

6.4 Vegetation

Figure 17 shows the vegetation types in the vicinity of the study area. The study area consists of agricultural land with grass pastures and urban areas. At the time of settlement, it was most likely dry schlerophyll forest with open patches created by Aboriginal burning regimes.

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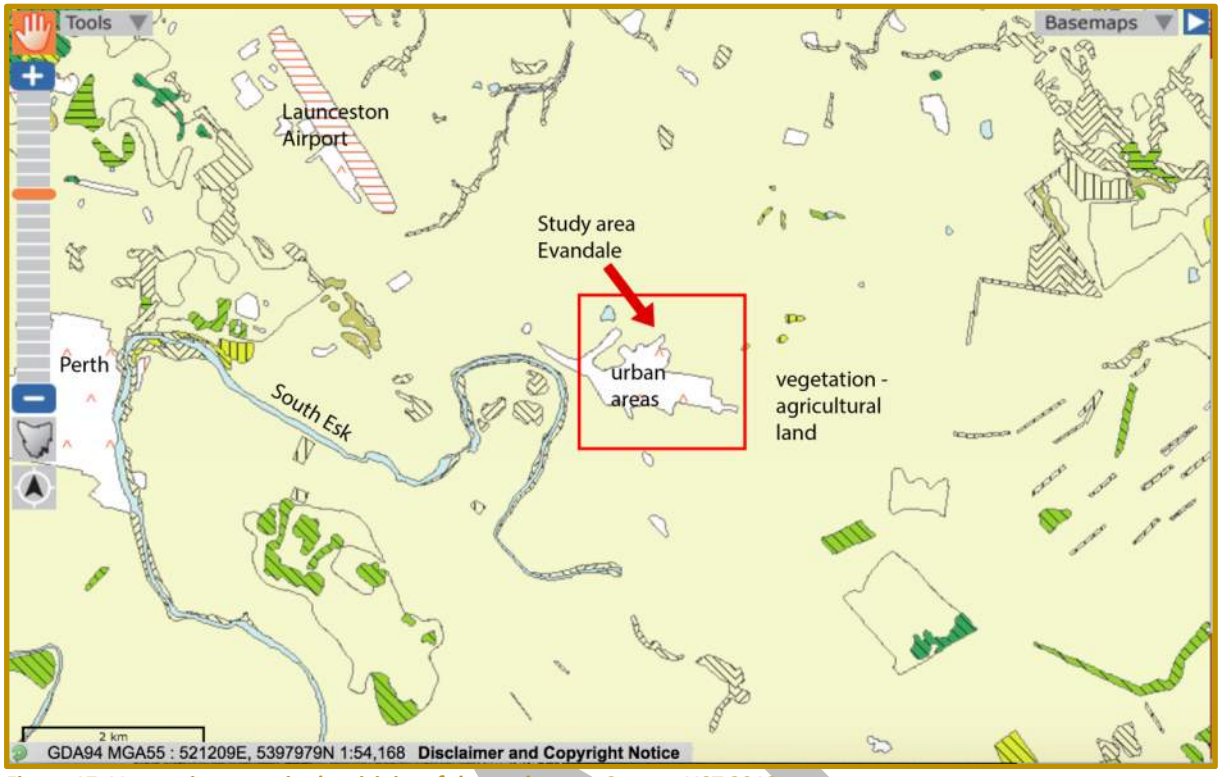


Figure 17: Vegetation types in the vicinity of the study area. Source: LIST 2019.

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7 Ethno-history

7.1 Overview

It is not the purpose of this report to provide a detailed analysis of Aboriginal history within the area (that is usually completed within an AHAR or other report to AHT if required). However, this brief analysis is provided to satisfy requirements under the *Aboriginal Heritage Act* (AHA) 1975 (and to advise whether an AHAR may be required) and to detail the potential for Aboriginal material to be found within the study area.

7.2 Aboriginal social relations in Tasmania

Ryan (2012:11) determined that upon European contact the Tasmanian Aborigines operated within a complex social system of three units (**Table 2**):

- The domestic unit, or *family group* (or sometimes called the *hearth group*);
- The basic social unit, or *clan* (or sometimes band);
- The political unit, or *nation*.

Ryan (2012:11) suggests that it is the family group, clan and nation that Aboriginal people prefer as the naming system for their community. This will be the terminology used in this report. Much of this information is derived from Robinson's observations, made when many of the Tasmanian Aboriginal groups were already largely displaced after around 30 years of contact and conflict with Europeans (Tindale, 1974:325). A summary of the social organization of each social system is shown below in **Table 2** and the clans associated with this area are shown in **Table 3 and Figure 18** (Tindale 1974:324-350; Ryan 2012). Detail of the clan associated with study area is shown in **Table 4**.

Social Unit	Approx. Size at 1803	Characteristics
Family Group	Two to eleven individuals	- Husband, wife, children, relatives and sometimes friends - Cooked around single fire/occupied hut - Monogamous or usually monogamous. Men and women married at maturity and were generally around the same age. - Often married quickly after a spouse's death and assumed responsibility for children. Divorce, infidelity, jealousy and raids for women occurred. - Division of labour – women collected shellfish, vegetable foods, hunted possums and other small animals and did many of the household chores; men manufactured weapons, hunted and fought other groups.

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Clan	48 known clans in Tasmania; could have been up to 100 originally (Ryan estimates 70-85 clans); Estimated 40-50 individuals per clan	- Led by a chief, usually a man of note with prowess as a hunter/fighter - Clans were made up of a chief, his family and other family groups who controlled a foraging area. - Clans had seasonal and ceremonial obligations, which brought them into contact with other clans and nations. - Clans usually went to other clans for marriage. - Clans were the basic war-making unit in disputes but cooperation between clans against a common enemy was common, usually in the form of ambushes or personal fights.
Nation	Approx. Nine Nations; Conservative estimated population in Tasmania in 1803 – 2500-5000 (Robinson estimated 6000-8000; Jones [1974] 3000-4000)	-Agglomeration of clans that lived in a contiguous region. - Usually shared a common language or dialect (although this could be shared by other nations), cultural traits, usually intermarried, similar pattern of seasonal movement, met together habitually for economic and ceremonial reasons and who shared a common relationship with outside groups for conflict, trade or other reasons.

Table 2: Social units in Tasmania. Source: Ryan 2012.

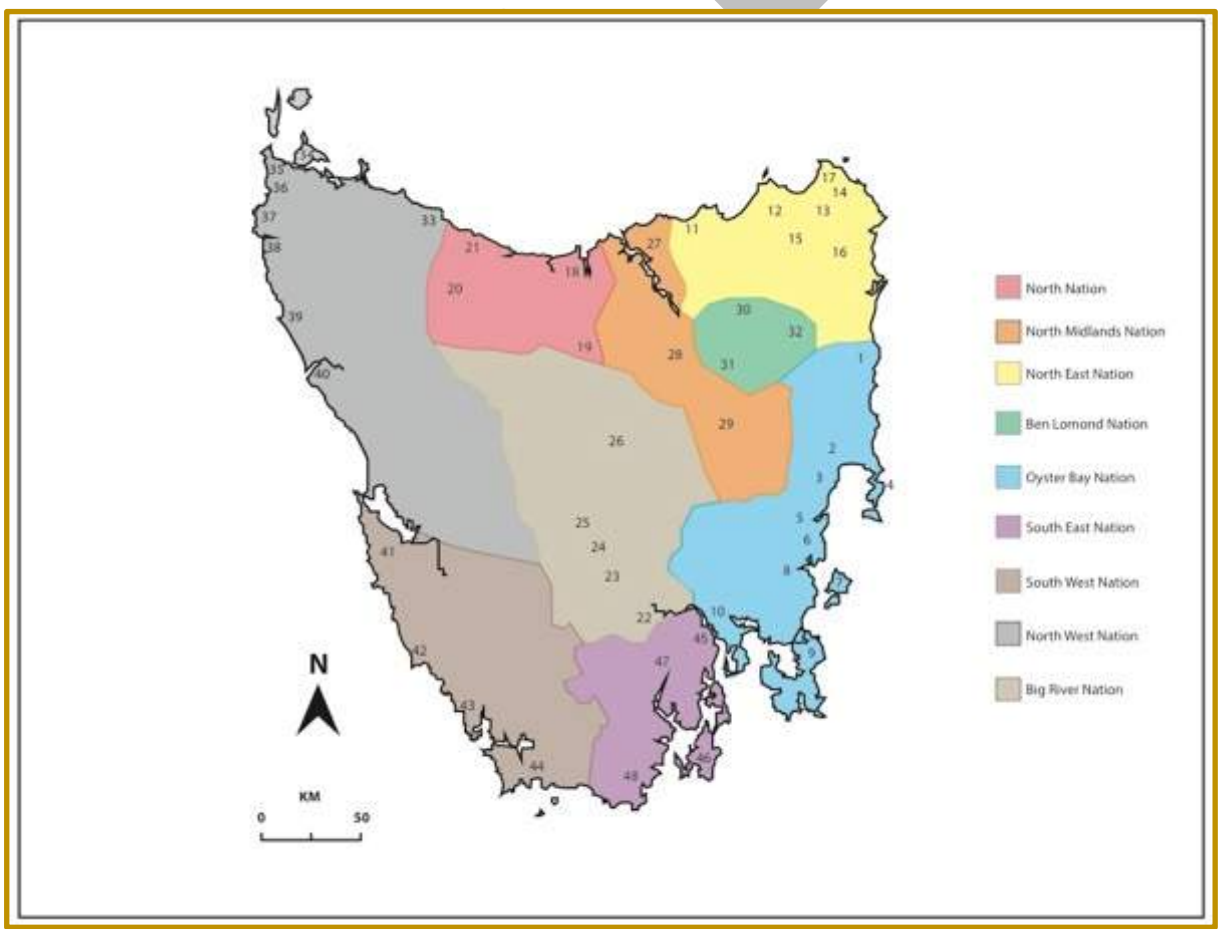


Figure 18: Location of Aboriginal Nations and Clans within Tasmania. Source: Ryan 2012.

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Nation	Clan	Clan Location	References and Regional Reports
North Midlands	1. Leterremairrener 2. Panninher 3. Tyerrernotepanner	East Tamar River Norfolk Plains Campbell Town	**Reports:** Kee, 1990

Table 3: Clans within the Northern Midlands Nation. The Panninher is the most likely Clan to have occupied the Study area. Source: Ryan 2012.

Nation	Characteristics/Features	Comments
North Midlands	Min. est. population – 300-400 individuals (including two extra clans, which are thought to have disappeared after contact [Ryan, 2012:29]). Controlled both coastal and coastal regions. Had extensive relations, not always good, with the North, North East, Big River, Ben Lomond and Oyster Bay nations because they had one of the largest kangaroo hunting grounds in their region at Campbell Town and rich birdlife along the Tamar. Winter some clans went to Oyster Bay for sea life while others foraged around the Tamar for shellfish and eggs; In spring returned to hunt kangaroo near Campbell Town and in summer hunted in the Great Western Tiers. Autumn saw a return to kangaroo grounds at Campbell Town. In January, some clans went mutton birding. All clans relied on reciprocal arrangements to gather ochre.	This nation relied upon extensive trade and reciprocal arrangements with other nations due to its hunting resources and the dryness of its region, especially in the midlands. Eumarrah was noted for opposing the colonists and was from this area.

Table 4: Characteristics of the Northern Midlands Nation. Source: Ryan 2012.

7.3 Midlands Nation and Clans (and the study area)

This area is the traditional region of the North Midlands Nation (**Figure 18 and Figure 19**). The clan associated with this area is the Panninher (**Table 3 and Table 4 and Figure 19**). The Panninher clan spent winter on the lower reaches of the Tamar where shellfish and swan eggs were collected (Ryan 2012:31). In spring the clan would have travelled south to kangaroo hunting grounds around Campbell Town possibly travelling through the study area following the major local rivers. This travel would have focused on the rich resources of the area including around the South Esk and the Macquarie and Lake Rivers and the local hunting and foraging opportunities. Key known sites such as the stone quarry on Mill Road and the large artefact scatter at Native Point near Perth was most likely a focus of camping and resource gathering in the area. In the summer the clan would have travelled further south to the Great Western Tiers and then possibly travelled to the west for the ochre at Mount Van Dyke (returning to their own country in autumn) (Roth 1890; Ryan 2012:31). It may be predicted that isolated sites and small camping areas may have been located within or close to the study area.

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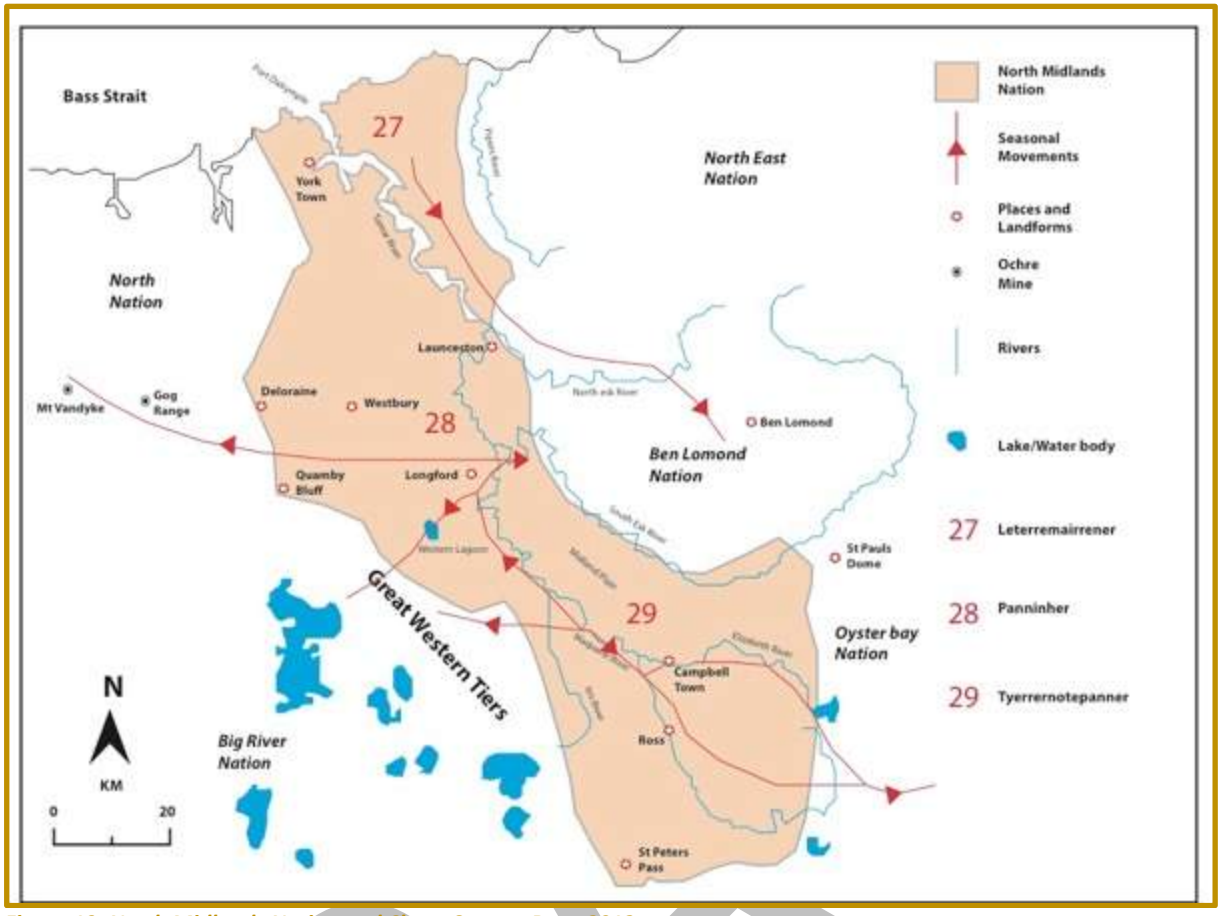


Figure 19: North Midlands Nation and Clans. Source: Ryan 2012.

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8 Historical development at the study area

8.1 Overview

This preliminary SHAP and AMS is aimed at informing the proponent of options and recommendations regarding the site. This report does not aim to provide a detailed background history of this site at this time. An overview of the history of the study area **is** provided based upon information in the THR ELWS. Datasheet (Pl. Id. 3871) accessed 2019) and some information collected during research for this report. **In addition to this some historical plans have been included here in Section 8.3 to assist in understanding the historical chronology of the site.** There has been, however, in the course of this investigation been the collection of much information as background for this project. It is anticipated that a more detailed background will be included in the final report and artefact analysis once archaeological excavation or other work associated with the study area has been completed.

8.2 Background history/Historical summary

8.2.1 Trafalgar and Cambock Houses – Capt. Andrew Barclay

Capt. Andrew Barclay (1759-1839) arrived in New South Wales from England in 1816. He immediately travelled to Van Diemen's Land and applied for a land grant after finding the climate more to his liking than New South Wales (Maddock, Date Unknown (DU)). Governor Macquarie granted him 500 acres north of the study area (and an allotment in Launceston) in 1816 and it was here that he built Trafalgar house (see **Figure 24** below). Barclay established himself as a merchant in Launceston and he is also known for growing fine sheep on his properties outside of Launceston.

In 1825 he was granted a further 500 acres which he called Cambock and it is on this property that the study area is located. Barclay built Cambock House about 200-300m south of Shaft 6 in 1826 (Maddock, DU). Cambock was a large estate house built using convict labour (see **Figure 24 to Figure 26** below).

Cambock was owned or leased by a succession of people after Barclay's death in 1839. It was a farming property during all of this time. In 1889, the Cheek family purchased the property, continued to farm it until 1970 when it was sold to the Wilkes family. Cambock house was demolished soon after this. Much of the property was subdivided in 1989 (Maddock, DU). The study area was sold to the Baker Group in 2019. The Evandale to Launceston Water Scheme was commenced in 1836 and abandoned in 1839. Work was underway at Shaft 6 and the associated tunnel in early 1837 and must have been a very busy and exciting work area when viewed from Cambock House (**Figure 25**).

8.2.2 The Evandale to Launceston Water Scheme (ELWS) – Governor Arthur's 'Magnificent Failure'

After its abandonment in 1839, William Lushington Goodwin, the editor of the Cornwell Chronicle and chief protagonist for a better water supply to Launceston, described the Evandale to Launceston Water Scheme as Governor Arthur's 'magnificent failure' (Harris 1998, Trafalgar Productions 2009). In early 2002, the Institute of Engineers Australia described it as the 'greatest civil engineering feat ever undertaken using convict labour' (Trafalgar Productions 2009). The Evandale to Launceston Water Scheme is one of the most interesting heritage sites in Tasmania and permanently listed on

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the Tasmanian Heritage Register (Pl. Id. 11063) as significant at a national level. The scheme satisfies many of the criteria set out in the *Historic Cultural Heritage Act* 1995 but notably from an archaeological point of view is recognised under Criteria (c) of the *HCH* Act 1995 for (See also **Appendix 1**):

> *The surface and subsurface features and deposits of the Evandale to Launceston Water Scheme [that] constitute the largest industrial archaeology site in Tasmania. There is high potential for the remnants of the engineering works to provide knowledge of the early design and construction practices whilst the remnants of the associated convict stations may provide knowledge of convict labour and life in early colonial Tasmania. The information from the site may also contribute to wider engineering and industrial archaeological research frameworks within or outside Australia.*
>
> *(ELWS Datasheet Id. No. 11063).*

The idea to provide fresh water to Launceston from the South Esk at Evandale was first coined around 1834 (ELWS Datasheet 2011). Water for domestic use in Launceston at the time had to be collected from wells containing poor quality water or by cart from the North Esk (which was often brackish) or from Cataract Gorge or the South Esk (which was expensive and difficult to access) (ELWS Datasheet 2011). A reliable supply of water from the South Esk via tunnels and canals would provide suitable water as well as alternative industries, such as mills placed on aqueducts along the way. Work began on this ambitious scheme of tunnels, canals, mills, aqueducts and convict stations (built to house the convicts working on the scheme) in 1837. Work progressed quickly with the first tunnel at Springvale (just south of the Launceston Airport), well underway by early 1837. It was found, however due to faulty levels or difficult rock conditions that this section of tunnel was not viable and this site was abandoned for an area further north and within the township of Evandale. A new tunnel with ventilation shafts (to provide air to tunnel workers, to facilitate access to tunnel diggings and to allow easier removal of material) was commenced in 1837 (see **Figure 23**). These shafts also allowed work to be undertaken at numerous sites which made construction faster and more efficient. Shaft 6 at the study area is one of these shafts with each shaft about 150m apart. Nine shafts (of varying widths and depths) are known to have been constructed.

The tunnel complex extended northwards about a kilometre from the South Esk where it became a canal from here to Windmill Hill in Launceston. The scheme was to follow contours around the landscape. A series of cast iron pipes were planned to reticulate water from Windmill Hill to residents. The total length of the scheme was about 22 kilometres. The building of the tunnel was dangerous and there are convict deaths recorded in the Evandale cemetery (Trafalgar Porductions 2009).

There were convict stations built to accommodate the convicts working on the tunnel. The two most notable were the Kings Meadows Convict Station at Kings Meadows (KMCS - re-found and recorded by Southern Archaeology in 2019) and the Springvale (or Morven) Convict Station (MCS) at the southern end of the Airport. Both were important with the Morven Convict Station probably able to accommodate over 100 men with it being the site where most of the bricks used in the scheme being made. The Morven site was visited in July 2019 by Southern Archaeology and many foundations and materials were observed at the surface over the site. The Kings Meadows Convict Station was a large building probably able to accommodate over 150 men. Both convict stations had associated buildings critical to the operation of the stations (**Figure 30 to Figure 32**). There were probably other stations along the way in addition to the KMCS and the MCS.

The scheme was abandoned in 1838 due to disputes between the colonial government over a water rate to be charged on the scheme designed to compensate landowners whose properties were

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affected or damaged by the scheme. This is interesting as it could be speculated that the landowners were set to benefit from a reliable water source on their property which would potentially also add value to their properties. However, it is known that the damage to a property could be great with Andrew Best, the lessor of the property where the Kings Meadows Convict Station was located, winning compensation from the colonial government in the late 1830s due to loss of timber income (Watton and Edmondson 2019).

After it was abandoned the ELWS was generally forgotten. Land subsidence and filling obscured the tunnel entrances and many of the shafts. Further land subsidence uncovered the tunnel at Springvale in the early 1900s. During World War 2 (and particularly after the bombing of Darwin on the 19th February 1942) interest in using the tunnel was rekindled and some of the area at Springvale was dug for trenches for gun emplacements and private slip trenches to protect the Launceston Airport and individuals in case of attack. Further land movement re-covered the tunnel entrance here after this time.

Shaft 6 was rediscovered by accident in the 1970s. John Cheek, whose family owned the block at the study area nearly fell into the shaft when clearing debris in the area. The shaft had a rotting wooden cover at the time. John remembers a deep brick lined shaft with, well made, with arched tunnels heading both directions at the base (John Cheek Pers. comm. 2019).

Shaft 6 is described in the ELWS datasheet (ID. No. 11063) as being vertical brick-lined shaft approximately 22.25 metres deep and about 1.06 metres wide. John Cheek remembers filling in the shaft in the 1970s with metal baling wire (John Cheek pers. Comm. 2019). The surface had been disturbed by a backhoe in the filling process. A tape measure was put into the shaft during the site visit in 2019 and found to be about 2400mm deep. The shaft remains open at this time.

Interestingly, there is a depression to the north east of Shaft 6 (approx. 2.5 metres). This depression is noted in the THR listing as possibly a brick-lined well. This is possible and the structure may pre-date the shaft and be associated with building the shaft giving it a high level of significance. Its association to the ELWS is, however, unclear at this time. Other brick and stone alignments in the vicinity are also curious. These may be associated with other associated structures or a gantry foundation as has been speculated by Southern Archaeology.

In the late 1990s local residents with the support of the Northern Midlands Council uncovered the tunnel entrance at Springvale revealing a largely intact tunnel. They also uncovered Shaft 2 at High street (a shaft over 2000mm wide).

Figure 20 is a text box summarising the ELWS. The ELWS datasheet (Pl. Id. 11063 – overviewed below) records the Kings Meadows Convict Station (KMCS) at Relbia around 2 to 2.5 kilometres to the south east of the now known site of the KMCS (Watton and Edmondson 2019). It is important also to note that the ELWS datasheet suggests there may be other infrastructure in the region that is unknown and associated with the ELWS. **Figure 21** is a map showing the location of the ELWS and associated infrastructure.

Figure 12 at the beginning of this report shows some photos relevant to the ELWS.

More information on the ELWS is also available in:

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Simon Harris, 'A Magnificent Failure – Governor Arthur's Water Supply Scheme for Launceston from the South Esk at Evandale', Report for the Institute of Engineers (Tasmania) and the Evandale Bicentenary Group, 1988

The Evandale to Launceston Water Scheme (ELWS) (THR Listing Pl. Id. 11063) (taken from the ELWS THR datasheet accessed 2019).

The ELWS (1836-1838) was designed to supply water to Launceston from the South Esk River at Evandale via more than 20km line of tunnels and open aqueducts. It was to be with a gradient that would gravity feed water to Launceston.

The tunnel components where to be constructed under the village of Evandale and 'comprised two separate attempts at tapping in to the South Esk River and transferring water through to the North Esk catchment around Springvale Creek' (ELWS Datasheet 2019).

A single aqueduct was then 'to follow a meandering line through the landscape from Springvale Creek to Windmill Hill in Launceston, where it could be reticulated throughout the city by pipelines' (ELWS Datasheet 2019). The 'southern section of the aqueduct route currently passes through rural farmland to the east of Launceston Airport whilst the northern section of the route has been mostly built over by the subsequent urban development of south-eastern Launceston' (ELWS Datasheet 2019).

Due to conflict over the scheme and difficulties in its construction the ELWS was abandoned in 1838. It was never completed and sections of the scheme are still visible in the landscape between Evandale and Launceston including a tunnel entrance at Western Junction near the airport. It is also speculated that other infrastructure may also lay undiscovered in the area (ELWS Datasheet 2019).

At least two convict stations were built to service and provide accommodation for the convicts used to build the scheme – The Morven Convict Station located just south of the Launceston Airport on Springvale Creek and the Kings Meadows Convict Station (KMCS). The ELWS Datasheet has the KMCS incorrectly located at Relbia. It has now been found, through historical research and archaeological excavation, to be located at 5 Dundas St. Kings Meadows. The previously identified site (which according to John Dent has artefacts at the surface of the site) may be the location of another station known as Nottman's Convict Station although this is yet to be shown to be correct.

A) The ELWS and the KMCS

Figure 20: Text box summarising the ELWS. Source: ELWS Datasheet accessed 2019.

8.3 Extra plans, photos and maps of Evandale and the ELWS

The following historical plans, photos, paintings, drawings and maps show the ELWS and relevant infrastructure (**Figure 21 to Figure 35**). These plans etc assist in understanding and contextualising the scheme.

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APPENDIX B

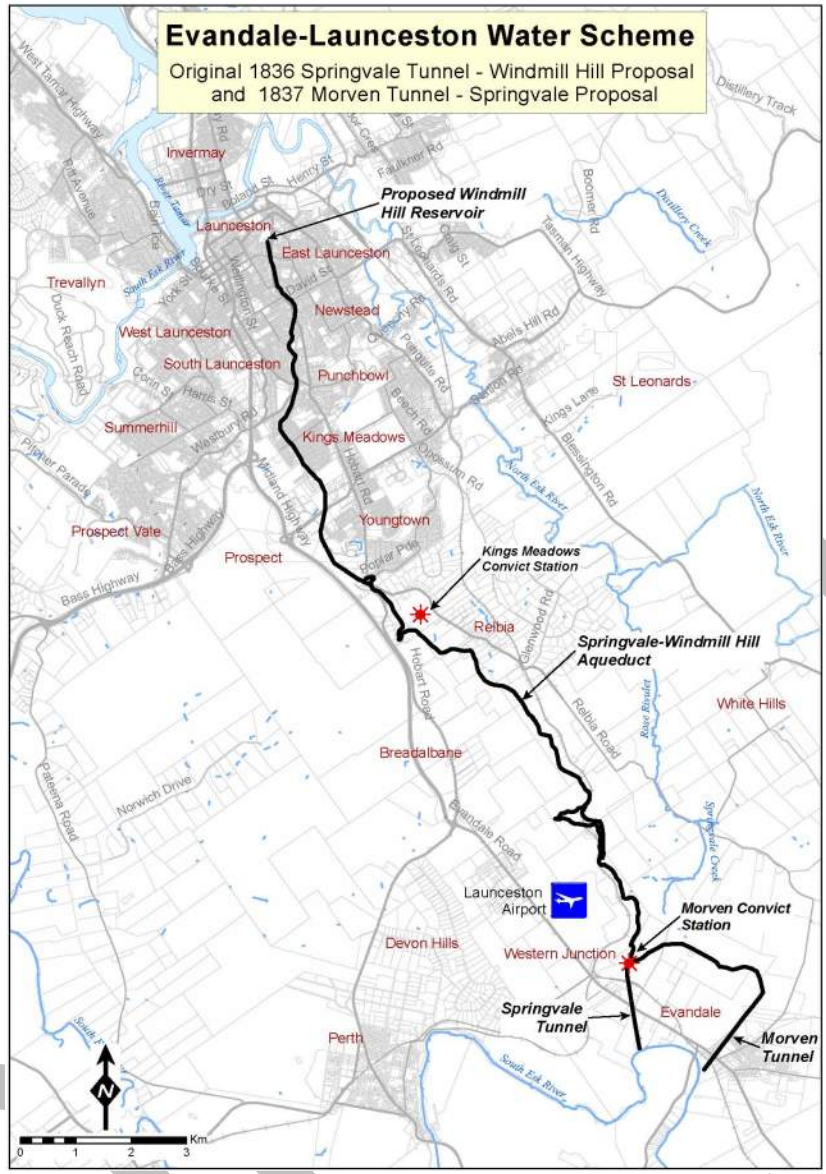


Figure 21: map showing the route of the ELWS and the main infrastructure associated with it. Note the KMCS is indicated in the wrong location and is now known to be located about 2 to 2.5kms to the north west of this location (Watton and Edmondson 2019). Source: ELWS Datasheet 2019.

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Figure 22: Early (c. 1830s) plan showing Evandale and the ELWS. This is the only known plan of the scheme. Source: Trafalgar Productions 2009.



Figure 23: Early plan (c. 1830s) with overlay showing the location of tunnels 1 and 2 and the Shafts associated with tunnel 2. Source: Trafalgar Productions 2009.

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Figure 24: Diorama completed by Laurie Wotherspoon at the Evandale Historical Society. This shows how the tunnel may have been built and the properties – Trafalgar (1816 – right rear), Cambock (1826 – left) and the Morven Convict Station (1836 – right foreground). Photo: Darren Watton 2019.



Figure 25: Painting of Cambock House by unknown artist. The small bush in the paddock in the center of the painting is possibly Shaft 6. Photo supplied courtesy of John Cheek 2019.

Exhibited



Figure 26: Painting of Cambock House done in the 1970s for John Cheek (it now hangs in John's home). Photo by Darren Watton 2019.



Figure 27: Drawing of the tunnel entrance at Springvale by unknown artist. Source: Trafalgar Productions 2009.

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Figure 28: Speculative drawing of proposed mills and aqueducts over creeks on the ELWS. Source: Trafalgar Productions 2009.

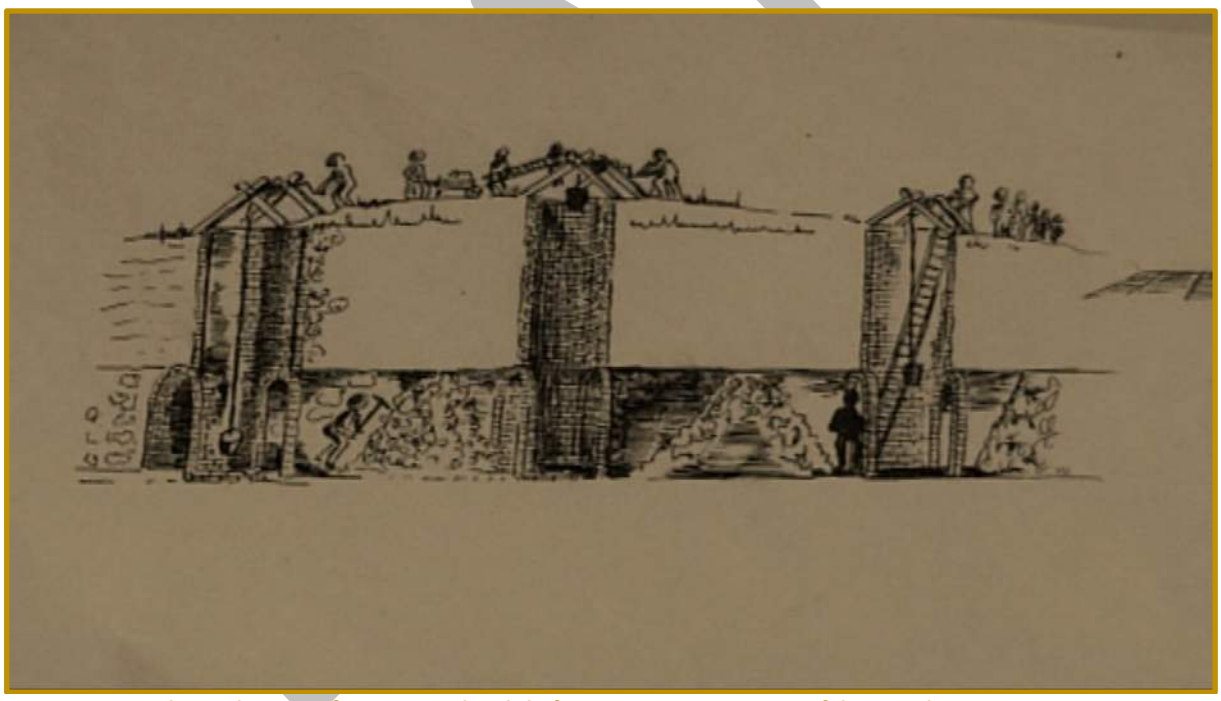


Figure 29: Speculative drawing of ELWS tunnel and shaft construction. Source: Trafalgar Productions 2009.

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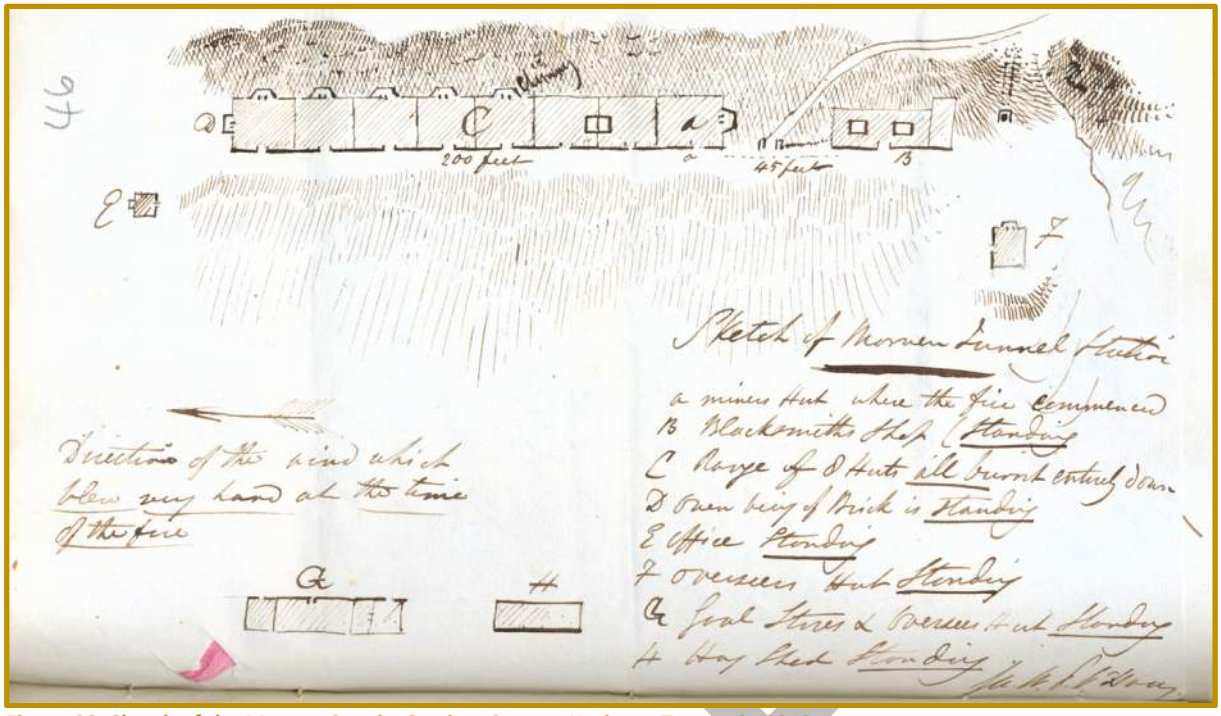


Figure 30: Sketch of the Morven Convict Station. Source: Heritage Tasmania 2019.

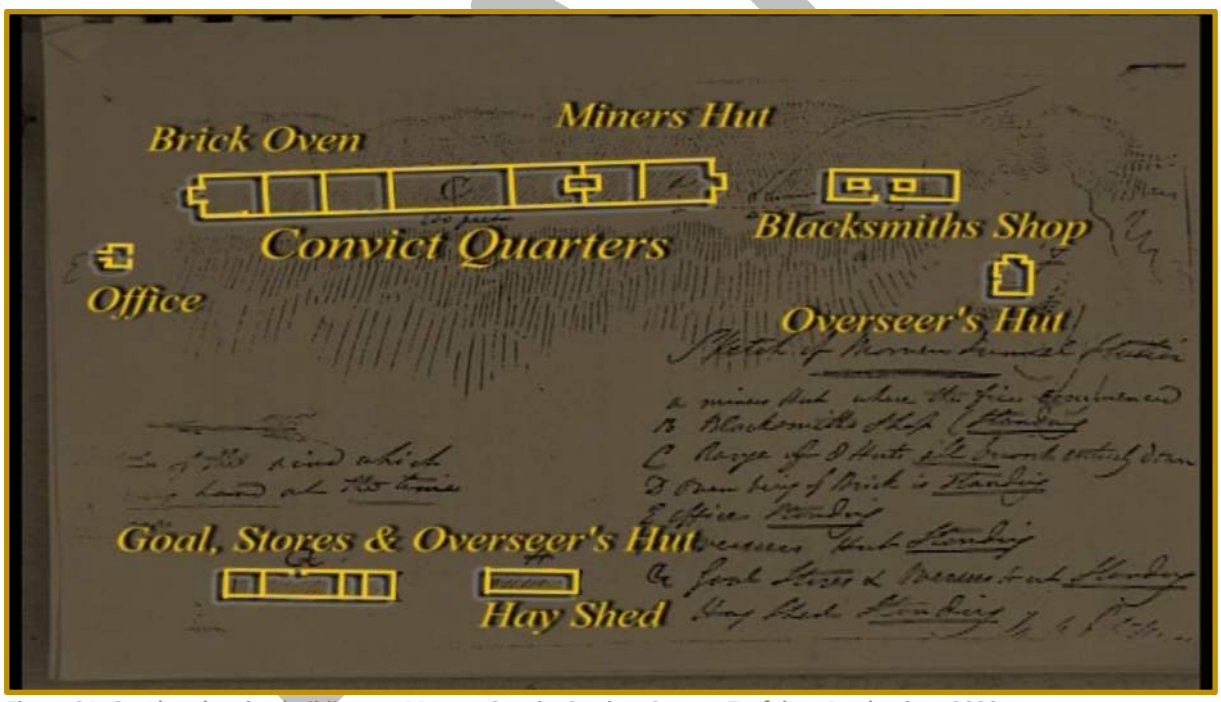


Figure 31: Overlay showing buildings at Morven Convict Station. Source: Trafalgar Productions 2009.

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Figure 32: Drawing showing possible layout and construction of buildings at Morven Convict Station. Source: Trafalgar Productions 2009.

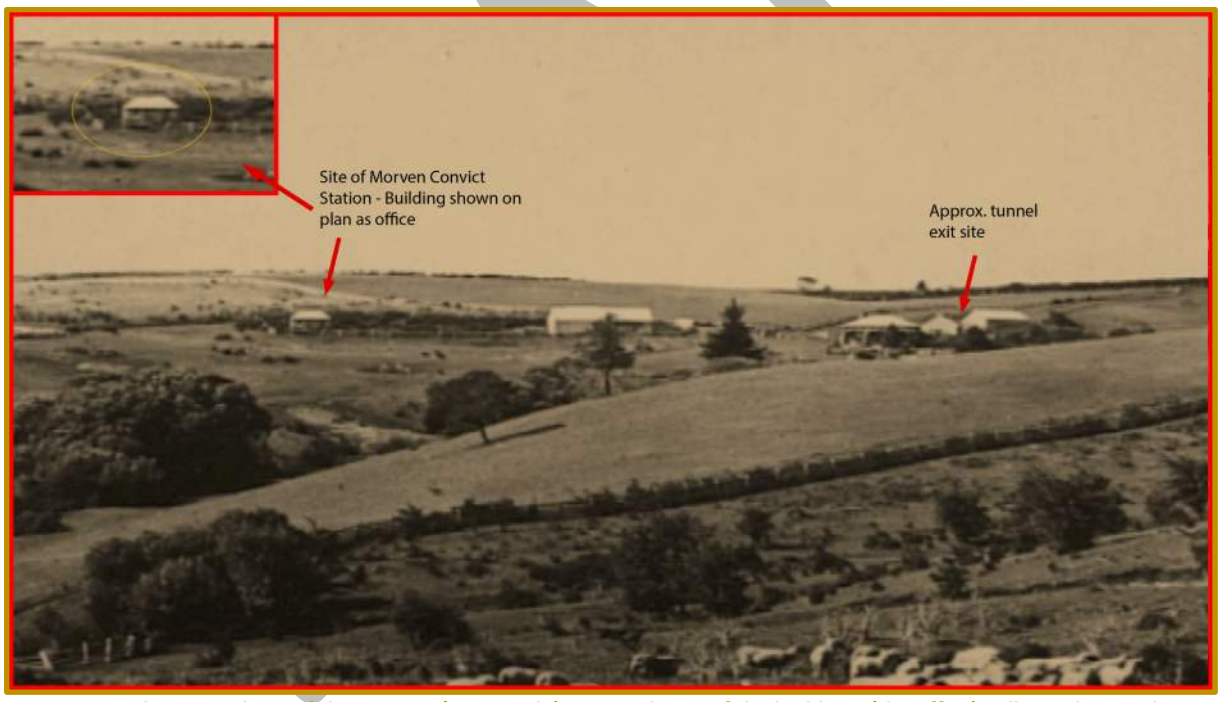


Figure 33: Early 1900s photo of the Morven (Springvale) area with one of the buildings (the office) still standing at the Morven Convict Station site. Source: Trafalgar Productions 2009.

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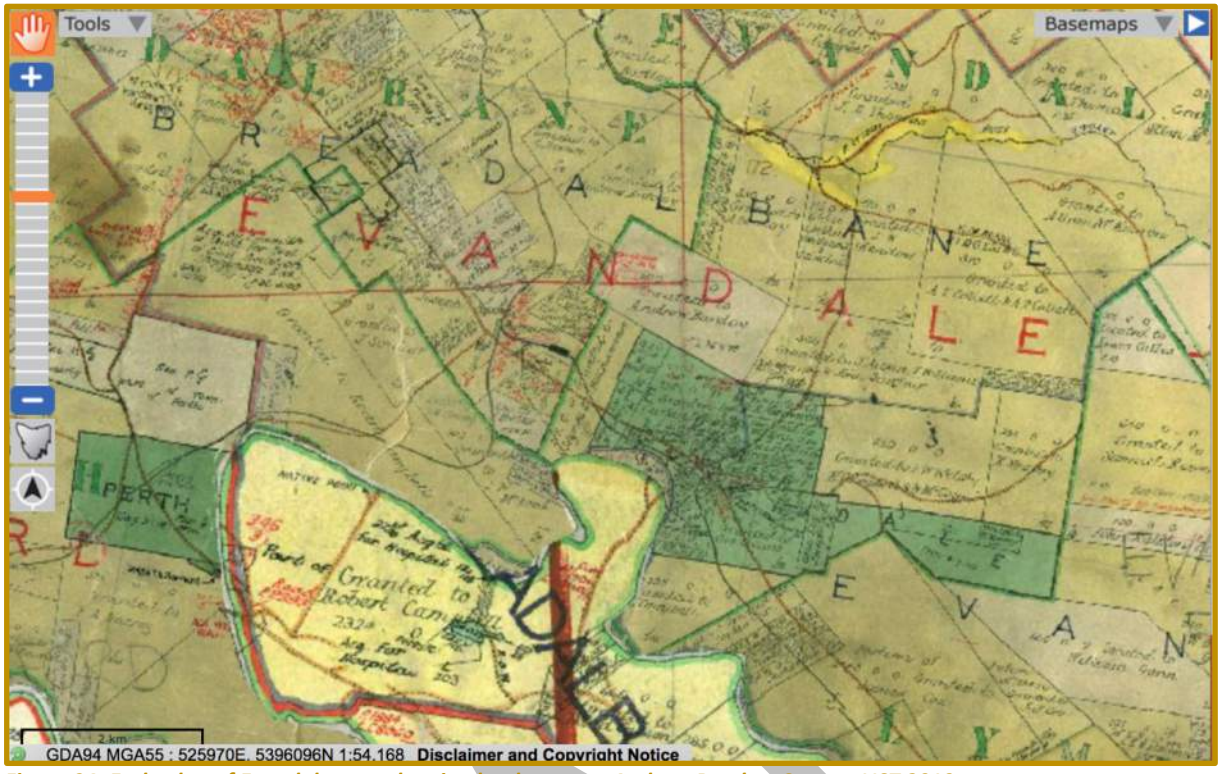


Figure 34: Early plan of Evandale area showing land grant to Andrew Barclay. Source: LIST 2019.

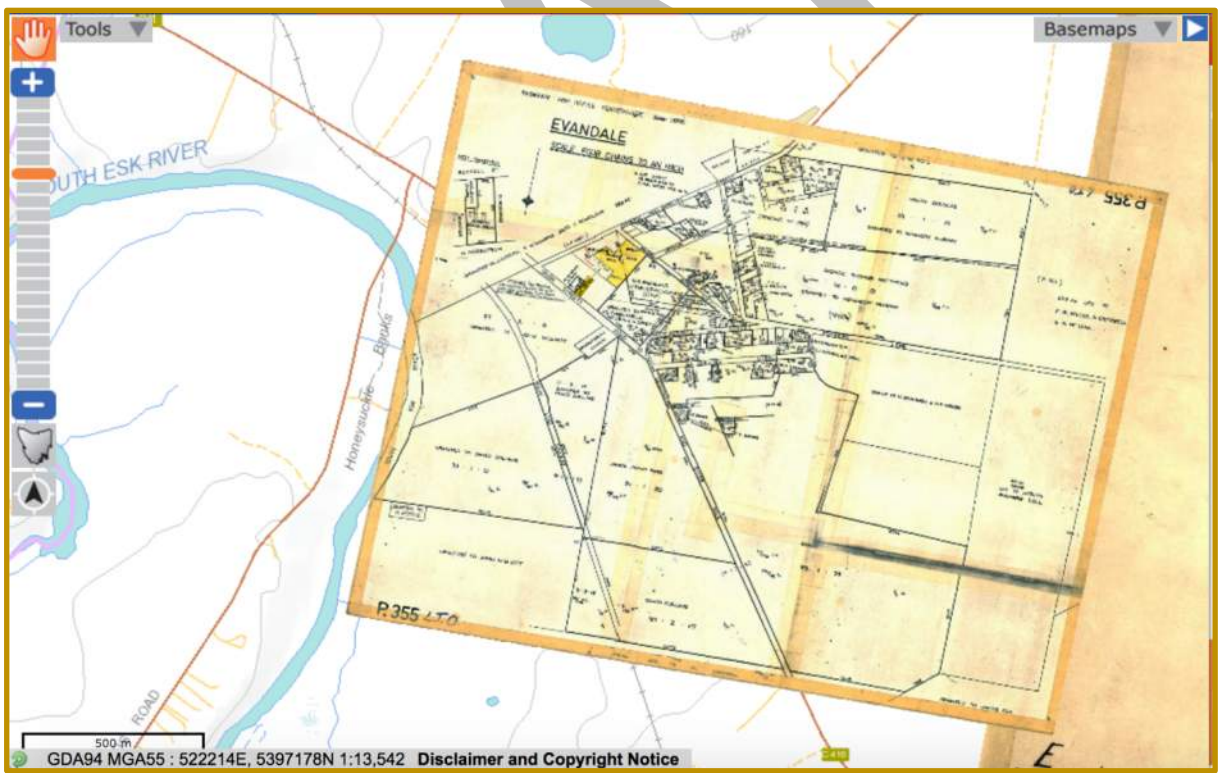


Figure 35: Early plan of Evandale. Source: LIST 2019.

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9 Legislation and approvals

9.1 Introduction

It is not the purpose of this report to provide a detailed analysis of the legislation that applies to the study area. The study area is listed on the Tasmania Heritage Register (Pl. Id. 11063) and is within Potential Historical Archaeologically Sensitive (PHAS) Zones designated by Southern Archaeology in **Section 10.1.3**. The study area is considered to be of very high archaeological potential and of very high significance (**Figure 41 in Section 10.1.3**). It is therefore being accorded appropriate archaeological assessment (in this case archaeological excavation), typically covered in an AMS document and within the legislative frameworks described below.

9.2 The Burra Charter (2013)

9.2.1 Overview

In 1964, an international conference of architects and others interested in the conservation of heritage places drew up a Charter which became known as the Venice Charter. This followed from an earlier document, the Athens Charter 1931, to 'provide guidance on the care of historic monuments' (Burra Charter, 1999:6 and 2013, Byrne et al., 2003:77; Logan, 2004:2-3). In 1977, the Australian ICOMOS (International Council on Monuments and Sites) met in the historic mining town of Burra in South Australia to review the applicability of the Venice Charter in Australia, resulting in the Australia ICOMOS *Guidelines for the Conservation of Places of Cultural Significance* or the Burra Charter (1999:6 and 2013; Byrne et al., 2003:4; Logan, 2004:3-4; Sullivan, 2008:109).

9.2.2 The Concept of Significance

The Burra Charter is the document that underpins heritage management in Australia and all Australian commonwealth and state heritage acts use listing criteria based on the five values identified in the Burra Charter (1999:80 and 2013; Byrne et al., 2003: 87-102). The five values identified in the Burra Charter (1999:80) are based on the concept of cultural significance. Cultural significance is defined within the Burra Charter (1999: 11 and 2013) as meaning 'the aesthetic, historic, scientific, social or spiritual value (the five values) for past, present or future generations' and that cultural significance is 'embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects'. Furthermore, the charter suggests 'places may have a range of values for different individuals or groups' (Burra Charter, 1999:11 and 2013). A key concept in this Charter is that, when managing a heritage place, it is important to understand its cultural significance and to prepare a statement of significance based on the places aesthetic, historic, scientific, social or spiritual values (Logan, 2004:4).

9.2.3 Tangible and Intangible Heritage

Tangible heritage are those features or things that are material and visible (touchable) within the landscape. Tangible heritage is usually clear and definable and are readily seen (observed) or discoverable (as is the case with archaeological remains often not directly visible in the landscape).

Intangible heritage is a little more difficult to define. The Burra Charter defines intangible heritage as:

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> The non-material aspects of culture that are valued. Expressions of intangible heritage include traditions, practices, performance, use, knowledge and language. Place and objects are tangible expressions (Burra Charter 2013).

Cultural significance and heritage values encompass both intangible and tangible heritage, especially through consideration of social and spiritual values. Methods of assessing cultural heritage must go beyond 'purely physical traces (the sites and artefacts), to also incorporate the intangible traces of people's attachments to place' (Burke and Smith, 2004:245).

9.3 The *Historical Cultural Heritage* (HCH) Act 1995 - Tasmania

The *HCH* Act 1995 promotes the identification, assessment, protection and conservation of places having historic cultural heritage and the *HCH* Act 1995 defines historic cultural heritage significance as meaning of a place, its significance in terms of registration criteria (Tasmanian Heritage Council 2014). The *HCH* Act 1995 requires that the Tasmanian Heritage Council (THC) must give approval (permit) before a project can proceed when a site is registered on the THR. A permit can either be 'in the form of a Certificate of Exemption (if the works do not impact on significance) or Discretionary Permit (THC 2014). The *Practice Note No. 2: Managing Historical Archaeological Significance in the Works Process* specifically outlines guidelines for archaeological work. A SHAP and AMS report will establish the extent of heritage at the subject site to advise whether further archaeological monitoring or excavation is needed in this area prior to development (whether a Certificate of Exemption or a Discretionary Permit is required). The following summarises key aspects of the *HCH* Act 1995 (**Figure 36**):

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***Historic Cultural Heritage Act*, 1995 ([HCH Act] Tasmania)**

State and local Acts are based on Burra Charter principles. The HCH Act in Tasmania is a typical example (Byrne et al., 2003:93-94).

Assessing cultural significance is the key to management and inclusion on the Tasmanian Heritage Register (THR). Alternatively, a place can be listed on a local planning scheme e.g. The Hobart Interim Planning Scheme 2015 or the Sullivans Cove Planning Scheme (1997). To be registered on the THR, sites must be of state significance (that is significant to the whole of Tasmania) and assessment of this is based on meeting one or more of eight criteria (Tasmanian Heritage Council: 2016). Determining archaeological significance is also based on these criteria. The Criteria are as follows:

- Criteria (a): The place is important to the course or pattern of Tasmania's history.
- Criteria (b): The place possesses uncommon or rare aspects of Tasmania's history.
- Criteria (c): The place has potential to yield information that will contribute to an understanding of Tasmania's history.
- Criteria (d): The place is important in demonstrating the principal characteristics of a class of place in Tasmania's history.
- Criteria (e): The place is important in demonstrating a high degree of creative or technical achievement.
- Criteria (f): It has strong or special association with a particular community or cultural group for social meaning for social or spiritual reasons.
- Criteria (g): the place has a special association with the life or works of a person, or group of persons, of importance in Tasmania's history.
- Criteria (h): the place is important in exhibiting particular aesthetic characteristics.

The general process of assessing a place is 1) Identify the historic heritage place 2) Investigate the place 3) assess and determine the level and nature of significance of the place 4) Enter on the THR or a heritage schedule of a local planning scheme to manage the significance of the place. The level of significance (threshold) is generally determined by geographical reach and the criteria identified as having significance.

Archaeological significance (See *Practice Note No. 2: Managing Historical Archaeological Significance in the Works Process* – Tasmanian Heritage Council [THC] 2014)

''Most commonly, archaeological heritage is valued for its research potential'.' (criterion c) but ''archaeological heritage may also have historic value (criterion a), community value (criterion f)'', rarity thresholds (criterion b), the representative threshold (criterion d) and associative value (criterion g) (THC 2014). These criteria provide the basis for significance in this report.

Figure 36: HCH Act 1995 summary

9.3.1 Practice Note 2 – Managing Archaeological Significance in the Works Process

The Tasmanian Heritage Council (THC 2014) has prepared *the Practice Note No. 2: Managing Historical Archaeological Significance in the Works Process* which sets out the guidelines for archaeological works. The *Practice Note No. 2* 'provides advice on managing significant historic archaeological sites and features' and 'advocates the application of professional standards with the aim of securing information resident in archaeological contexts either through meaningful protection *in situ* or through a logical well-founded process of inquiry and specialized investigation' (THC 2014). This document also recognizes the 'public benefit from archaeological investigations' and 'the high level of public interest in archaeology and the contributions which new-found information can make to the

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cultural amenity of the Tasmanian community' (THC 2014). The *Practice Note No. 2* document is designed to complement the *Works Guidelines for Historic Places 2015* document (THC 2015). The following Process Chart outlines the process for approval of developments under the *HCH* Act 1995 (**Figure 37**).

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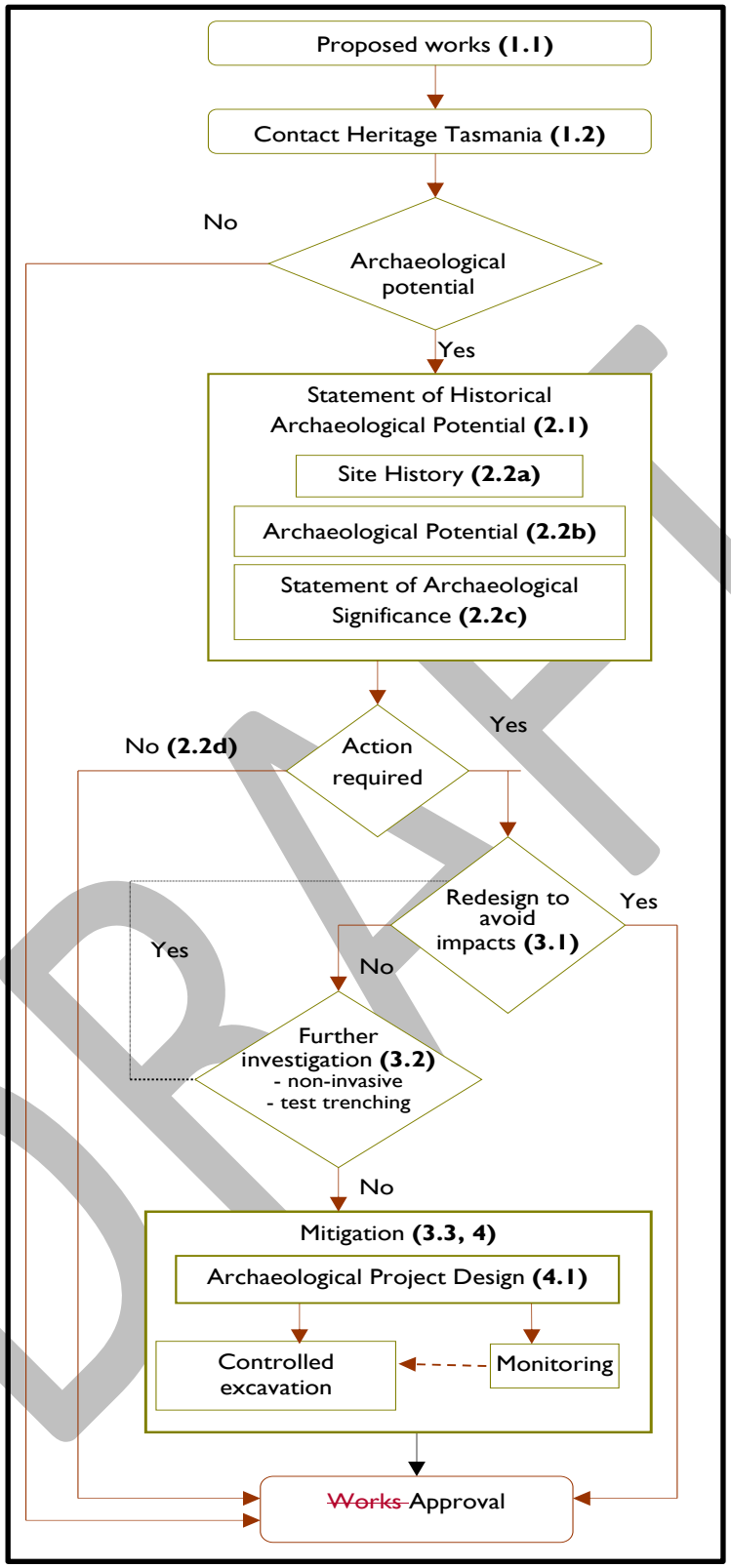


Figure 37: Process for assessing archaeological heritage. Source: Heritage Tasmania 2018.

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9.4 Tasmanian Heritage Council: Development Guidelines for the Evandale to Launceston Water Scheme (2014)

In addition to the usual requirements associated with a heritage listed property the Tasmanian Heritage Council (THC) has developed a set of development guidelines particular to the Evandale to Launceston Water Scheme (THC 2014). These aim to assist property owners understand how best to conserve the heritage values of their property. The document also states the importance of the archaeological aspects of the ELWS. The Development Guidelines (THC 2014) should be read in conjunction with the Tasmanian Heritage Register Datasheet for the Evandale to Launceston Water Scheme (Pl. Id. 11063).

The Development Guidelines (THC 2014) state that the listing protects:

- The visible and intact remains of shafts, tunnels and aqueducts; and
- Archaeological remains, including those which are visible in the ground surface and those which survive below ground and may not be visible.

The Development Guidelines (THC 2014) make clear that the ELWS is entered on the Tasmanian Heritage Register because:

- it is a rare example of a major public utility that was designed and partially constructed at an early stage in Australia' s history.
- The proposed Scheme was a substantial and innovative feat of engineering for the period, particularly when considering the available skills and technology.

There are several points that these guidelines raise (especially in regard to archaeological remains) (THC 2014):

- The ability of archaeologists to observe and record these remains in an undisturbed state is vital to enabling them to work out what happened and how people worked and lived.
- Some elements of the scheme have been recorded, but no archaeological excavations have been undertaken. More archaeological work could be done, with the potential to uncover more archaeological remains.
- Heritage listing of the site will protect all archaeological remains, including those we know of and those not yet identified.
- Private property owners are the custodians of the archaeological remains on their land that are associated with the Scheme.
- If and when more archaeological information becomes available, Heritage Tasmania will include this information in the datasheet in the form of an archaeological site record. This record will be an important asset for all owners to guide future development opportunities. It will also be an important tool for archaeologists.
- Any activity that might result in disturbance of the shaft should be avoided and will require a permit.
- Where there are alternatives to the siting of buildings, tunnels should generally not be built over, for reasons of safety and so as not to prevent future archaeological investigation.
- Where it is necessary to build over a tunnel, owners should obtain appropriate structural engineering advice in planning their development.

A full copy of the Development Guidelines (THC 2014) have been included in **Appendix 2.**

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9.5 The Coroners Act (1995)

The *Coroners* Act 1995 requires that:

1) A person who has reasonable grounds to believe that a reportable death, other than a reportable death referred to in subsection (4), has not been reported must report it as soon as possible to a coroner or a police officer.

This includes Aboriginal remains and in this case the Coroner has the following obligations:

1) The Attorney General may approve an Aboriginal organisation for the purposes of this section.
2) If, at any stage after a death is reported under section 19 (1), a coroner suspects that any human remains relating to that death may be Aboriginal remains, the coroner must refer the matter to an Aboriginal organisation approved by the Attorney General.
3) If a coroner refers a matter to an Aboriginal organisation approved by the Attorney General –

    a) The coroner must not carry out any investigations or perform any duties or functions under this Act in respect of the remains; and
    b) The Aboriginal organisation must, as soon as practicable after the matter is referred to it, investigate the remains and prepare a report for the coroner.

4) If the Aboriginal organisation in its report to the coroner advises that the remains are Aboriginal remains, the jurisdiction of the coroner under this Act in respect of the remains ceases and this Act does not apply to the remains.
5) If the Aboriginal organisation in its report to the coroner advises that the remains are not Aboriginal remains, the coroner may resume the investigation in respect of the remains.

Human burials or remains are not expected on this site.

9.6 National legislation and registers (Department of Energy and Environment (DEE) website 2018)

9.6.1 Introduction

In 1997 the Council of Australian Governments agreed that heritage listing, and protection should be the responsibility of the level of government best placed to deliver agreed outcomes (DEE website 2018). It was agreed that the Commonwealth's involvement in environmental matters should focus on matters of national environmental significance, including World Heritage properties and places of national significance. Each state, territory and local government has a similar responsibility for its own heritage.

This led to the creation of two new heritage lists in 2003 – the National Heritage List and the Commonwealth Heritage List (DEE website 2018). Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) the National Heritage List includes places of outstanding heritage value to the nation (both historical and Indigenous), and the Commonwealth Heritage List includes heritage places (both historical and Indigenous) owned or controlled by the Commonwealth.

The protection of heritage places for which the Australian Government is responsible continues under the EPBC Act (DEE website 2018). The EPBC Act not only protects heritage from actions by the

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Commonwealth, it protects places in the National Heritage List, in the Commonwealth Heritage List, and on Commonwealth land. All proponents, not just the Commonwealth, are required to seek approval for actions that could have a significant impact on the heritage values of these places.

9.6.2 Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act)

The *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) is the Australian Government's central piece of environmental legislation (DEE website 2018). It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (both historical and Indigenous) — defined in the EPBC Act as matters of national environmental significance.

9.6.3 National Heritage List

The National Heritage List is Australia's list of natural, historic and Indigenous places of outstanding significance to the nation (DEE website 2018). The study area is not included on the National Heritage List.

The site is not listed on the National heritage List.

9.6.4 Commonwealth Heritage List

The Commonwealth Heritage List is a list of natural, Indigenous and historic heritage places owned or controlled by the Australian Government (DEE website 2018). These include places connected to defence, communications, customs and other government activities that also reflect Australia's development as a nation.

The site is not listed on the Commonwealth Heritage List.

9.6.5 World Heritage List

World heritage sites that are nominated for World Heritage listing are inscribed on the list only after they have been carefully assessed as representing the best examples of the world's cultural and natural heritage (DEE website 2018). Australia currently has 19 properties on the World Heritage List. The study area is not listed on the World Heritage List.

The site is not listed on the World Heritage List.

9.6.6 The Register of the National Estate - archive

The Register of the National Estate was closed in 2007 and is no longer a statutory list (DEE website 2018). All references to the Register of the National Estate were removed from the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 19 February 2012. It serves now as an archive of heritage properties.

The site does not appear on the National Estate – archive.

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9.6.7 Aboriginal and Torres Strait Islander Heritage Protection Act 1984 *(ATSIHP Act)*

Generally, Australia's state and territory governments are responsible for the protection of Australia's Indigenous heritage places (DEE website 2018). All states and territories have laws that protect various types of Indigenous heritage.

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) can protect areas and objects that are of particular significance to Aboriginal people. The ATSIHP Act allows the Environment Minister, on the application of an Aboriginal person or group of persons, to make a declaration to protect an area, object or class of objects from a threat of injury or desecration.

9.6.8 *Other Commonwealth Legislation*

Other legislation that may be relevant in certain circumstances but not likely to affect this development are (AHT website 2018):

- Aboriginal Land Act 1995
- National Parks and Reserves Management Act 2002
- Crown Lands Act 1976
- Living Marine Resources Management Act 1995
- Museums (Aboriginal Remains) Act 1984

9.7 The Aboriginal Heritage Act 1975 (ARA)

9.7.1 *Overview*

Aboriginal heritage sites, places or objects, whether on private or public land in Tasmania are governed and protected by the *Aboriginal Heritage Act* 1975. The Tasmanian Department of Primary Industries, Parks, Water and Environment (DPIPWE), through Aboriginal Heritage Tasmania (AHT), administer this Act. This government department is responsible for enforcing the Act and providing liaison between the public, developers, Aboriginal groups, the Government and other parties.

9.7.2 *The AHA 1975*

9.7.3 *Introduction*

The *AHA* 1975 was reviewed and amended in August 2017. The following points were the key changes made to the Act (AHT website 2018):

- The Act was previously named the *Aboriginal Relics Act* 1975;
- References to 1876 being a 'cut-off' point for what is considered as Aboriginal heritage have been removed;
- Increased penalties for damage to Aboriginal heritage;
- Introduction of scaled offences, in association with the removal of the ignorance defence;
- Removal of the 6-month time limit for prosecuting offences;
- Establishment of a statutory Aboriginal Heritage Council of Aboriginal people to advise the Minister; and
- Setting a statutory timeline for further review of the Act.

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Aboriginal Heritage Tasmania (AHT) requires a permit to proceed with works or activities under s14 (1) of the AHA 1975, if works or activities impact Aboriginal heritage sites or material. It is a requirement under the *AHA* 1975 to obtain a permit if Aboriginal heritage sites or materials (relic, for definition under the AHA 1975) are impacted by a development.

9.7.4 The AHA 1975 requirements

The *Aboriginal Heritage Act* 1975 is the key Tasmanian Act for the preservation of Aboriginal 'relics'. The Act defines a 'relic' as (Section 2 (3)):

(3) For the purposes of this Act, but subject to the following provisions of this section, a relic is –

(a) Any artefact, painting, carving, engraving, arrangement of stones, midden, or other object, made or created by any of the original inhabitants of Australia or the descendants of any such inhabitants, which is of significance to the Aboriginal people of Tasmania; or
(b) Any object, site, or place that bears signs of the activities of any such original inhabitants or their descendants, which is of significance to the Aboriginal people of Tasmania; or
(c) The remains of the body of such an original inhabitant or of a descendant of such an inhabitant that is not interred in–
(i) Any land that is or has been held, set aside, reserved, or used for the purposes of a burial-ground or cemetery pursuant to any Act, deed, or other instrument; or
(ii) A marked grave in any other land.

Section 14 of the *AHA* 1975 sets out the provisions for the protection of 'relics':

(1) Except as otherwise provided in this Act, no person shall, otherwise than in accordance with the terms of a permit granted by the Minister on the recommendation of the Director –
(a) Destroy, damage, deface, conceal, or otherwise interfere with a relic;
(b) Make a copy or replica of a carving or engraving that is a relic by rubbing, tracing, casting, or other means that involve direct contact with the carving or engraving;
(c) Remove a relic from the place where it is found or abandoned;
(d) Sell or offer or expose for sale, exchange, or otherwise dispose of a relic or any other object that so nearly resembles a relic as to be likely to deceive or be capable of being mistaken for a relic;
(e) Take a relic, or cause or permit a relic to be taken, out of this state; or
(f) Cause an excavation to be made or any other work to be carried out on Crown land for the purpose of searching for a relic.

9.7.5 AHR search results for the study area

Table 5 and **Figure 38** show the results of the AHR search with Aboriginal Heritage Tasmania (AHT).

No sites were identified within the development footprint at the study area.

Number	Site Types	Place Name	Locality	Easting	Northing
164	Artefact Scatter	Evandale	Evandale	519712	5397783

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227	Stone Quarry	Native Point Quarry	Perth	515312	5398483
1711	Stone Quarry	Native Point	Perth	515440	5398711
4009	Artefact Scatter	Mill Rd South	Western Junction	516205	5398355
7632	Artefact Scatter	Native Point		515434	5397853
13113	Isolated Artefact	NEIS	Evandale	525990	5400610
13114	Artefact Scatter		Evandale	523111	5399776
13115	Isolated Artefact		Western Junction	519286	5400317
13116	Artefact Scatter		Western Junction	519155	5400563
13117	Isolated Artefact		Evandale	519973	5400010
13118	Artefact Scatter		Relbia	518820	5402783
13663	Artefact Scatter			518356	5400675
13664	Artefact Scatter			518500	5400637
13665	Isolated Artefact		Western Junction	517313	5400530

Table 5: Results of Aboriginal Heritage Register Search. Source: AHT 2019.

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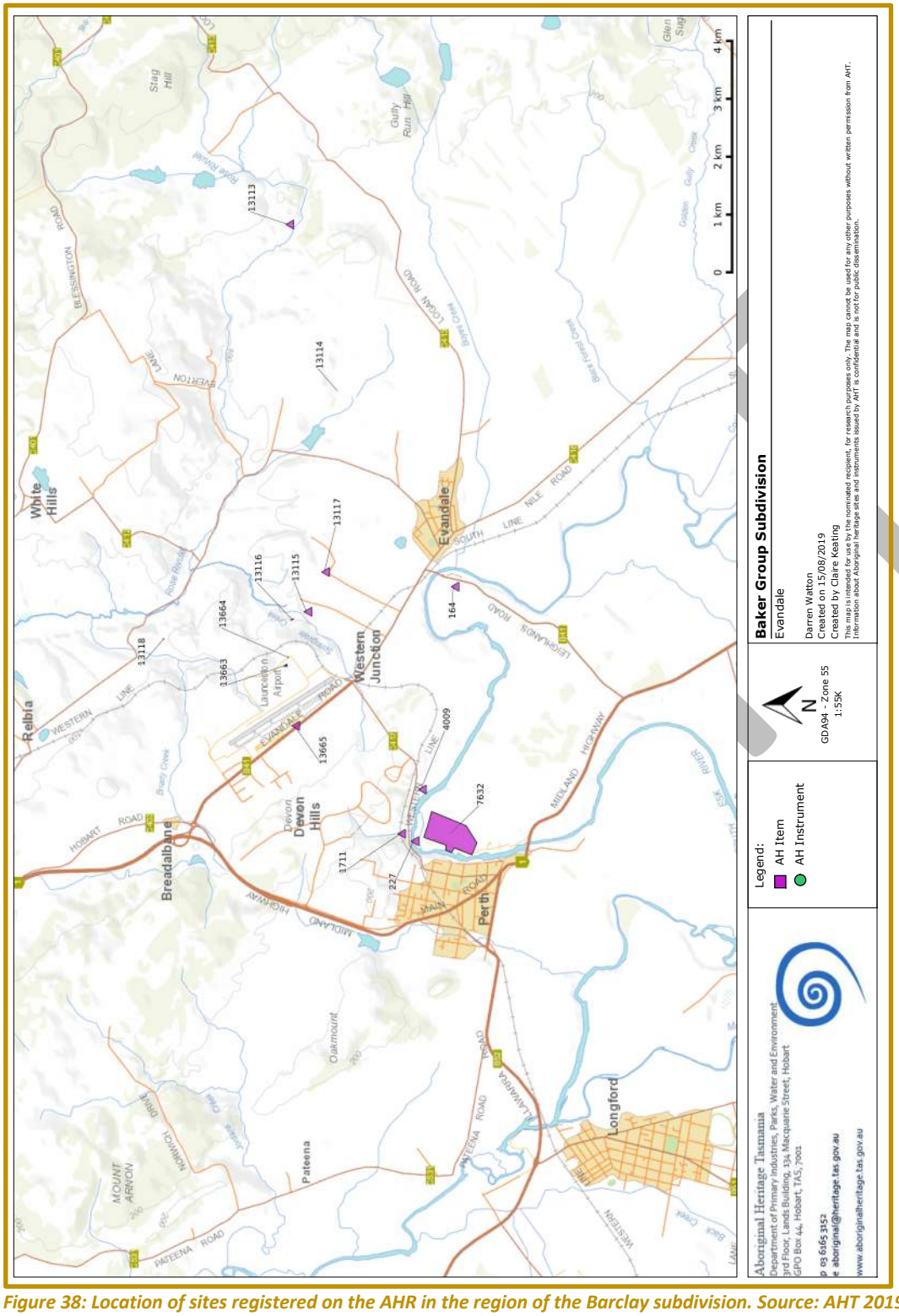


Figure 38: Location of sites registered on the AHR in the region of the Barclay subdivision. Source: AHT 2019.

9.7.6 Recommendations under the AHA 1975 for the study area

It is recommended that, in regard to possible Aboriginal heritage at the study area:

- An AHAR report is recommended for the study area based upon its proximity to the South Esk River and as a due diligence risk management option for the development (i.e. to reduce the

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possibility of unanticipated discoveries during the subdivision works and the associated delays).

- An Unanticipated Discovery Plan (UDP) be kept on hand while all works are being undertaken. A copy is included in **Appendix 3**.

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10 The AoAP, AoD and AoAS

10.1 Assessment of Archaeological Potential (AoAP)

10.1.1 Overview

An AoAP is a desktop assessment (usually part of the SHAP) with the purpose of:

- Understanding in more detail the archaeological values of the place, including its potential to contain significant archaeological features and deposits.
- Providing guidance on the appropriate course of action to protect those values.
- Assisting in preparing Potential Historical Archaeological Sensitivity (PHAS) Zones which outline areas where potential archaeology may be focused at a site.

(THC 2014)

The AoAP provides an analysis of whether archaeological features or deposits are likely to exist within the development area and an appraisal as to the level of intactness of these features or deposits within the subject area. This is linked to the level of understanding and research value (Criteria C of the *HCH* Act 1995) of the archaeology and how it can contribute to knowledge not available from other sources such as early plans, maps, historic sources, written records and previous work. These items provide the preliminary matter for research. Determination of the intactness and extent of the potential archaeology and historical research is an intricate part of historical archaeological potential (Burke and Smith 2004:164). In turn, this determines archaeological significance (**Section 10.3**). For example, an archaeological site that has high research value or potential and can provide new or further knowledge to the historical understanding of a place is therefore of high archaeological significance and visa versa.

Conversely, places of high archaeological potential (high level of intactness) may have little archaeological significance because they are common, highly disturbed or destroyed or well-known through documentation. However, because historical records and documents are often created for a specific purpose, have inherent biases, or do not document the lives of the specific individuals, groups or activities within history they often leave enormous gaps within our understanding of the past (Burke and Smith 2004:166). It is possible that sites with low archaeological potential to be of high archaeological significance because they provide rare insight into the past. Because of this it is necessary to document each site individually and to determine a level of archaeological potential (intactness) and significance.

An AoAP provides an opportunity to:

- Redesign or reconsider any proposals at an early stage, in order not only to avoid identified zones of historical archaeological potential or sensitivities;
- Minimize or eliminate the capacity for later delays to critical path timetables;
- Identify areas of low significance.

(THC 2014)

Determining archaeological potential can be difficult because many sites are obscured by subsequent development or changes in use of the area (see **Section 10.2** – Assessment of Disturbance (AoD)). The archaeologist is particularly trained in the assessment of archaeological sites and best placed to

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determine archaeological potential or intactness through documentary research, field study and the collecting of oral histories and other community information (Burke and Smith 2004:166). The *Practice Note No. 2* (THC 2014) document requires an AoAP (within a SHAP) be completed by a qualified archaeologist or, in the case of a large project or development at a highly significant site, a multi-disciplinary team.

10.1.2 AoAP for the study area

In terms of archaeological potential, there are obvious and clear surface features and archaeology present within the study area associated with the THR listed site (Pl. Id. 11063). These are Shaft 6 and associated unidentified features and material within lot 4 on the subdivision plan. The sub-surface alignment of the ELWS tunnel is also considered as it passes through a substantial part of the study area.

Southern Archaeology rates the area around Shaft 6 at the study area as having **very high archaeological potential** as set out in the PHAS zones in **Figure 39** (see **Section 10.1.3** below), i.e. there is high likelihood that archaeological features or material persists under the surface at the site. This includes features and material associated with Shaft 6 of the ELWS and some unidentified archaeological features and materials within the vicinity of Shaft 6 (These features may be wells/reservoirs, walls, cesspits, structures, former road or path surfaces and other features). Materials (such as artefacts associated with occupation of the site) have also been observed at the site. The level of intactness of these features and artefacts is difficult to rate due to disturbance at the site but professional experience and observation of the site suggest that these archaeological features or artefacts have a very high level of intactness (See **Section 10.2** below – Assessment of Disturbance (AoD)) at the study area.

The alignment of the ELWS through the study area is rated as having very high potential for archaeological features sub-surface at the site. However, these features probably exist at over 10-20 metres below the current surface.

10.1.3 Potential Historical Archaeological Sensitive (PHAS) Zones

Figure 39 below divides the study area into Potential Historical Archaeological Sensitivity (PHAS) Zones. These PHAS Zones have been developed to assist in understanding the main areas of archaeological potential at the site and to assist in focusing potential archaeological works at the site. The zones are as follows:

- Red Zone – High Archaeological Potential – Shaft 6 and associated features and materials study area (approx. 12 metres diameter around Shaft 6 or other shafts in the area but outside the study area). Development within these areas will impact significant archaeology associated with the ELWS. Archaeological excavation is recommended.
- Orange Zone – Medium Archaeological Potential – Area outside of 12 metre THR registered zone for shafts associated with the ELWS. This is an area approx. 12-30 metres diameter around shafts associated with the ELWS. Development within these areas may impact significant archaeology associated with the ELWS particularly as some features and material are noted around Shaft 6. Archaeological excavation is recommended if the extent of these features goes outside of the 12 metre protected area on the THR listing.
- Yellow Zone – Low Archaeological Potential – area approx. 30-50 metres diameter from shafts on the ELWS and area along ELWS tunnel alignment (6 metres wide). Development within these areas may impact significant archaeology associated with the ELWS. However, the

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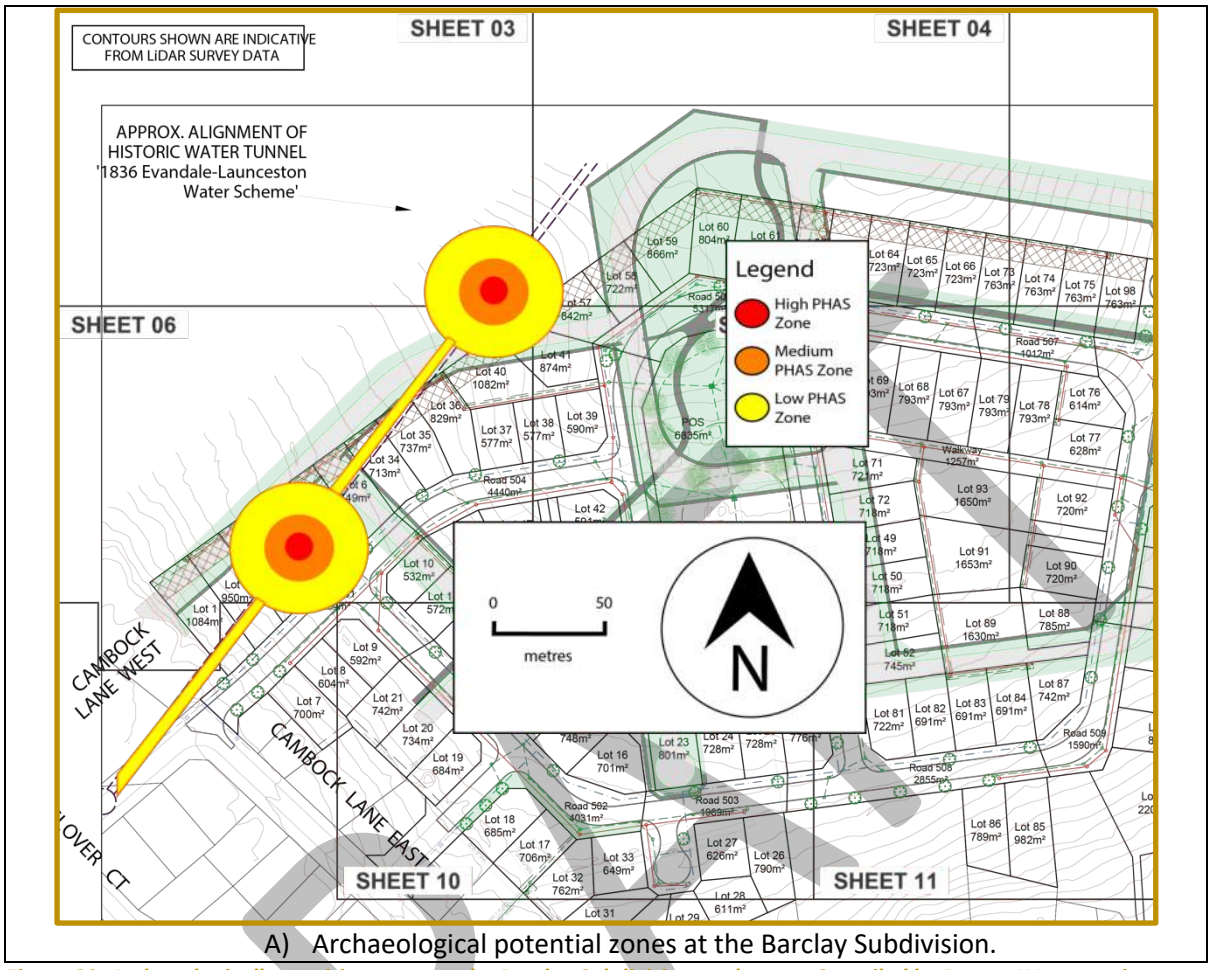
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potential for impact is considered low in this area. Archaeological investigation is not required unless archaeology discovered in adjacent zones reveals otherwise (i.e. dependent upon results of archaeological excavation in red and orange zones).

These PHAS Zones have been designated to better determine areas of archaeological sensitivity and significance and as a guide to where archaeology may be impacted by the proposed subdivision works.

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A) Archaeological potential zones at the Barclay Subdivision.

Figure 39: Archaeologically sensitive zones at the Barclay Subdivision study area. Compiled by Darren Watton using information provided by the Baker Group 2019 and Adobe Illustrator.

10.2 Assessment of Disturbance (AoD)

If a site is assessed, as having 'archaeological significance, sensitivity and/or potential' and has been disturbed over time it is useful to assess the nature and extent of the disturbance so that a satisfactory method of archaeological work can be advised by the archaeologist. Disturbance is established by analysis of the historical record, a site survey, liaison with the client and other relevant people, comparison with other relevant archaeological sites and by professional experience. It generally forms part of the Assessment of Archaeological Potential (AoAP) determining the level of intactness.

The Heritage Council may also require that a certain method of archaeological work be completed to mitigate loss of fabric or to avoid significant or potentially significant impacts to the site (THR 2014). This may include non-invasive techniques such as remote sensing and/or test pitting and/or monitoring or, if unavoidable loss is to occur, archaeological excavation (combined archaeological testing and recording, controlled archaeological excavation or monitoring) (THC 2014). Redesign and further investigation may be required if the potential of the site or unanticipated finds are found during works.

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10.2.1 Disturbance at the study area

There has been some disturbance within the study area mostly associated with deliberate destruction and filling in of Shaft 6 and many years of farming including stock raising and crop production. Currently, stock (Belted Galway Cattle) are agisted at the property and are impacting heritage (Shaft 6 and associated features and material) at the site. A drain in the form of a channel has been constructed and runs approximately southeast to northwest through the property. It is located approx. 10 to 20 metres north of Shaft 6. Fences and housing have been constructed near the study area.

However, archaeological features and material observed at the site appear to be relatively intact close to the current surface in the area. Certainly, brick well construction can be seen just below the surface at Shaft 6 and the depression, bricks and stone alignments close by appear to be intact. It is often the case that archaeological foundations of buildings, drains and other associated features remain untouched by subsequent works sub-surface. There are also artefacts associated with the occupation of a site observed at the surface in the area and these may provide further understanding of the sites history. Only archaeological examination (in this case the recommendation is controlled archaeological excavation (test pitting)) can confirm this.

Southern Archaeology assesses the disturbance at this site as being low over most of the site where the works are to occur, due to observations during the site visit and through examination of historical records. This in turn suggests the level of intactness of archaeological remains at this site may be high archaeologically.

10.3 Assessment of Archaeological Significance (AoAS)

10.3.1 Overview

The AoAS is an integral part of the process of assessing a site and determining whether it requires further archaeological work. Through research and assessment by the archaeologist it is possible to determine an understanding of the site and its archaeological potential (and intactness). The level of archaeological potential and the sites ability to contribute to the understanding of history influence the level of significance assigned. Disturbance is also an important consideration and also informs the level of significance.

The Heritage Council of Tasmania uses the principles of the Burra Charter 2013 as a guide in defining cultural significance. This has informed the criteria outlined in the *HCH* Act 1995 and the main criteria used to determine archaeological significance is Criteria (c), which is based on the potential of the site (via research) to contribute to Tasmania's history.

The AoAS is also used to determine a sites ability to contribute to local, state, national and possibly international historical contexts. Understanding the importance of a site at these levels helps to understand how significant the site is. The archaeologist determines the local, state, national and international significance by assessing the site using the criteria in the *HCH* Act 1995 and the criteria in other relevant legislation such as local planning schemes. For example, the *Hobart Interim Planning Scheme* 2015 (which mirrors the criteria in the *HCH* Act 1995), the sites inclusion on the Tasmanian Heritage Register (THR) and/or whether it has World Heritage Listing or National Heritage Listing.

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10.4 Significance under the HCH ACT 1995 – ELWS Datasheet (Id. No. 11063)

Figure 40 is the significance assessment from the ELWS datasheet (id. No. 11063). It rates the scheme as significant at a national level.

ASSESSED HISTORIC CULTURAL HERITAGE SIGNIFICANCE

Statement of Significance: *(non-statutory summary)*

The 1836-38 Evandale to Launceston Water Scheme is of heritage significance in a national context as a rare example of a major public utility that was designed and partially constructed at an early stage in Australia's history.

The 22km system of tunnels and aqueducts designed to supply the town of Launceston with water for domestic consumption and power represents a substantial and innovative feat of engineering for the available skills and technology of the period. The use of convict labour reflects the national reliance on transportation of convicts to provide the labour for essential public infrastructure during the early nineteenth century.

The remnants of the Scheme constitute one of the largest industrial archaeology sites in Tasmania. There is high potential for the remnants of the engineering works to provide knowledge of early design and construction practices whilst the remnants of the associated convict stations will contribute to knowledge of convict labour and life in early colonial Tasmania.

The Heritage Council may enter a place in the Heritage Register if it meets one or more of the following criteria from the Historic Cultural Heritage Act 1995:

a) ***"It is important in demonstrating the evolution or pattern of Tasmania's history"***

The Evandale to Launceston Water Scheme is of heritage significance in a national context in demonstrating the engineered design and construction of a major public utility during the 1830s. Of specific relevance is the scale and complexity of the design, a 22km network of tunnels and open aqueducts to bring water to a major township (Launceston) for both domestic use and to power mills, the use of tunnels to transfer water from one catchment into another, and the use of convict labour—which played a major and essential role in the construction of public infrastructure across Australia during the early nineteenth century. It comprises a range of engineering features and the broader infrastructure of workers camps, roads, bridge, wells and brickworks. It demonstrates wider aspects of undertaking major capital works in the early nineteenth century, and aspects of convict management including penal philosophies of work programs that isolated and separated convicts from the established communities. Construction of the Scheme demonstrates the growth, and growing service needs, of Launceston as the major centre in northern Tasmania at this time,

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whilst the process of the Scheme's inception, development and abandonment reflects aspects of the political and administrative environment within colonial Tasmania and early steps toward Launceston becoming self-administered.

b) ***"It demonstrates rare, uncommon or endangered aspects of Tasmania's heritage"***

The Evandale to Launceston Water Scheme is of heritage significance because its remnants are a rare surviving example—from anywhere in Australia—of an engineered major public utility from the early colonial period. Other Australian examples of major engineering works from this period include the Great North Road and Great South Road in New South Wales, but are limited elsewhere as settlement in the other States were barely established by the mid 1830s.

c) ***"It has potential to yield information that will contribute to an understanding of Tasmania's history"***

The surface and subsurface features and deposits of the Evandale to Launceston Water Scheme constitute the largest industrial archaeology site in Tasmania. There is high potential for the remnants of the engineering works to provide knowledge of early design and construction practices whilst the remnants of the associated convict stations may provide knowledge of convict labour and life in early colonial Tasmania. The information from this site may also contribute to wider engineering and industrial archaeological research frameworks within or outside of Australia.

d) ***"It is important as a representative in demonstrating the characteristics of a broader class of cultural places"***

e) ***"It is important in demonstrating a high degree of creative or technical achievement"***

The remnants of the Evandale to Launceston Water Scheme demonstrate a high degree of technical design by its engineers, being a gravity-powered system that was to utilise brick-lined tunnels with vents/surge shafts to transfer water from its source in one catchment to another catchment, thence cost-effective open aqueducts to convey water a substantial distance to the Launceston, and well-situated reservoirs atop Windmill Hill were to serve as the final distribution point with the drop from the Hill generating a reasonable mains pressure. The design also allowed for 7 water-powered mills to be serviced by the Scheme.

f) ***"It has strong or special meaning for any group or community because of social, cultural or spiritual associations"***

The Evandale to Launceston Water Scheme has a strong and special meaning for two key community groups. The first is the community of professional engineers across Australia—evidenced by Engineers Australia involvement in investigation of the Scheme during the late twentieth century and placing of a marker recognising the importance of the Scheme in 2002. It also has special meaning for the regional community—evidenced in the activities of the Evandale Historical Society and Northern Midlands Council to promote awareness of the Scheme through publications and to actively conserve the site through research, surveying and conservation works such as were undertaken in 1988, 2002 and continues today.

g) ***"It has a special association with the life or work of a person, a group or an organisation that was important in Tasmania's history"***

The Evandale to Launceston Water Scheme is of historic heritage significance for its association with the convict engineer and architect, James Blackburn, who assisted with surveys of the area, and oversaw convict labour. Blackburn designed many of Tasmania's early buildings such as Holy Trinity Church in Hobart. Blackburn's engineering and architectural achievements establish him as Tasmania's leading proponent of design for the colonial period (1833-49). The scheme is also associated with Alexander Cheyne who built the Glasgow—Edinburgh canal, and who became a controversial figure in Tasmania's early history; and William Dawson, who was a convict overseer for the Scheme and subsequently became a well known surveyor of Tasmania's remote areas and roads.

PLEASE NOTE *This datasheet is intended to provide sufficient information and justification for listing the place on the Heritage Register. It is not intended to be a comprehensive historical record or inventory of the heritage values of the place.*

*Assessed by:*MEB 28/10//09
Cleared by: DS 09/11/09

Figure 40: Assessment of significance ELWS Datasheet for Place Id. No. 11063. Source: ELWS Datasheet 2011.

10.5 Archaeological significance under the HCH Act 1995 – Southern Archaeology

Southern Archaeology as part of this assessment process have provided an archaeological significance rating. This is aimed at the study area and the individual features and materials associated with the

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scheme. The study area is rated by Southern Archaeology as being **very highly significant** at a local, state and national level for the following reasons (HCH Act 1995):

Assessment under Criteria (c) of the *HCH* Act 1995:

- Criteria (c): The place has potential to yield information that will contribute to an understanding of Tasmania's history.

In summary and specifically, the study area is:

Provides a rare opportunity to understand and investigate infrastructure associated with the ELWS, a major engineering feat in Tasmania with associations to convict labour. This scheme was undertaken in the 1830s and represents a complex and ambitious project (over 22kms of infrastructure) by the colonial government to supply water to Launceston. There have been no previous (formal) opportunities to archaeologically investigate the scheme. Further archaeological investigation has the ability to add to knowledge of engineering techniques in the early 1800s, wider understanding of the ELWS, inform future development proposals and contribute to research opportunities and knowledge at a state and national level.

Furthermore, this project represents a unique opportunity to archaeologically investigate and research aspects of the ELWS with the benefits of:

- Understanding the early history of the colony and the north of Tasmania.
- Understanding a major project with convict associations.
- Providing information about engineering methods and construction techniques from the 1830s.
- Establishing relationships and associations of unidentified infrastructure associated with the construction of the ELWS.
- Relatively cost effectively and non-invasively extracting rare information and materials on a relatively unknown aspect of history in Tasmania and the north of Tasmania.
- Contribute to knowledge about historical development, engineering and research in the north of Tasmania, throughout Tasmania and Australia and, possibly, at an international level.
- Informing future development proposals associated with the ELWS.

Assessment under other criteria of the *HCH Act 1995* (specifically relating to archaeological considerations):

- Criteria (a): The place is important to the course or pattern of Tasmania's history – Yes, the site is a good example of the development and evolution of occupation in Tasmania from the earliest period of Tasmanian colonisation. Archaeology in the north of Tasmania has been rarely undertaken (and never on the ELWS) and there are gaps in our understanding of this scheme, its construction and its role in the history of northern Tasmania and outside Tasmania. The scheme is unique in its scale and complexity. More specifically, Shaft 6 and the associated features and materials can contribute to the wider understanding of the scheme, inform future development and assist in understand engineering and construction techniques from the early 1800s;
- Criteria (b): The place possesses uncommon or rare aspects of Tasmania's history – Yes, the place may contain archaeologically intact elements associated with the ELWS and convictism in the north of the state and it likely contains rare examples of infrastructure associated with the ELWS (which possibly pre-date the scheme). Major engineering feats such as this are

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extremely rare, and any archaeological investigation will contribute to the understanding and knowledge base;

- Criteria (d): The place is important in demonstrating the principal characteristics of a class of place in Tasmania's history – Yes, the place may contain evidence of rare engineering infrastructure from the 1830s period, specifically relating to convictism, and the development Launceston and northern Tasmania. Further knowledge through archaeological investigation may assist in understanding other significant places in Tasmania (and Australia) and provide insights into hierarchy around convictism, management and class distinctions. In relation to Shaft 6 and the associated features and materials, the study area has the potential to reveal information about this through analysis of the materials (artefacts) recorded at the place;
- Criteria (e): The place is important in demonstrating a high degree of creative or technical achievement – Yes, this construction is an extremely rare example of engineering design and construction and the provision of water in Tasmania (and possibly Australia). The complexity, technical achievement and ambitiousness of the scheme is reflected in its size (over 22kms with associated aqueducts, mills, stations and other infrastructure) and detail. This is related to the critical function of the colony and the development of the north. The scheme is architecturally unique and built to critical standards of the time in relation to materials, structural integrity and spatial layout for such a purpose. The construction relates to a period of time when the colony was experiencing high growth and there was an influx of convicts requiring work and accommodation. Siting was at the time on the fringe of the growing township of Launceston and considered at its inception to be critical to the growth of this township. Demands for infrastructure were high and the fact that it was abandoned over taxation disputes is a critical factor in the functioning of the government, economy and colonial society.
- Criteria (f): It has strong or special association with a particular community or cultural group for social meaning for social or spiritual reasons – Yes, has a strong association with the colonial government and the convict system in Tasmania. There are also relationships to hierarchy, colonial society and political pressures at the time. The scheme was also in response to the rapid growth of Launceston and the demands from the local community for fresh water but also reflects disputes over taxation of the scheme.

  Today, the scheme has meaning to the National Institute of Engineers who put a plaque on the scheme in 2002. The scheme also has meaning to the local community with strong community interest in the project (observed by Southern Archaeology in their background research) from local residents and the Evandale Historical Society. The scheme is not well known at a wider level but there is potential for great interest in the scheme and its convict associations. Interest in heritage associated with convicts and early Tasmania often attracts great community and media interest;
- Criteria (g): The place has a special association with the life or works of a person, or group of persons, of importance in Tasmania's history – The scheme has strong associations with convicts (who worked on the scheme), the colonial government including the special consideration of Governor Arthur, who instigated the schemes construction and later was involved in the conflict that lead to the abandonment of the scheme. There is also an association to Governor Franklin who ultimately abandoned the scheme which reflects changes in political motivation and priorities. The scheme also has associations to the convict architect, James Blackburn.
- Criteria (h): The place is important in exhibiting particular aesthetic characteristics – The scheme is important in the general aesthetics of the area. It has the potential with a little work and planning to be a nice contribution to the aesthetics of the subdivision and the township of Evandale.

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Southern Archaeology rates the study area as having **Very High Significance** due to its rarity and capacity to add new information about engineering and construction in the 1830s, convictism in Tasmania and the development and establishment of Tasmania and more specifically Launceston and the north of the State. The study area also has very high archaeological potential and high levels of intactness.

This significance is considered to be at a local and state level and may have national significance given its rarity, uniqueness and association to convictism.

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11 Options regarding the Evandale to Launceston Water Scheme and the Barclay subdivison

11.1 Introduction

The following options are presented regarding the study area site. They are assigned a preference (one to three) by Southern Archaeology based upon the best possible outcomes for the site with consideration of the landowner, the proposed development, legislative and THR register requirements, the future management of the site and community interest in the site. These options are offered with SWOT analysis (Strength, weaknesses, threats and opportunities) which assist in informing the preferred recommendation of archaeological excavation of the site.

The three options are (in order of preference):

4. Controlled archaeological excavation (test pitting) be conducted at the site.
5. Avoid the site.
6. Destroy the site.

Table 6, Table 7 and Table 8 show the SWOT (Strengths, Weaknesses, Threats and Opportunities) for Barclay Subdivision for each of the options.

11.2 Option 1 SWOT analysis (Strengths, Weaknesses, Opportunities, Threats – Controlled archaeological excavation (Preferred)

Table 6 shows the SWOT (strengths, Weaknesses, Opportunities, Threats) analysis for the preferred and recommended Option 1.

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Controlled archaeological excavation (test pitting)

S Strengths	W Weaknesses	O Opportunities	T Threats
o Establishes heritage site boundaries and extent (curtilage) o Assists in preventing delays from unanticipated discoveries o Targeted excavation that minimises potential impact to heritage o Cost effective o Informs recommendations and management of the site o Assists in making the area safe o Assists in satisfying community concerns regarding risk to heritage o Can be completed prior to development	o Discretionary Permit and Approval by THC required o Costs increase if significant heritage discovered (i.e reporting and analysis) o May reveal further features outside of the current THR registered area (unanticipated discoveries)	o Comprehensive (further) site understanding o Informs recommendations, protection and management o Wider understanding of the ELWS o Assists in satisfying community regarding risk heritage o Community involvement o Promotes responsible development and positive business image	o Further managment and protection recommendations if further heritage uncovered o May reveal features and material outside of current protected area

Table 6: Option 1 SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) – Controlled archaeological excavation (preferred). Compiled by Darren Watton using Adobe Illustrator 2019.

11.3 Option 2 SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) – Avoid – Protect in situ and monitor during development (Not Preferred)

Table 7 shows the SWOT (strengths, Weaknesses, Opportunities, Threats) analysis for Option 2.

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Avoid - Protect in situ and monitor during development

S Strengths	W Weaknesses	O Opportunities	T Threats
o Minimal impact option for Shaft 6 and associated infrastructure	o Approval and Certificate of Exemption from THC required o Visible features at surface make hand digging and recording necessaryo Does not support new understanding about the ELWS o Does not establish extent o Delays may occur due to unanticipated discoveries - hand digging and recording o Archaeology obvious at the surface so some recording and hand digging necessary o Costs increase if significant heritage discovered (i.e hand digging reporting and analysis)	o Minimal impact to existing heritage o Some new features may be recorded near the surface	o Some increased risk of damage to archaeology (machine) o Some hand excavation still likely (archaeology visible at surface o Community concern or opportunities for community involvement may not satisfied o Monitoring must be done during subdivison works so potential for stop works and delays

Table 7: Option 2 SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) – Avoid – Protect in situ and monitor during development (Not Preferred). Compiled by Darren Watton using Adobe Illustrator 2019.

11.4 Option 3 SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) – Destroy – Open area excavation

Table 8 shows the SWOT (strengths, Weaknesses, Opportunities, Threats) analysis for Option 3.

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Destroy - Open area archaeological excavation

S Strengths	W Weaknesses	O Opportunities	T Threats
o No protected zone required (if approved by THC) o No hinderance to development (if approved by THC) o Can be completed prior to development o No future archaeological managment required	o Requires Discretionary Permit o Requires approval by THC o Destruction of known heritage is the least preferred option archaeologically o Requires larger scale open area archaeological investigation to satisfy Criteria (c) of HCH Act 1995 o Expensive option o Largest time delays - Will depend on completion of major report and artefact analysis o High impact to heritage o Likley unpopular with community	o Complete understanding of site - everything exposed and recorded o Development progesses unhindered on the impacted block o Some protection of Shaft 6 could be achieved by capping at an lower agreed level	o Results in destruction and loss of significant heritage o In depth archaeological investigation may reveal more significant archaeology o No guarantee of THC approval to destroy o No guarantee that criteria (c) will be satisfied o Possible community backlash and negative media response o Large time delays for approvals etc

Table 8: Option 3 SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) – Destroy – Open area excavation. Compiled by Darren Watton using Adobe Illustrator 2019.

11.5 Option 3 – Preferred option

The preferred option is Option One – Controlled Archaeological Excavation. It offers the best scenario for Shaft 6 and the associated infrastructure because it (see SWOT analysis in **Section 11.2**):

8) Supports establishment of new knowledge regarding the water scheme and its construction
9) Protects and maintains the significant heritage with minimal impact – controlled excavation is sensitive to the risk of impact to the archaeology and is conducted accordingly. This is particularly critical given that Shaft 6 has associated features (the depression and brick and stone alignments) that are poorly understood and not known at other shafts.
10) Helps gain a clear understanding regarding the extent of the site and aids the establishment of curtilage (site boundaries).
11) Best addresses community concerns regarding the risk to heritage.
12) Best supports future management of the site, which may include site interpretation.
13) Informs the wider understanding of the ELWS and establishes knowledge which contributes to future development proposals associated with the scheme.

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14) Satisfies recommendations within the ELWS Development Guidelines (THC 2014) for further archaeological investigation (see **Section 9.4**).

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11.6 Option 2 and 3 – Not Preferred

Options 2 and 3 are likely to be more costly and involve unforeseen issues and generate additional management requirements (See **Sections 11.3 and 11.4**). Any time delays might impact other development activity. The alternative options 2 and 3 are more likely to cause community concern, with the scheme highly regarded by local historians and community members.

There is greater potential for impacting the archaeology (irreversible damage) with option 3. Understanding and interpretation of the archaeology is severely lessened with option 2. Opportunity to understand and appreciate the site over time is lost with the destructive option 3. Opportunity to understanding the site better is lost under the avoidance option 2.

The development offers a chance to find out more about this unusual and rare archaeological site. Shaft 6 is one of several relatively intact shafts along the scheme's alignment. Archaeological exploration, with minimal intervention (controlled archaeological investigation by test pitting) is an ideal option with this particular shaft (shaft 6), particularly considering the damage already sustained to the upper courses through farming activity over time, and deliberate backfilling over time.

This would be the first archaeological excavation of one of the ELWS shafts and would mean there would be reduced need to impact other shafts in the future.

ELWS Development Guidelines state that there has been 'no formal archaeological excavations of the ELWS and that this would be of benefit to all landowners and understanding of the scheme' (THC 2014) (**see Section 9.4**).

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12 Recommendations

Based upon the above three options and further consideration of the site and its significance the following general recommendations are made in regard to the study area (see **Section 12** for more details):

- It is strongly recommended that Option 1 - controlled archaeological excavation (test pitting) be conducted at the site as per the attached AMS document. The AMS for this option (**Option 1 – Section 11**) **ONLY** is included in **Section 13** due to its recommendation as the preferred option (see note below).
- A Discretionary Permit be applied for from Heritage Tasmania and approval be sought from the Heritage Council regarding the controlled archaeological excavation (test pitting).
- That structural engineering advice be sought for any building within the tunnel protected zone or over any tunnel alignments.
- That a safety barrier (fence) be erected around Shaft 6 (at a minimum of 12metres diameter) as soon as practicable to protect this significant heritage and to make the area safe.
- The excavation of the site be completed as soon as practical to avoid unnecessary delays.
- The excavation include a full excavation report (including management recommendations), and that analysis of any artefacts associated with the site be completed (as per attached AMS – **Section 13**).
- An Aboriginal Heritage Survey be completed for the site with associated Aboriginal Heritage Assessment Report (AHAR).

Note: An alternative AMS for Options 2 and 3 can be provided at the request of the client.

The following points provide further details regarding the recommendations for the 43 Cambock Lane (Barclay) proposed subdivision:

- Controlled archaeological excavation (test pitting) be completed by a qualified archaeologist, prior to subdivision works at the study area as detailed in this accompanying AMS and as shown in **Figure 8** below.
- A Discretionary Permit will be required under the *HCH* Act 1995 for these archaeological works to proceed.
- Given the significance of the site, a copy of this SHAP and AMS be sent to Heritage Tasmania for review.
- Archaeological remains may exist anywhere on this site. Any disturbance in this area should consider the **archaeologically sensitive and significant nature of the site.**
- Any archaeological features discovered on the site should be assessed, surveyed and recorded for future management and research purposes. This might include walls, floors, foundations, artefact concentrations or evidence of former road surfaces.
- If artefacts are found on site, it is recommended that they be recorded and collected for further analysis as per the attached AMS (**Section 13)**.
- Any Aboriginal cultural heritage material found during works will require work to stop immediately while this is assessed by the qualified archaeologist and an Aboriginal Heritage Officer, with consideration of statutory requirements. An Unanticipated Discovery Plan (UDP) is included in **Appendix 3** and this details the procedure if Aboriginal heritage is discovered during works.

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In summary, the study area is considered to be of **very high significance archaeologically with very high archaeological potential,** within the area where the ELWS is located. This is at a state and national level. Any works (excavation/development) on this site should be undertaken with consideration of the significant nature of archaeological remains in the historical development of Launceston and Tasmania. Such work should be completed by a suitably qualified archaeologist, meeting the recommendations within this report.

12.1.1 Aboriginal Cultural material within the study area

- No Aboriginal sites are registered on the AHR within the vicinity of the study area. If Aboriginal material or heritage is found during works – works must stop immediately and the UDP contained in **Appendix 1** be followed.

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13 Archaeological Method Statement (AMS)

13.1 Introduction

If a place is determined as having significant archaeological value, particularly under Criteria (c) the 'Heritage Council may require the preparation of a Statement of Archaeological Potential (SoAP) (as part of a SHAP report) to ensure impacts to significant archaeological values are considered' (Heritage Tasmania [HT] website 2019). Usually this will assist the Heritage Council in determining if an AMS is required 'to lessen the impacts on the significant archaeological values' (HT Website 2019). In some cases where the significance of the site is considered high an AMS will be prepared as part of the SHAP report. This is such a case.

The AMS should include (THC 2014):

- Extracts as appropriate from the SHAP or in this case the THR listing for the ELWS (Pl. Id. 11063) (**Appendix 1**).
- An archaeological strategy, outlining the proposed stages of works and protocols for undertaking that work.
- An Archaeological Research Design (ARD).
- An archaeological methodology for archaeological excavation or monitoring.
- Provisions for archaeological advice to be given in planning stages of any exploratory works or environmental site assessments, if applicable.
- A strategy for reburial/rehabilitation of the site, if applicable.
- A proposal for artefact analysis, including procedures for management and conservation of finds during the field program and analysis stage.
- A program that provides for the communication of new-found information to be made available to the Tasmanian community.

Upon completion the Heritage Council requires two separate reports in a timely manner (THC 2014):

1. A final report which presents the findings of the excavation in a comprehensive and systematic framework;
2. A project archive containing – copies of excavation records, plans and sectional drawings, selected artefacts drawings and/or photographs, photographs of the excavation, notes pertaining to site interpretation and analysis, artefacts catalogue, appropriate digital copies of documentation and an index of all the material provided.

13.2 The AMS and the study area

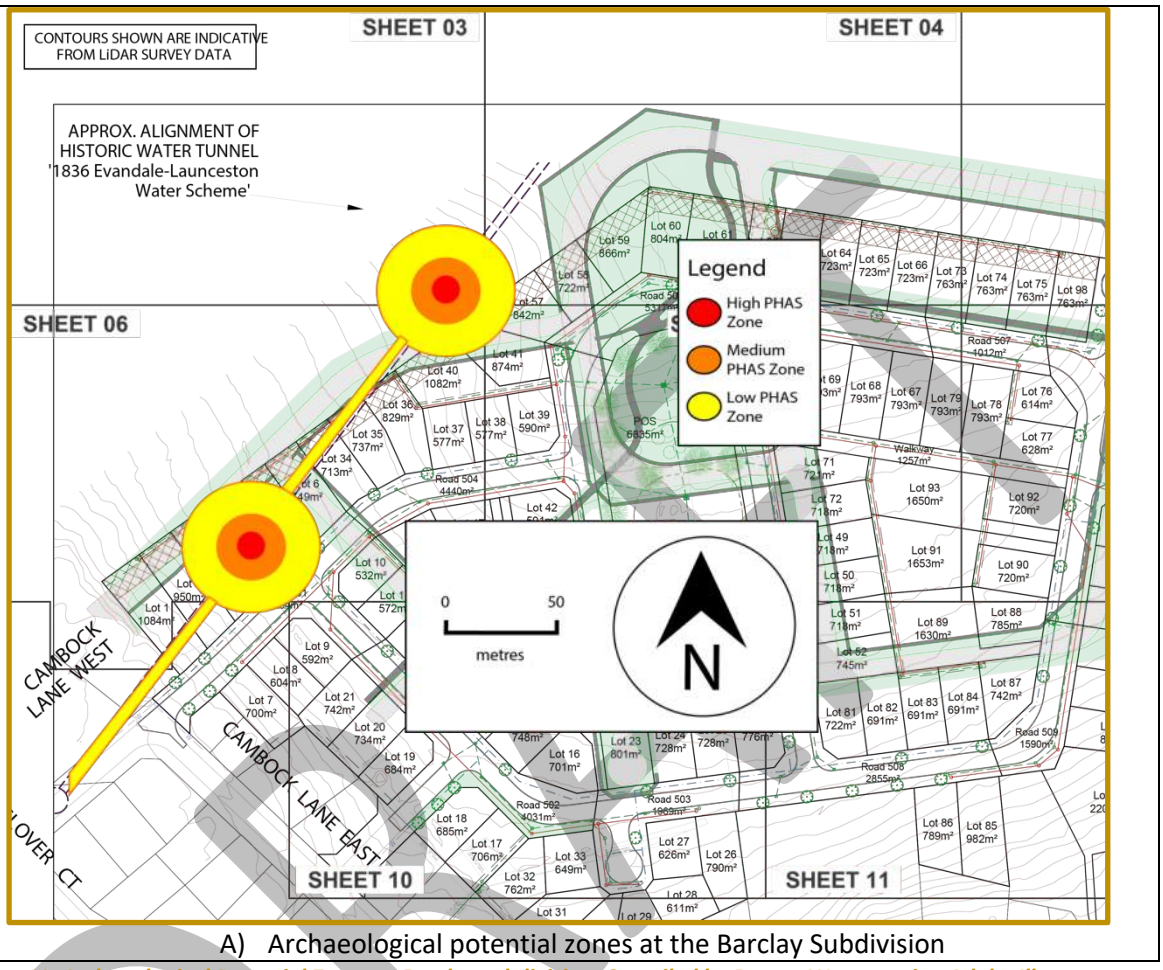
The study area is assessed as having very high archaeological potential (see PHAS Zones in **Figure 15** below) and very high archaeological significance at a state (and possibly national) level.

This report recommends that controlled archaeological excavation (test pitting) occur on this site as per usual archaeological standard procedures and this supported by Heritage Tasmania guidelines associated with the ELWS (see **Section**). The procedures for controlled archaeological excavation (test pitting) are outlined in this AMS report as per usual legislative requirements. Features within these areas may be destroyed or damaged by subdivision works and the controlled archaeological

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excavation (test pitting) (supervised by an Archaeologist) will establish the extent, condition and relationships of archaeological remains that are present in the development area. **Figure 15** details PHAS Zones within the area of the development and provides a guide as to where controlled archaeological excavation (test pitting) should be prioritised.



A) Archaeological potential zones at the Barclay Subdivision

Figure 41: Archaeological Potential Zones at Barclay subdivision. Compiled by Darren Watton using Adobe Illustrator 2019.

It is usually a requirement of *Practice Note No. 2* that an AMS be prepared when archaeological monitoring or excavation is proposed at a site to be developed. The items to be included in the AMS are detailed in **Section 8.1**. The following standard considerations should be addressed before commencement of any works at the Barclay Subdivision site in Evandale.

- A copy of the AMS be supplied to HT - while not a requirement here, HT is aware of the project and should have a copy for their records - and the proponent (The Baker Group) for review.
- In regard to Aboriginal heritage, there is no requirement for an Aboriginal Heritage survey and AHAR, but it is strongly recommended that these be undertaken at the site for risk management purposes. **Appendix 2** contains the guidelines for unanticipated discoveries (UDP).
- Tasmania police should be advised if there is any possibility of finding of human skeletal remains in accordance with the *Coroners* Act 1995. In this case there is no reasonable expectation of finding skeletal remains and this is not required.
- A suitably qualified archaeologist should supervise archaeological works at the study area. This supervision can be completed by Southern Archaeology.

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- The objectives and methodology of the archaeological work should be clearly defined and understood by the supervising archaeologist, the developer (The Baker Group), The Northern Midlands Council and Heritage Tasmania (See **Section 8.4** below). A pre-start site is recommended.
- The Archaeologist should consult with the developer (The Baker Group) prior to the commencement of work and the responsibilities of both parties be clearly defined and understood.
- A 'Dial before you Dig' or similar searches for services should be completed prior to commencement of work. This is the responsibility of the developer (The Baker Group).
- Spoil management and disposal should be organized before commencement of the excavation. This is the responsibility of the developer (Baker Group);
- Items such as water supply, provision of toilet facilities, safety fencing and shoring, concrete cutting and building demolition, marking out of and surveying of the site and the provision of equipment and tools should be clearly defined and understood by all parties prior to commencement of works. These are generally the responsibility of the developer (The Baker Group).
- Limitations and constraints such as bad weather, contaminants, management of groundwater, toxic materials, the discovery of unanticipated Aboriginal or historical heritage and structural concerns should be defined and a plan for their management organized. These are addressed in the Letter of Engagement, the development contractor's scope of works and in this report as relevant and will be addressed at the pre-start meeting.
- OH & S issues should be clearly defined before commencement of work. A Job Safety Assessment (JSA) can be prepared by the Archaeologist and other relevant contractors prior to commencement of excavation.

13.3 Excavation/trench plan

The following excavation/trench plan has been devised by Southern Archaeology for the study area. It is based upon results of background research, field observations, best practice, usual archaeological practices, professional experience and consultation with Heritage Tasmania regarding the site. The excavation/trench plan is devised to achieve the best possible information gathering results from the site while minimising the impact to sensitive archaeology.

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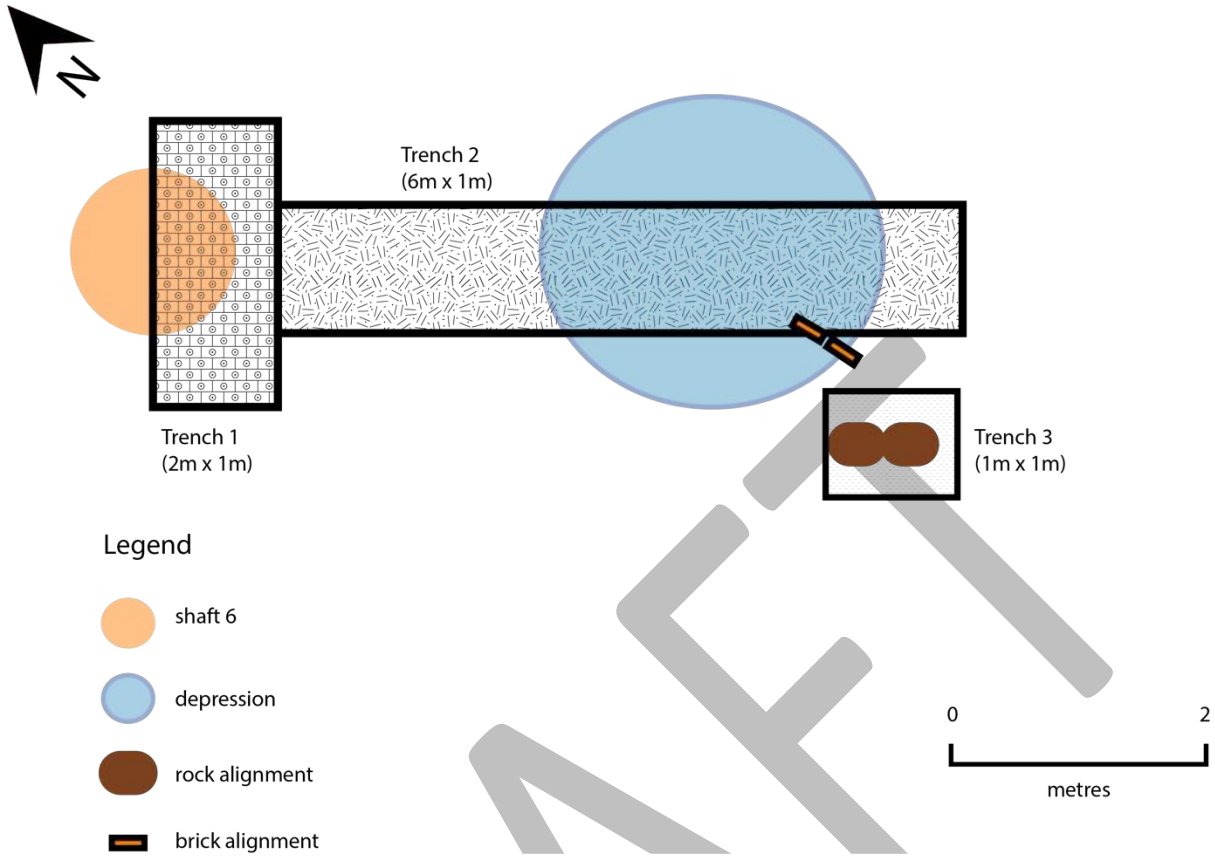


Figure 42: Sketch map showing the excavation/trench plan for Shaft 6 and the associated infrastructure at the Barclay subdivision. Compiled by Darren Watton using Adobe Illustrator 2019.

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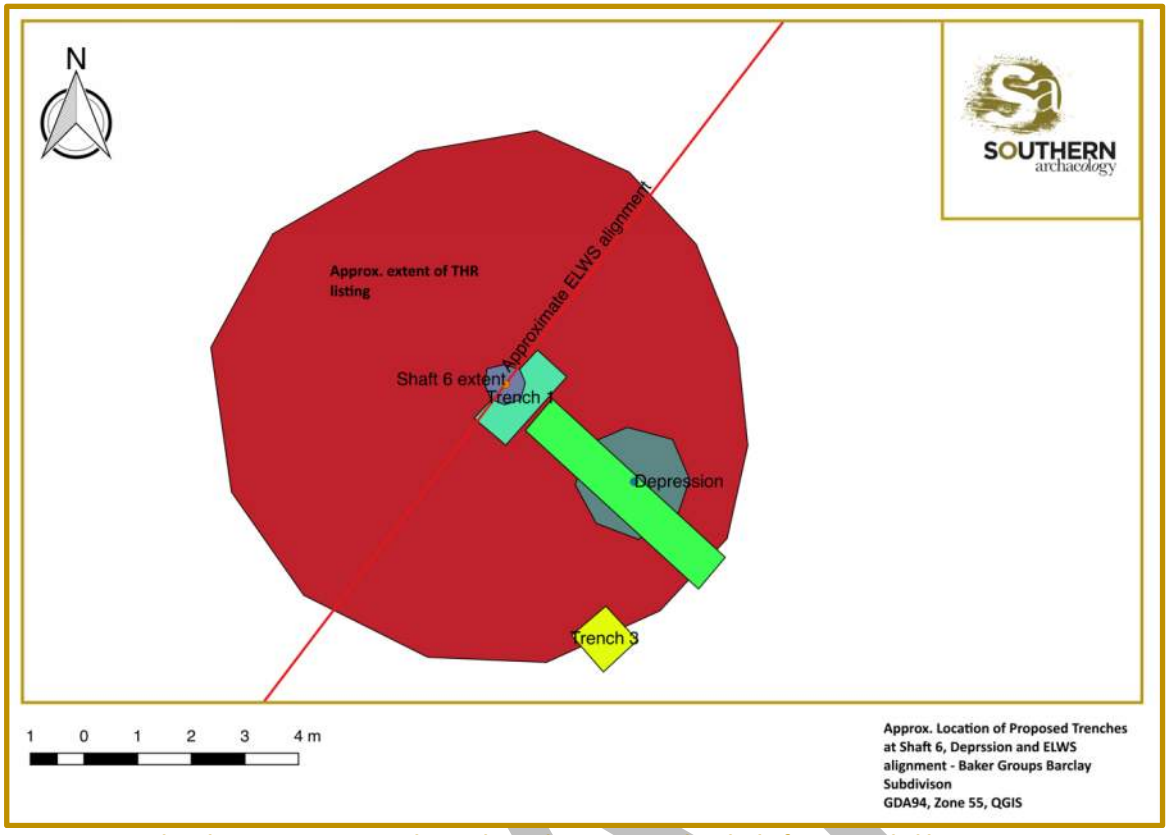


Figure 43: GIS plan showing excavation plan and trenches associated with Shaft 6. Compiled by Darren Watton using QGIS 2019.

13.4 Archaeological Methods

Archaeological methods are set out in this AMS according to usual standard archaeological procedures and according to methods detailed in Burke and Smith (2004). Archaeological methods are defined by the nature of the site, expertise, time and budget constraints, the SHAP results, the results of any work so far, research results and the procedures set out in the AMS.

13.5 Controlled Archaeological Excavation (Test Pitting)

13.5.1 Timeframe for archeological work onsite

The anticipated length of the proposed controlled archaeological excavation

The following methods are proposed for the controlled archaeological excavation (test pitting) works at the study area and will follow general principles outlined in Burke and Smith (2004):

- A qualified archaeologist to supervise all archaeological works.
- An excavator driver and machine will be supplied by the developer (The Baker Group) for the initial excavation and clearing of debris and vegetation over Shaft 6. This is anticipated to be 1 day. The excavator will return for the backfilling of the site after the excavation is completed (in negotiation with the proponent, Heritage Tasmania and the archaeologist and dependant on the results of the excavation). The use of the machine will be guided by this AMS and the archaeologist on-site.

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- Excavation will be laid out according to requirements detailed in the developers scope of works and drawings associated with the subdivision and approved archaeological methods set out in this AMS.
- The PHAS Zones in **Figure 15** set out the areas or zones where archaeological potential is expected. These PHAS Zones will guide and focus archaeological work and the excavation/trench plan (**FIGURE**) will guide and focus the individual trenches and the excavation.
- Topsoil and grass overburden will be removed first by machine (as detailed above) and the sub-surface exposed. This can be done in sections as agreed between parties (for example in 10-20m horizonal sections as negotiated). The subsequent archaeological excavation will proceed by hand in the usual archaeological fashion (i.e. by feature and context).
- Trenches will be opened systematically to explore all information gathering possibilities. It is expected that excavation will begin at Shaft 6 and proceed first towards the depression feature then to the wall/brick alignments (see excavation/trench plan in **FIGURE**).
- Hand excavation will be by context and proceed to sterile levels to expose all sub-surface fabric as per usual archaeological practices and at the discretion of the supervising archaeologist. The archaeologist will decide when archaeological potential has been realised based on professional experience, stratigraphic considerations and site observations. Features and contexts will be exposed and recorded as per usual archaeological methods (see **SECTION**)
- Hand excavation is required to expose archaeological features and contextual (stratigraphic) changes within the fabric (at the discretion of the supervising archaeologist). Hand excavation also enables the best opportunities for artefact recording and collection.
- Fill or overburden, or stratigraphic layers, may need to be sieved for archaeological remains/material. There are a number of options and considerations in this:
    - A 5mm table sieve supplied by the archaeologist. This works for most jobs where small amounts of hand sieving or sample sieving are required.
    - Mechanical sieve screening (5mm trailer sieve) may be engaged to support this process if high densities or significant artefacts are located. This can be supplied by Southern Archaeology if required at a hire-rate of $330.00 per day. This machine can be a significant labour and time cost saving when large amounts of material are required to be sieved (material can also be loaded by excavator). It is anticipated that on this small job that the mechanical sieve may be unnecessary.
    - Wet sieving may also be required (for either table or mechanical sieving) if soil material is difficult to dry sieve (e.g. contains excessive amounts of clay or moisture). The provision of a water tanker for this purpose will be the responsibility of the proponent (The Baker Group).
    - These options will be negotiated with the consulting archaeologist.

- The supervising archaeologist reserves the right to extend or limit the trenches to discover the extent of archaeological features and fabric or to avoid sensitive archaeological material. This will usually be done after notifying Heritage Tasmania of this intention for advice.
- Trenches will be backfilled according to agreed expectations within this AMS and with consideration of any archaeology uncovered. Usual procedure is to cover with geofabric, and this is at the cost of the proponent (the Baker Group). Backfilling is the responsibility of the development contractor in negotiation with the Archaeologist.

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- All archaeological artefacts will be recorded *in situ*, then collected for cataloguing and analysis. These will be individually bagged, systematically labeled by feature and context and stored in a secure location (see below).
- Cataloguing of artefacts (if required) will involve recording, cleaning (as needed), researching, photographing, bagging, labeling each individual artefact for interpretative, descriptive and dating purposes. All data will be entered into a spreadsheet and documented in a separate Artefact Analysis Report (AAR). A catalogue of relevant data and the AAR will be included in the final report (as an Appendix);
- Any particularly sensitive features or material found on site (i.e. rare or very early artefacts) may need to be preserved *in situ* or stored or curated at the advice of the archaeologist and at the cost of the client. These situations are discussed with Heritage Tasmania as a first pass requirement.

All features and contexts will be recorded in the usual manner as set out below in **Section 8.5** below.

13.6 Recording methods

All archaeological features, contexts, artefacts and materials will be recorded in the usual manner (standard archaeological procedures) and as detailed by Burke and Smith (2004). The general methods of recording are set out below:

- All archaeological features and contexts will be recorded at the discretion of the supervising archaeologist but in general this will include feature sheets, context (stratigraphic) sheets, trench sheets, photographs and photographic records, and field notes to assist the archaeologist in interpreting and recording the site.
- Archaeological features will be drawn and mapped as appropriate.
- Archaeological features may need to be surveyed by a qualified surveyor and at the cost of the proponent (The Baker Group).
- Photographs will be taken to record the site and the extent of archaeological features and contexts. These will include a scale and north arrow where relevant.
- Cataloguing will involve recording, cleaning (as needed), researching, photographing, bagging, labeling and entering onto a spreadsheet each individual artefact for descriptive and dating purposes. The catalogue (with an AAR) will be included (as an Appendix) in the final report prepared by a qualified archaeologist.
- All recorded information will be used to help interpret the site and will form part of the final report.
- If no archaeological material is found a small report will be prepared which outlines the procedures and methodology during the works (see **Section 8.6** below).

13.7 Preparation of report

A professional archaeological excavation report will be prepared for the study area once the works and archaeological work has occurred. This will include:

1. Initially, a Draft Archaeological Excavation Report (DAER) detailing archaeological features or material recorded (length and detail depends on archaeological features and material recorded – see following). This will be reviewed by the proponent and Heritage Tasmania and any changes or issues addressed.

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2. An Artefact Analysis Report (AAR) and Artefact Catalogue (AC) with details about the artefacts found or recorded in the excavation - These will be dated, interpreted and catalogued.
3. A Final Archaeological Excavation Report (FAER) with changes and issues from the DAER addressed, a copy of the Artefact Analysis Report (AAR) and Artefact Catalogue (AC) as an appendix.

Reports and associated work for the DAER, FAER, AAR and AC will:

- Be at the cost of the proponent as outlined in the quote and letter of engagement.
- The report will detail any archaeological features discovered, the results of the excavation, provide an interpretation of the results, show, catalogue and describe the artefacts found and provide recommendations as to the management, display or storage of artefacts and future preservation and management of archaeological features and the site. It is anticipated that the report will be completed **two** months after the completion of the excavation, but this is at the discretion of the supervising archaeologist, subject to the nature or volume of features and artefacts found.
- An exact time frame and cost for the completion of this work is included as a separate quote.

13.8 Archaeological Research Design (ARD)

The ARD is a set of questions which seek relevant answers regarding research information that may be gathered from a site that may contribute to a greater understanding of Tasmania's history. They are particularly useful in informing criteria (c) in terms of archaeological research. The questions should answer the research objectives of the archaeological work (THC 2009). The THC (2009) encourages a tiered structured set of questions as follows:

- Tier One Questions – Outline the essential knowledge base needed for any site research or significance evaluations. These questions are typically empirical (based on observations rather than theory or pure logic) and have straightforward answers. Examples include: When was the site occupied? What were the phases of use? What activities were conducted at the site? When was this site abandoned?
- Tier Two Questions – Connect the material remains on the site with specific behaviour. For example: Do the contents of the privy tell us anything about the activities within the house?
- Tier Three Questions – Associate the activities and behaviour at individual sites with broad social and cultural developments such as the processes of industrialization, or cultural change. These are often open-ended inquiries which seek refined and nuanced understandings of human cultures within broader theoretical or comparative contexts.

13.9 ARD for the study area

The archaeological works at the study area seek to understand whether there are any features or materials present in the area which might be impacted by the subdivision works.

The following questions have been developed specifically for the study area:

1. What is the extent of the heritage features at the site? Do they extend beyond the area designated on the heritage register?
2. How was Shaft 6 constructed? Are there any clues as to the method of construction and the relationship to the ELWS tunnel?

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3. What can the archaeological features or materials present at study area tells about activities at the site. For example, what is the purpose of the depression (or the brick and rock alignments) and how does it relate to Shaft 6?
4. Can the study area provide insight into when and how the site was developed and used? Were the associated features used to construct Shaft 6?
5. Can the site provide insight into when it when it was abandoned? For example, were the associated features used after the tunnel was abandoned?
6. Can this site provide any insight into engineering and the building of government infrastructure in northern Tasmania?
7. Is there any evidence of the convicts that built the tunnel, Shaft 6 and the associated infrastructure? Can the artefacts at the site tell us anything about the occupation of the site?

This is a rare site with high archaeological significance and proposed archaeological works are a unique opportunity to further investigate and understand this site and the ELWS in general.

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Exhibited

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Exhibited

15 Appendix 1: ELWS Datasheet (Pl. Id. 11063) – Attached as PDF.

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Exhibited

16 Appendix 2 – Tasmanian Heritage Council: Development Guidelines for the Evandale to Launceston Water Scheme (2014) – Attached as PDF

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Exhibited

17 Appendix 3: Unanticipated Discovery Plan (UDP) – Aboriginal Heritage

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Exhibited

Unanticipated Discovery Plan

Procedure for the management of unanticipated discoveries of Aboriginal relics in Tasmania

For the management of unanticipated discoveries of Aboriginal relics in accordance with the *Aboriginal Heritage Act 1975* and the *Coroners Act 1995*. The Unanticipated Discovery Plan is in two sections.

Discovery of Aboriginal Relics other than Skeletal Material

Step 1:
Any person who believes they have uncovered Aboriginal relics should notify all employees or contractors working in the immediate area that all earth disturbance works must cease immediately.

Step 2:
A temporary 'no-go' or buffer zone of at least 10m x 10m should be implemented to protect the suspected Aboriginal relics, where practicable. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected Aboriginal relics have been assessed by a consulting archaeologist, Aboriginal Heritage Officer or Aboriginal Heritage Tasmania staff member.

Step 3:
Contact Aboriginal Heritage Tasmania on **1300 487 045** as soon as possible and inform them of the discovery. Documentation of the find should be emailed to **aboriginal@heritage.tas.gov.au** as soon as possible. Aboriginal Heritage Tasmania will then provide further advice in accordance with the *Aboriginal Heritage Act 1975*.

Discovery of Skeletal Material

Step 1:
Call the Police immediately. Under no circumstances should the suspected skeletal material be touched or disturbed. The area should be managed as a crime scene. It is a criminal offence to interfere with a crime scene.

Step 2:
Any person who believes they have uncovered skeletal material should notify all employees or contractors working in the immediate area that all earth disturbance works cease immediately.

Step 3:
A temporary 'no-go' or buffer zone of at least 50m x 50m should be implemented to protect the suspected skeletal material, where practicable. No unauthorised entry or works will be allowed within this 'no-go' zone until the suspected skeletal remains have been assessed by the Police and/or Coroner.

Step 4:
If it is suspected that the skeletal material is Aboriginal, Aboriginal Heritage Tasmania should be notified.

Step 5:
Should the skeletal material be determined to be Aboriginal, the Coroner will contact the Aboriginal organisation approved by the Attorney-General, as per the *Coroners Act 1995*.

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Aboriginal Heritage Tasmania
Department of Primary Industries, Parks, Water and Environment

Tasmanian Government

Darren Watton 0439 444868 and Ian Edmondson 0476 620 056

Exhibited

Guide to Aboriginal site types

Stone Artefact Scatters

A stone artefact is any stone or rock fractured or modified by Aboriginal people to produce cutting, scraping or grinding implements. Stone artefacts are indicative of past Aboriginal living spaces, trade and movement throughout Tasmania. Aboriginal people used hornfels, chalcedony, spongelite, quartzite, chert and silcrete depending on stone quality and availability. Stone artefacts are typically recorded as being 'isolated' (single stone artefact) or as an 'artefact scatter' (multiple stone artefacts).

Shell Middens

Middens are distinct concentrations of discarded shell that have accumulated as a result of past Aboriginal camping and food processing activities. These sites are usually found near waterways and coastal areas, and range in size from large mounds to small scatters. Tasmanian Aboriginal middens commonly contain fragments of mature edible shellfish such as abalone, oyster, mussel, warrener and limpet, however they can also contain stone tools, animal bone and charcoal.

Rockshelters

An occupied rockshelter is a cave or overhang that contains evidence of past Aboriginal use and occupation, such as stone tools, middens and hearths, and in some cases, rock markings. Rockshelters are usually found in geological formations that are naturally prone to weathering, such as limestone, dolerite and sandstone

Quarries

An Aboriginal quarry is a place where stone or ochre has been extracted from a natural source by Aboriginal people. Quarries can be recognised by evidence of human manipulation such as battering of an outcrop, stone fracturing debris or ochre pits left behind from processing the raw material. Stone and ochre quarries can vary in terms of size, quality and the frequency of use.

Rock Marking

Rock marking is the term used in Tasmania to define markings on rocks which are the result of Aboriginal practices. Rock markings come in two forms; engraving and painting. Engravings are made by removing the surface of a rock through pecking, abrading or grinding, whilst paintings are made by adding pigment or ochre to the surface of a rock.

Burials

Aboriginal burial sites are highly sensitive and may be found in a variety of places, including sand dunes, shell middens and rock shelters. Despite few records of pre-contact practices, cremation appears to have been more common than burial. Family members carried bones or ashes of recently deceased relatives. The Aboriginal community has fought long campaigns for the return of the remains of ancestral Aboriginal people.

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Further information on Aboriginal Heritage is available from:

Aboriginal Heritage Tasmania
Natural and Cultural Heritage Division
Department of Primary Industries, Parks, Water and Environment
GPO Box 44 Hobart TAS 7001

Telephone: **1300 487 045**
Email: **aboriginal@heritage.tas.gov.au**
Web: **www.aboriginalheritage.tas.gov.au**

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PLANNING REPORT

White Hills Stormwater Trunk Main
778, 840, 866 and 876 White Hills Road, White Hills (including CT: 107326/1)



Northern Midlands Council

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Executive Summary

The application seeks planning approval for the construction of approximately 945 metres of underground stormwater trunk main and associated infrastructure across land at White Hills Road, Evandale. The infrastructure will provide the primary stormwater conveyance connection between the northern Evandale urban catchment, including the proposed Barclay Subdivision, and an existing tributary of Rose Rivulet.

The proposal comprises buried DN900 and DN1050 pipelines, maintenance holes, an engineered outlet structure, energy dissipation measures, scour protection works and associated rehabilitation and revegetation. Upon completion, the infrastructure is intended to become part of Northern Midlands Council's public stormwater network.

The site is located within the Agriculture and Rural Living zones and is affected by the Waterway and Coastal Protection Area overlay. The site also contains part of the heritage-listed Evandale to Launceston Water Scheme, which is entered on the Tasmanian Heritage Register. A Statement of Historical Archaeological Potential and Archaeological Method Statement have previously been prepared for the site, and the application will be subject to the referral provisions of the *Historic Cultural Heritage Act 1995*.

Assessment of the proposal demonstrates that the stormwater trunk main is appropriately categorised as Utilities and satisfies the relevant provisions of the *Tasmanian Planning Scheme - Northern Midlands*. The development represents essential municipal infrastructure required to service existing and future urban development within northern Evandale while minimising impacts on agricultural land through its predominantly underground design.

Specialist ecological and engineering investigations confirm that impacts associated with the proposed outfall can be appropriately managed through the incorporation of energy dissipation measures, scour protection, revegetation works and construction management practices. The proposal will provide a coordinated and long-term stormwater management solution, improve the performance of the local drainage network and support the orderly development of land identified for future residential growth.

The assessment concludes that the proposal satisfies the applicable planning scheme provisions and that a discretionary permit can be granted, subject to appropriate conditions.

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1. Introduction

6ty° Pty Ltd have been engaged by **Baker Group** to prepare an application[1] for a new stormwater trunk main (**SW trunk main**) which will traverse five (5) properties located at 778, 840, 866 and 876 White Hills Road, Evandale and including Certificate of Title Volume 107326 Folio 1 (**'proposal'**).

The purpose of this report is to provide a description and details of the proposal and an assessment of the application against the applicable standards[2] of the *Tasmanian Planning Scheme* incorporating the **Northern Midlands** *Local Provisions Schedule* (**'the Scheme'**).

This report should be read in conjunction with following stormwater trunk main plans prepared by **IPD Consulting** with **1467** and other supporting information listed in Table 1. Where there are discrepancies between the information included in this report and the plans or information listed in Table 1, the plans and information listed in Table 1 prevail.

Table 1 - plans and supporting information that form part of the application.

Title	Number	Revision	Date	Status
Cover Sheet	1467-SW-001	A	17.09.25	Planning Approval
General Notes	1467-SW-010	A	17.09.25	Planning Approval
Key View Plan	1467-SW-020	A	17.09.25	Planning Approval
Longsection (1 of 9)	1467-SW-030	A	17.09.25	Planning Approval
Longsection (2 of 9)	1467-SW-031	A	17.09.25	Planning Approval
Longsection (3 of 9)	1467-SW-032	A	17.09.25	Planning Approval
Longsection (4 of 9)	1467-SW-033	A	17.09.25	Planning Approval
Longsection (5 of 9)	1467-SW-034	A	17.09.25	Planning Approval
Longsection (6 of 9)	1467-SW-035	A	17.09.25	Planning Approval
Longsection (7 of 9)	1467-SW-036	A	17.09.25	Planning Approval
Longsection (8 of 9)	1467-SW-037	A	17.09.25	Planning Approval
Longsection (9 of 9)	1467-SW-038	A	17.09.25	Planning Approval
Trench Details	1467-SW-050	A	17.09.25	Planning Approval
Outlet Details (1 of 2)	1467-SW-060	A	17.09.25	Planning Approval
Outlet Details (2 of 2)	1467-SW-061	A	17.09.25	Planning Approval
Typical Manhole Details	1467-SW-070	A	17.09.25	Planning Approval

Report	Author	Revision	Date
Barclay Subdivision Stormwater Outfall Design	IPD Consulting	A	25.11.25
Natural Values Assessment	Enviro-dynamics	-	August 2025
Natural Values Assessment	Elgin Associates	-	24 July 2025
Archaeological SHAP and AMS	Southern Archaeology	Draft	4 September 2019

[1] *means an application for a permit made under this planning scheme*. Table 3.1, Scheme.
[2] *means, in any zone, code or specific area plan, the objective for a particular planning issue and the means for satisfying that objective through either an acceptable solution or performance criterion presented as the tests to meet the objective*. Table 3.1, Scheme.

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1.1 Planning Overview

The site[3] comprises five (5) lots. The location and specific planning details of the site are set out in Table 2, Table 3 and Figure 1 below.

Table 2 - site specific details and planning scheme controls.

Category	Details
Address	778, 840, 866 and 876 White Hills Road, Evandale
Property ID	3398202 1888486 1888478 7751018 6395365
Title	Volume **188870** Folio **2** Volume **107326** Folio **1** Volume **227393** Folio **1** Volume **36474** Folio **1** Volume **38076** Folio **1**
Site Area	179.96ha
Planning Scheme	Tasmanian Planning Scheme - **Northern Midlands**
Zone	Rural Living Agriculture
Overlays	• Airport Obstacle Limitation Area • Bushfire-Prone Areas • Waterway and Coastal Protection Area
Codes	• Natural Assets
General Overlays	Nil
Special Provisions	Nil
Proposed Use	Utilities
Proposed Development	Construction of a stormwater trunk main
Application Type	**Discretionary**

Table 3 - lot specific details.

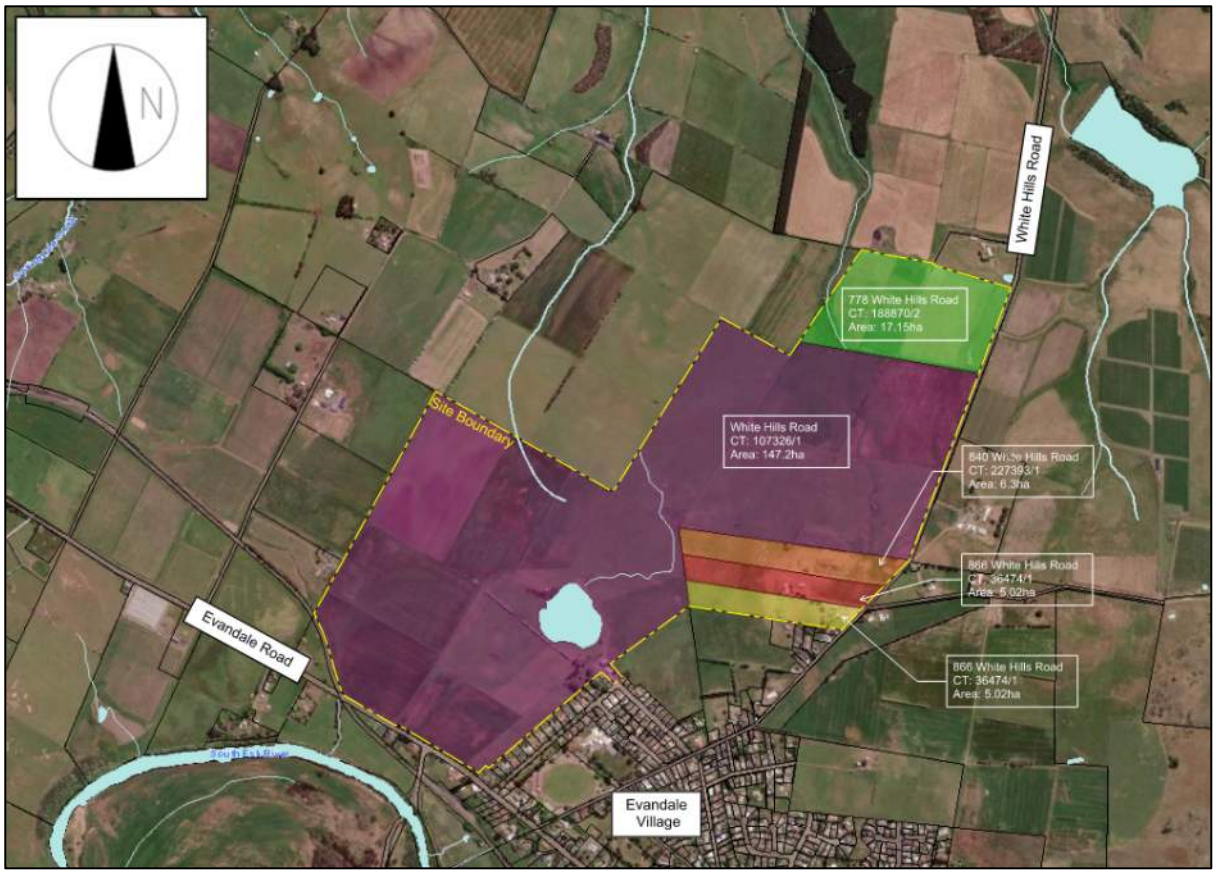
Address	Title	PID	Area	Frontage		Zone	Overlay	Existing Use
				Width	Road			
778 White Hills Road	188870/2	3398202	17.15ha	258m	White Hills Road	Agriculture	• Bushfire-Prone Areas • Airport Obstacle Limitation Area • Waterway and Coastal Protection Area	agriculture
White Hills Road	107326/1	1888486	147.2ha	648m 515m	White Hills Road Evandale Road	Agriculture	• Bushfire-Prone Areas • Airport Obstacle Limitation Area • Waterway and Coastal Protection Area	agriculture
840 White Hills Road	227393/1	1888478	6.3ha	112m	White Hills Road	Rural Living	• Bushfire-Prone Areas • Airport Obstacle Limitation Area	Single dwelling

[3] *means the lot or lots on which a use or development is located or proposed to be located*. Table 3.1, Scheme.

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Address	Title	PID	Area	Frontage		Zone	Overlay	Existing Use
				Width	Road			
866 White Hills Road	36474/1	7751018	5.02ha	98m	White Hills Road	Rural Living	• Bushfire-Prone Areas • Airport Obstacle Limitation Area	Single dwelling
876 White Hills Road	38076/1	6395365	4.29ha	92m	White Hills Road	Rural Living	• Bushfire-Prone Areas • Airport Obstacle Limitation Area	Single dwelling

Figure 1 - ariel image illustrating the location of the site within the context of the surrounding area.



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2. Site and Surrounding Area

2.1 Site Characteristics

The site is located on the northern edge of Evandale and comprises five (5) lots with a combined area of approximately 179.96 hectares. The land is predominantly rural in character and consists largely of open agricultural paddocks, together with three established rural residential properties fronting White Hills Road.

The site contains a network of farm drains and an unnamed watercourse that traverses the agricultural land before flowing northward and ultimately discharging to Rose Rivulet. Topography across the site is generally gently undulating, with drainage naturally directed toward the existing watercourse network. Vegetation is generally limited to pasture, agricultural land uses, scattered trees and vegetation associated with drainage lines and farm boundaries.

The proposed development comprises the construction of a stormwater trunk main extending across the site through agricultural land before discharging into the unnamed tributary of Rose Rivulet. The majority of the alignment is located within open farmland and avoids substantial existing development.

2.2 Surrounding Area

The site is situated within a predominantly rural landscape immediately north of the Evandale township. The surrounding area is characterised by broad-acre agricultural land used for grazing, cropping and viticulture, together with scattered rural residential properties concentrated along White Hills Road.

The township of Evandale adjoins the southern extent of the site and represents the nearest urban area. Land to the north, east and west is predominantly agricultural, comprising large paddocks, farm dams, drainage channels and occasional rural buildings. The locality is serviced by White Hills Road and Evandale Road, which provide access to surrounding properties and the broader road network.

The wider catchment contains an established system of open drains and watercourses that collect runoff from surrounding farmland and convey flows to Rose Rivulet downstream of the site. The receiving environment for the proposed trunk main is therefore consistent with the existing rural drainage network that characterises the broader locality.

2.3 Existing Use and Development

The site is currently used for a combination of agricultural and rural residential purposes. The larger lots are utilised for agricultural activities and are largely undeveloped, while three smaller lots contain existing single dwellings and associated domestic outbuildings.

Existing infrastructure within the site includes White Hills Road frontage, farm access tracks, agricultural fencing, drainage channels and the unnamed tributary that receives runoff from the surrounding catchment. Aside from the existing dwellings on the rural residential lots, built development across the site is limited and the land remains predominantly open and rural in nature.

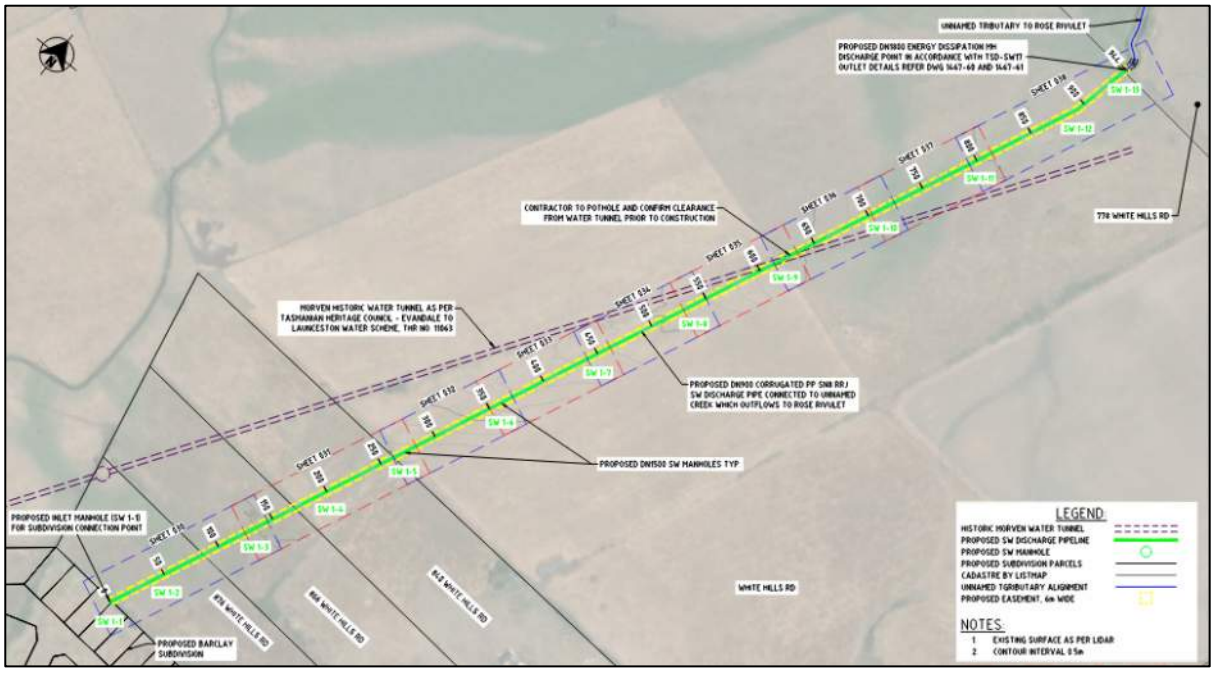
The proposed stormwater trunk main will be constructed primarily through agricultural land and will connect to the existing drainage system via a new outfall structure located within the unnamed tributary.

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3. Proposed Use and Development

The application seeks approval for the construction and operation of a stormwater trunk main and associated stormwater infrastructure on land at White Hills Road, Evandale (refer to Figure 2).

Figure 2 – excerpt of White Hills Stormwater Trunk Main Key View Plan illustrating the location and spatial extent of the proposed stormwater trunk main.



The proposal forms a key component of the broader stormwater management framework for northern Evandale and has been designed to provide a formal stormwater conveyance system between existing and future urban development areas and the receiving drainage network. The infrastructure will collect, convey and discharge stormwater runoff from the proposed Barclay Subdivision (to be assessed under a separate development application), existing upstream urban catchments and future urban growth areas to an unnamed tributary that ultimately drains to Rose Rivulet.

The proposal is required to address a long-standing urban drainage issue affecting northern Evandale. The absence of a suitable trunk drainage connection has constrained the efficient servicing and development of land intended for residential growth. The construction of the trunk main will establish the primary drainage connection required to manage stormwater in a controlled and coordinated manner, thereby enabling the orderly development of residential land and improving the overall performance of the local stormwater network.

The infrastructure is intended to become part of the public stormwater system following construction. Upon completion and acceptance, the trunk main is proposed to be transferred to Northern Midlands Council and managed as public stormwater infrastructure in accordance with the provisions of the *Urban Drainage Act 2013*, ensuring its ongoing operation, maintenance and integration within the municipal drainage network.

3.1 Proposed Use

The proposed use is for stormwater drainage infrastructure that will form part of the public stormwater network servicing northern Evandale.

The trunk main will provide an essential utility function by conveying stormwater runoff from the (proposed) Barclay Subdivision, existing urban catchments and future urban development areas to an

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appropriate discharge location within the existing drainage system. The infrastructure will facilitate the safe and efficient management of stormwater, reduce reliance on uncontrolled overland flow paths and provide the capacity necessary to support planned urban growth.

The use is infrastructure-based in nature and has been designed to not result in the generation of ongoing operational impacts beyond routine inspection, maintenance and asset management activities associated with public stormwater infrastructure.

3.2 Proposed Development

The proposed development comprises the construction of approximately 945 metres of underground stormwater trunk main extending from the northern boundary of the (proposed) Barclay Subdivision land to an unnamed tributary of Rose Rivulet. The alignment traverses predominantly agricultural land before connecting to the existing drainage network.

The development includes:

- approximately 945 metres of buried stormwater pipeline comprising DN1050 and DN900 pipework;
- thirteen (13) maintenance holes located along the pipeline alignment;
- a DN1800 outlet maintenance hole at the discharge location;
- an engineered energy dissipation structure incorporated within the outlet chamber;
- a rock-lined stilling basin and rock check weir to reduce discharge velocities and prevent scour;
- localised modification of the receiving drainage channel immediately downstream of the outlet;
- associated excavation, backfilling and reinstatement works; and
- revegetation and stabilisation works at the outfall location.

The trunk main has been specifically designed to convey stormwater flows from the developing northern Evandale catchment to the receiving watercourse while managing discharge velocities and minimising erosion risks through the incorporation of energy dissipation and scour protection measures. The outlet design includes a maintenance hole with internal energy dissipation, a rock stilling basin and a rock check weir to ensure stormwater is discharged in a controlled manner.

The development is necessary to resolve a long-standing drainage constraint affecting northern Evandale and to provide the trunk infrastructure required to service land identified for residential development. Without a dedicated trunk drainage connection, stormwater generated from existing and future urban areas cannot be appropriately conveyed to the receiving drainage network. The proposal will therefore unlock established residential land for development by providing the essential drainage infrastructure required to support growth while ensuring stormwater is managed in a coordinated and sustainable manner.

Upon completion, the trunk main is intended to be vested in Northern Midlands Council and incorporated into the public stormwater network, providing a long-term municipal asset that will service both current and future development within the northern Evandale catchment.

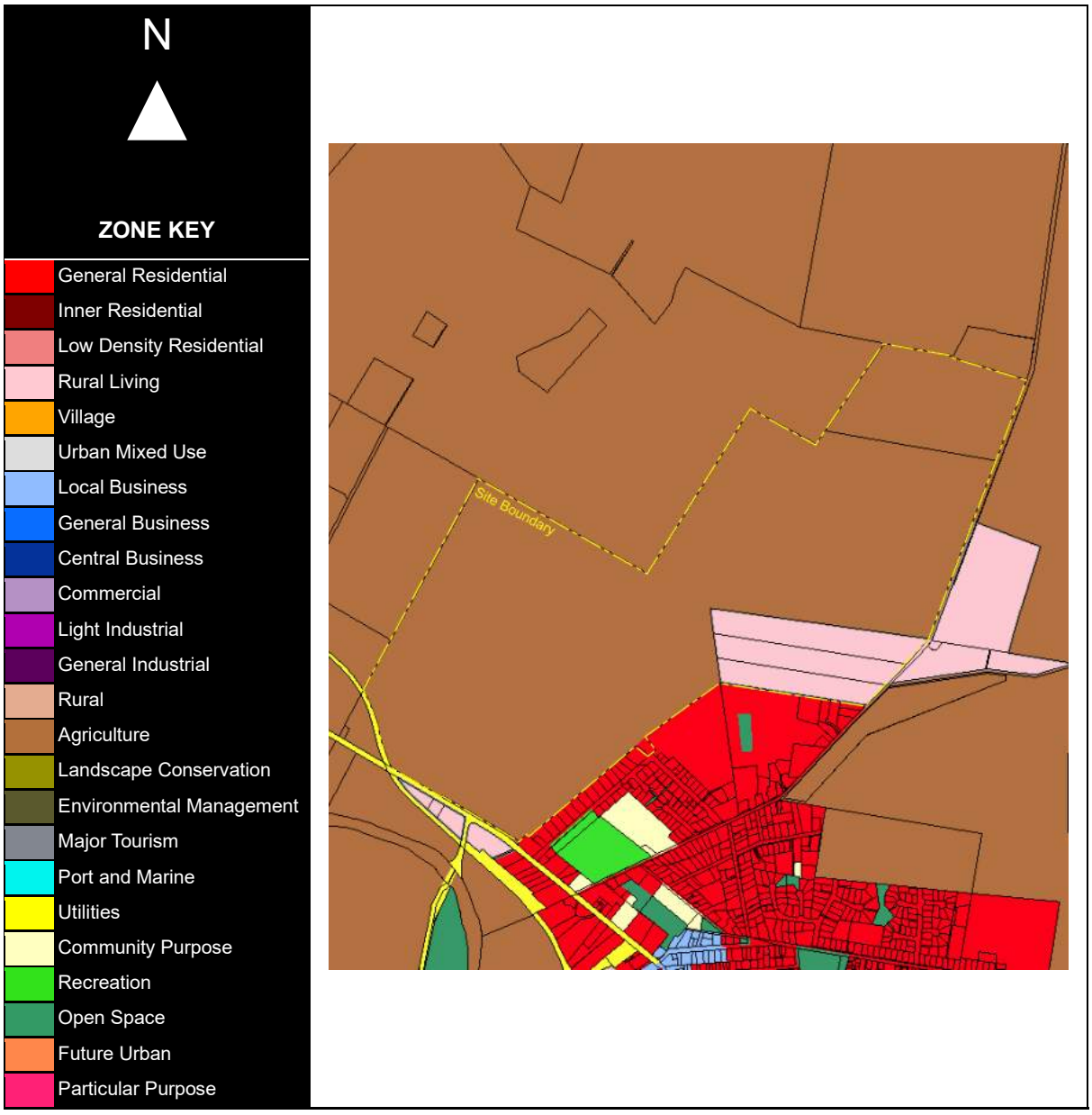
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4. Planning Scheme Controls

4.1 Zone

The zoning of the site and land surrounding the site is illustrated in Figure 3.

Figure 3 - Zone Map.



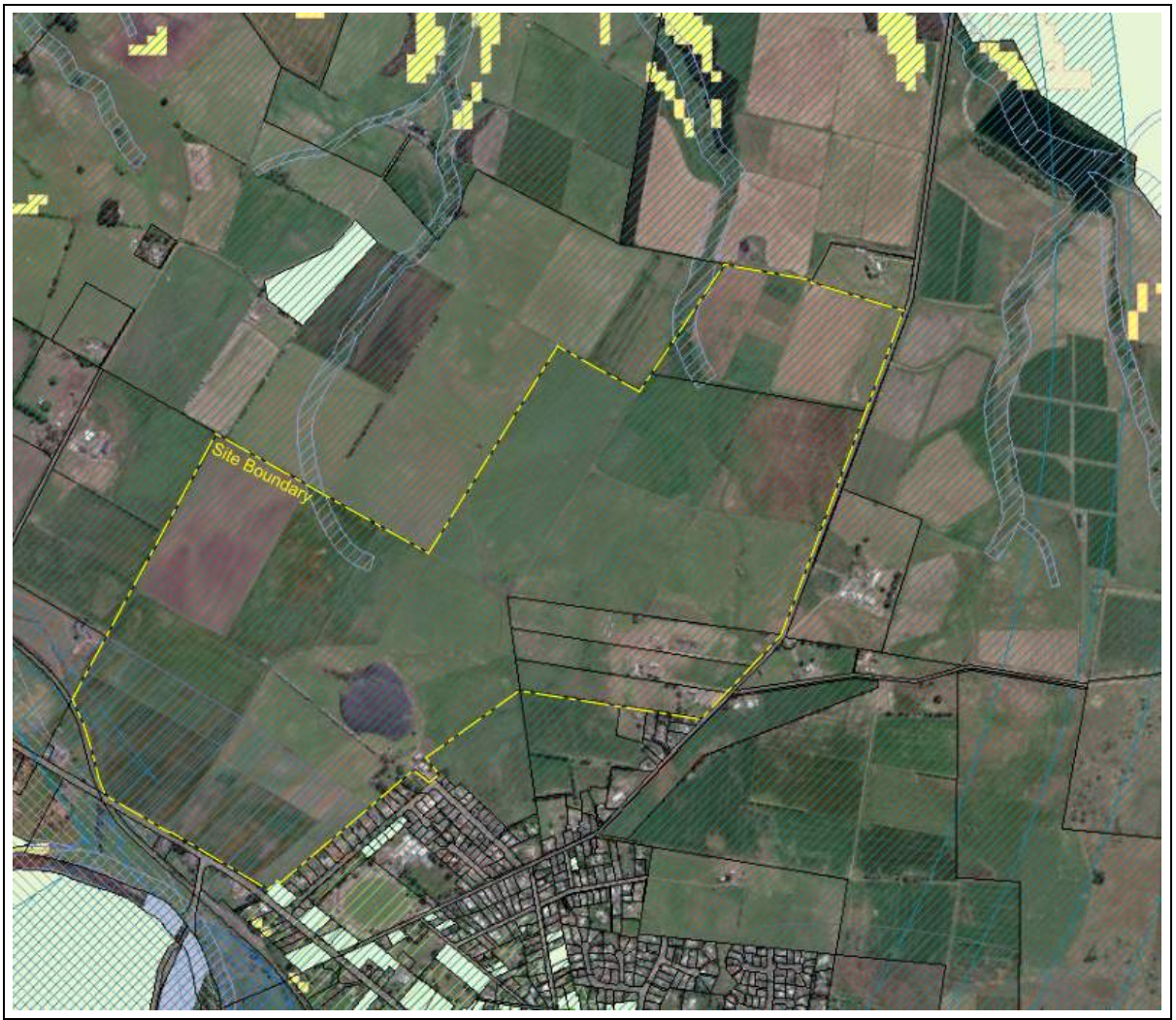
Source: image and base data retrieved from the LIST.

4.2 Overlays

Code overlays that apply to the site and land surrounding the site is illustrated in Figure 4.

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Figure 4 - Overlay Map.



OVERLAY KEY

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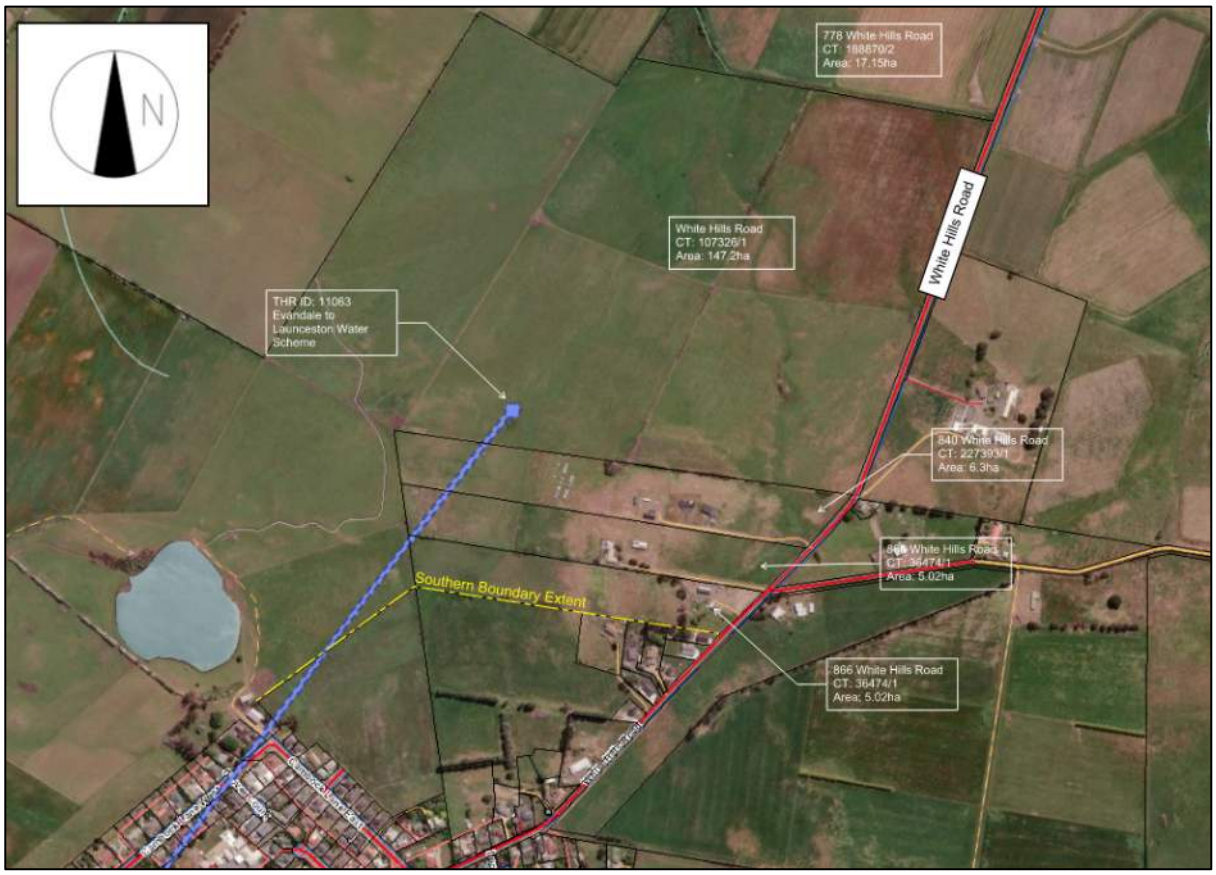
Parking Precinct Plan	Pedestrian Priority Street	Road Attenuation
Future Major Road	Future Railway	Communications Buffer
Transmission Corridor	Inner Protection Area	Substation Facility
Substation Buffer	Local Heritage Place	Heritage Precinct
Historic Landscape	Archaeological Area	Significant Tree
Waterway/Coastal Area	Coastal Refugia	Priority Vegetation
Scenic Protection Area	Scenic Road Corridor	Attenuation Area
Erosion Investigation	Low Erosion	Medium Erosion
High Erosion	Inundation Investigation	Low Inundation
Medium Inundation	High Inundation	Flood-Prone
Bushfire-Prone	Contaminated Land	Low Landslip
Medium Landslip	Medium-Active Landslip	High Landslip
Airport Noise	Airport Obstacle	

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4.3 Tasmanian Heritage Register

The site contains part of the Evandale to Launceston Water Scheme, a place entered on the Tasmanian Heritage Register (THR Place No. 11063, including Place No. 10640) (refer to Figure 5).

Figure 5 - aerial image illustrating the location of the northern extent of the THC listing.



The registered place comprises the historic water conveyance tunnel and associated infrastructure associated with Launceston's early water supply network.

A Statement of Historical Archaeological Potential (SHAP) and Archaeological Method Statement (AMS) were prepared in 2019 to assess archaeological values associated with the site and the registered heritage place. The investigations identified that the principal heritage values relate to the tunnel alignment and associated infrastructure, including Ventilation Shaft 6, and established a framework for archaeological investigation and management of any potential impacts arising from future development.

As the site contains a place entered on the Tasmanian Heritage Register, the application is subject to the referral provisions of the *Historic Cultural Heritage Act 1995* (Act). Under sections 36 - 38 of the Act, the planning authority must provide a copy of the permit application to the Tasmanian Heritage Council. The Heritage Council must then advise whether it has an interest in the application or wishes to participate in its determination. Where the Heritage Council elects to participate, it may request additional information through the planning authority. Following receipt and consideration of any additional information, the Heritage Council provides its advice to the planning authority for consideration as part of the assessment and determination of the application.

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5. Statutory Planning Assessment

The following section provides a detailed assessment of the proposed development against all Acceptable Solutions of applicable standards of the Scheme. Assessment of identified Performance Criteria is provided in Section 6 of this report.

5.1 Categorisation of Use

Provisions of clause 6.2 (Categorising Use or Development) of the Scheme are set out below:

Clause 6.2.1 *Each proposed use or development must be categorised into one of the Use Classes in Table 6.2.*

Clause 6.2.2 *A use or development that is directly associated with and a subservient part of another use on the same site must be categorised into the same Use Class as that other use.*

Clause 6.2.3 *If a use or development fits a description of more than one Use Class, the Use Class most specifically describing the use applies.*

Clause 6.2.4 *If a use or development does not readily fit any Use Class, it must be categorised into the most similar Use Class.*

Clause 6.2.5 *If more than one use or development is proposed, each use that is not directly associated with and subservient to another use on the same site must be individually categorised into a Use Class.*

Clause 6.2.6 *Notwithstanding sub-clause 6.2.1 of this planning scheme, development which is for subdivision, a sign, land filling, retaining walls or coastal protection works does not need to be categorised into one of the Use Classes.*

In the case of the proposal, clause **6.2.1** applies.

Pursuant to clause **6.2.1** the proposal is categorised into the **Utilities** which the Scheme defines as *use of land for utilities and infrastructure including: (a) telecommunications; (b) electricity generation; (c) transmitting or distributing gas, oil, or electricity; (d) transport networks; (e) collecting, treating, transmitting, storing or distributing water; or (f) collecting, treating, or disposing of storm or floodwater, sewage, or sullage. Examples include an electrical sub-station or powerline, gas, water or sewerage main, optic fibre main or distribution hub, pumping station, railway line, retention basin, road, sewage treatment plant, storm or flood water drain, water storage dam and weir.*

For completeness, the proposal is not considered to be appropriately characterised as **Minor Utilities**.

The definition of *Minor Utilities* contemplates infrastructure associated with the local distribution or reticulation of services, including stormwater channels, water and sewer pipes and other infrastructure that primarily serves a localised area or individual developments.

While the proposed development comprises stormwater infrastructure, its function extends beyond local reticulation. The White Hills Stormwater Trunk Main is intended to operate as a strategic drainage asset that conveys stormwater from a broader urban catchment, including the (proposed) Barclay Subdivision, existing upstream urban drainage infrastructure and future residential development areas within northern Evandale.

The trunk main has been specifically designed as the primary stormwater conveyance system for the northern Evandale growth area, transporting stormwater over a distance of approximately 945 metres from the urban catchment to the receiving watercourse. Its purpose is not to provide local drainage servicing to individual properties, but rather to accommodate and manage catchment-wide stormwater flows generated from existing and future urban development.

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The strategic function of the infrastructure is further demonstrated by its intended transfer to Northern Midlands Council following construction, where it will form part of the public stormwater network under the *Urban Drainage Act 2013*. The asset is therefore intended to operate as municipal trunk infrastructure servicing a wider catchment rather than a local reticulation system.

Accordingly, the proposal is more appropriately characterised as **Utilities** rather than **Minor Utilities**, as it performs a catchment-wide stormwater conveyance and drainage management function rather than the local distribution or reticulation of services contemplated by the definition of **Minor Utilities**.

5.2 General Provisions

No general provisions apply to the proposal.

5.3 Specific Area Plans

No specific area plans apply to the proposal.

5.4 Site-Specific Qualifications

No site-specific qualifications apply to the proposal.

5.5 Rural Living Zone Assessment

Pursuant to clause 11.0 of the Scheme, a portion of the site is assigned to the Rural Living zone.

5.5.1 Use Table

In accordance with Table 11.2 use of land for **Utilities** has a **Discretionary** status within the Rural Living zone.

5.5.2 Use Standards

11.3 Use Standards			
Standard		**Assessment**	**Compliance**
11.3.1 Discretionary use			
A1	Hours of operation for a use listed as Discretionary, excluding Emergency Services or Resource Development, must be within the hours of:	The proposed use is a stormwater trunk main forming part of the public stormwater network. The infrastructure is a passive underground drainage asset that functions solely by gravity to convey stormwater runoff generated by rainfall events within the contributing catchment. Unlike land uses that involve human occupation, staffing, customer visitation, machinery operation or other activities capable of being commenced or ceased at particular times, the trunk main has no operational component that can be regulated through operating hours. Stormwater flows occur in response to natural rainfall conditions and may occur at any time of the day or	

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11.3 Use Standards			
Standard		**Assessment**	**Compliance**
		night. Accordingly, the infrastructure does not have operating hours in the ordinary or common understanding of the term, and the standard is not applicable to the ongoing use and function of the stormwater trunk main.	
	(a) 8.00am to 6.00pm Monday to Friday;		Not Applicable
	(b) 9.00am to 12.00 noon Saturday; and		Not Applicable
	(c) nil on Sunday and public holidays.		Not Applicable
A2	External lighting for a use listed as Discretionary:	The proposal does not include external lighting associated with the operation of the stormwater trunk main. The infrastructure is entirely passive in nature and does not require lighting for its normal operation. Any temporary lighting required during construction would be managed separately and does not form part of the approved use.	
	(a) must not operate within the hours of 7.00pm to 7.00am, excluding any security lighting; and		Not Applicable
	(b) security lighting must be baffled to ensure direct light does not extend into the adjoining property.		Not Applicable
A3	Commercial vehicle movements and the unloading and loading of commercial vehicles for a use listed as Discretionary, excluding Emergency Services, must be within the hours of:	The operation of the stormwater trunk main does not generate regular commercial vehicle movements, loading or unloading activities. Following construction, access will be limited to infrequent inspection, maintenance and emergency works undertaken by the relevant infrastructure authority. The standard is therefore not applicable to the ongoing use of the development.	
	(a) 7.00am to 5.00pm Monday to Friday;		Not Applicable
	(b) 9.00am to 12 noon Saturday; and		Not Applicable
	(c) nil on Sunday and public holidays.		Not Applicable

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11.3 Use Standards			
Standard		**Assessment**	**Compliance**
11.3.2 Visitor Accommodation			
A1	Visitor Accommodation must: (a) accommodate guests in existing habitable buildings; and (b) have a gross floor area of not more than 200m^2 per lot.	The application does not involve visitor accommodation.	Not Applicable
A2	Visitor Accommodation is not for a strata lot that is part of a strata scheme where another strata lot within that strata scheme is used for a residential use.	The application does not involve visitor accommodation.	Not Applicable

5.5.3 Development Standards

11.4 Development Standards for Buildings and Works			
Standard		**Assessment**	**Compliance**
11.4.1 Site coverage			
A1	The site coverage must be not more than 400m².	Site coverage is defined as the proportion of a site covered by roofed buildings. The proposal comprises underground stormwater infrastructure, maintenance holes, outlet structures and associated drainage works. While these elements constitute development and works, they do not comprise roofed buildings and therefore do not contribute to site coverage.	Not Applicable
A2	Buildings must have a setback from a frontage of not less than 20m.	The development consists of underground stormwater infrastructure and associated works. No buildings, as defined by the Scheme, are proposed. As the standard regulates the setback of buildings from a frontage, the proposed works do not give rise to a frontage setback requirement.	Not Applicable
A3	Buildings must have a setback from side and rear boundaries of not less than 10m.	The proposal does not include the construction, placement or relocation of any building. The development comprises buried stormwater infrastructure and associated works only. Consequently, the building setback outcomes sought by the standard are not affected by the proposal.	Not Applicable

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11.4 Development Standards for Buildings and Works			
Standard		**Assessment**	**Compliance**
A4	Buildings for a sensitive use must be separated from an Agriculture Zone or Rural Zone a distance of: (a) not less than 200m; or (b) if the setback of an existing building is within 200m, not less than the existing building.	The purpose of the standard is to provide separation between sensitive uses and agricultural or rural activities. The proposal is a passive stormwater drainage asset comprising underground pipes and associated drainage structures. It is not a sensitive use, does not involve human occupation, and does not include any building for a sensitive use. The proposal therefore does not create the land use interface that the standard is intended to manage.	Not Applicable Not Applicable

5.5.4 Subdivision Standards

The application does not involve subdivision of land.

5.6 Agriculture Zone Assessment

Pursuant to clause 21.0 of the Scheme, a portion of the site is assigned to the Agriculture zone.

5.6.1 Use Table

In accordance with Table 21.2 use of land for **Utilities** has a **Discretionary** status within the Agriculture zone.

5.6.2 Use Standards

21.3 Use Standards			
Standard		**Assessment**	**Compliance**
21.3.1 Discretionary use			
A1	No Acceptable Solution	The application involves a Discretionary use within the Agriculture zone and there is no corresponding Acceptable Solution.	**Relies on Performance Criteria**
A2	No Acceptable Solution	The application involves a Discretionary use within the Agriculture zone and there is no corresponding Acceptable Solution.	**Relies on Performance Criteria**
A3	No Acceptable Solution	The application involves a Discretionary use within the Agriculture zone and there is no corresponding Acceptable Solution.	**Relies on Performance Criteria**
A4	No Acceptable Solution	This clause is not applicable on the basis that it relates to the	Not Applicable

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21.3 Use Standards			
Standard		**Assessment**	**Compliance**
		Residential Use Class only, which is not proposed.	

5.6.3 Development Standards

21.4 Development Standards for Buildings and Works			
Standard		**Assessment**	**Compliance**
21.4.1 Building height			
A1	Building height must not be more than 12m.	The proposal comprises a stormwater trunk main and associated drainage infrastructure, including underground pipelines, maintenance holes, outlet structures and associated earthworks. No buildings are proposed. The development does not result in any structure approaching the maximum permitted building height of 12m.	Not Applicable
21.4.2 Setbacks			
A1	Buildings must have a setback from all boundaries of: (a) not less than 5m; or (b) if the setback of an existing building is within 5m, not less than the existing building.	The setback standard applies to buildings. The proposal comprises underground stormwater infrastructure and associated works and does not involve the construction of any buildings. The objectives of the standard relating to the siting of buildings relative to boundaries are therefore not affected by the development.	Not Applicable Not Applicable
A2	Buildings for a sensitive use must have a setback of: (a) not less than 200m; or (b) if the setback of an existing building for a sensitive use on the site is within 200m of that boundary, not less than the existing building.	The proposal is for a stormwater trunk main and associated drainage infrastructure. It does not constitute a sensitive use, does not involve human occupation and does not include any building for a sensitive use. The development does not create the land use interface the standard is intended to manage.	Not Applicable Not Applicable
21.4.3 Access for new dwellings			

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21.4 Development Standards for Buildings and Works			
Standard		**Assessment**	**Compliance**
A1	New dwellings must be located on lots that have frontage with access to a road maintained by a road authority.	The proposal does not include the construction of a dwelling or the creation of a residential use. The development comprises essential stormwater infrastructure only and does not give rise to any access requirements associated with a new dwelling.	Not Applicable

5.6.4 Subdivision Standards

The application does not involve subdivision of land.

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5.7 Code Applicability Overview

Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
C1.0	**Signs**	C1.2.1	Unless otherwise stated in a particular purpose zone, this code applies to all development for signs, unless the following clauses apply:	No	No signage is proposed.	C1.4.1	A sign listed in Table C1.4 is exempt from this code, provided it complies with the relevant requirements.	NA	
		(a)	C1.4.2; or	No		C1.4.2	A sign within a building or site that cannot be, or is not intended to be, seen from outside of the building or site is exempt from requiring a permit.	NA	
		(b)	C1.4.3.	No		C1.4.3	Changes to the graphics of a sign that was lawfully displayed on or after the effective date, including text, graphic design and colour, is exempt provided that:	NA	
		C1.2.2	This code does not apply to use.	NA		(a)	the sign has not changed in dimension, proportion or location; and	NA	
						(b)	if an illuminated sign, the method of illumination has not changed.	NA	
C2.0	**Parking**	C2.2.1	Unless stated otherwise in a particular purpose zone, or sub-clause C2.2.2, C2.2.3 or C2.2.4, this code applies to all use and development.	Yes	The code applies to all use and development. On the other hand, Table C2.1 does not set a requirement for car parking spaces, loading or unloading spaces or bicycle parking spaces to be provided for the Utilities Use Class and no such development is proposed. Accordingly, the standards within the code are not applicable pursuant to clause 5.6.2(c) of the Scheme.	C2.4.1	There are no exemptions to this code.	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
C3.0	**Road and Rail**	C3.2.1	This code applies to a use or development that:			C3.4.1	There are no exemptions form this code.	NA	
		(a)	will increase the amount of vehicular traffic or the number of movements of vehicles longer than 5.5m using an existing vehicle crossing or private level crossing;	No	The application will not increase the amount of vehicular traffic or the number of movements of vehicles longer than 5.5m using an existing vehicle crossing or private level crossing				
		(b)	will require a new vehicle crossing, junction or level crossing; or	No					
		(c)	involves a subdivision or habitable building within a road or railway attenuation area if for a sensitive use.	No					
C4.0	**Electricity Transmission**	C4.2.1	This code applies to use or development of land within the following areas:			C4.4.1	The following use or development is exempt from this code:		
		(a)	electricity transmission corridor;	No		(a)	buildings or works, or a sensitive use within an electricity transmission corridor, but not within an inner protection area or registered electricity easement for:	NA	
		(b)	communications station buffer area;	No		(i)	alterations or extensions to an existing building provided it does not increase the site coverage by more than 150m² from that existing at the effective date;	NA	
		(c)	substation facility buffer area.	No		(ii)	a non-habitable building provided the site coverage is not more than 150m² from that existing at the effective date; or	NA	
						(iii)	minor utilities.	NA	
						(b)	buildings or works within a communications station buffer area if:	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
						(i)	the building height is not more than 9.5m; and	NA	
						(ii)	is located not less than:	NA	
						a.	5m from a security fence associated with a communications station; or	NA	
						b.	5m from the boundary of a lot containing a communications station;	NA	
						(c)	use or development for Utilities within a communications station buffer area;	NA	
						(d)	use or development of electricity transmission infrastructure;	NA	
						(e)	use or development within a building area on a sealed plan approved under this planning scheme; and	NA	
						(f)	consolidation of lots.	NA	
5.0	**Telecommunications**	C5.2.1	Unless otherwise stated in a particular purpose zone, this code applies to all development for telecommunication facilities.	No		C5.4.1	There are no exemptions from this code.	NA	
C6.0	**Local Heritage**	C6.2.1	This code applies to:			C6.4.1	Development described in Table C6.4.1 is exempt from this code provided it meets the corresponding qualifications.	No	
		(a)	development on land within any of the following, as defined in this code:	No					
		(i)	a local heritage place;	No					
		(ii)	a local heritage precinct;	No					
		(iii)	a local historic landscape precinct; and	No					

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
		(iv)	For excavation only, a place or precinct of archaeological potential; and	No					
		(b)	the lopping, pruning, removal or destruction of a significant tree as defined in this code.	No					
		C6.2.2	If a site is listed as a local heritage place and also within a local heritage precinct or local historic landscape precinct, it is only necessary to demonstrate compliance with the standards for the local heritage place unless demolition, buildings and works are proposed for an area of the site outside the identified specific extent of the local heritage place.	No					
		C6.2.3	This code does not apply to a registered place entered on the Tasmanian Heritage Register, unless for the lopping, pruning, removal or destruction of a significant tree as defined in this code.	No					
		C6.2.4	This code does not apply to use.	No					
C7.0	**Natural Assets**	C7.2.1	This code applies to development on land within the following areas:			C7.4.1	The following use or development is exempt from this code:		
		(a)	a waterway and coastal protection area;	Yes	The application involves development within a waterway and coastal protection area.	(a)	works by or on behalf of the Crown, State authority, or council to remedy an unacceptable risk to public or private safety or to mitigate or prevent environmental harm;	NA	
		(b)	a future coastal refugia area;	No		(b)	development assessed as a Level 2 Activity;	NA	
		(c)	a priority vegetation area only if within the Choose an item.	No		(c)	clearance of native vegetation within a priority vegetation area:	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
		C7.2.2	This code does not apply to use.	No		(i)	on existing pasture or crop production land; or	NA	
						(ii)	if the vegetation is within a private garden, public garden or park, national park, or within State-reserved land or a council reserve:	NA	
							provided the native vegetation is not protected by legislation, a permit condition, an agreement made under section 71 of the Act, or a covenant.	NA	
						(d)	forest practices in accordance with a forest practices plan certified under the Forest Practices Act 1985, unless for the construction of a building or the carrying out of any development associated with the construction of a building;	NA	
						(e)	works by or on behalf of the Crown, State authority, or council for the protection of a water supply, watercourse, lake, wetland, or tidal waters or coastal assets as part of an endorsed or approved management plan;	NA	
						(f)	coastal protection works by or on behalf of the Crown, State authority, or council that have been designed by a suitably qualified person; and	NA	
						(g)	consolidation of lots.	NA	
C8.0	**Scenic Protection**	C8.2.1	This code applies to development on land within a scenic protection area or scenic road corridor and only if within the Rural Living Zone, Rural Zone, Agriculture Zone,	No		C8.4.1	The following development is exempt from this code:		

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
			Landscape Conservation Zone, Environmental Management Zone or Open Space Zone.						
		C8.2.2	This code does not apply to use.	No		(a)	planting or destruction of vegetation on existing pasture or crop production land, unless for the destruction of the following:	NA	
						(i)	exotic trees, other than part of an agricultural crop, more than 10m in height within a scenic road corridor; or	NA	
						(ii)	hedgerows adjoining a scenic road within a scenic road corridor;	NA	
						(b)	agricultural buildings and works, including structures for controlled environment agriculture, irrigation and netting, on land within an Agriculture Zone or Rural Zone, excluding the destruction of vegetation identified in C8.4.1(a);	NA	
						(c)	alterations or extensions to an existing building if:	NA	
						(i)	the gross floor area is increased by not more than 25% from that existing at the effective date;	NA	
						(ii)	there is no increase in the building height; and	NA	
						(iii)	external finishes are the same or similar to the existing building;	NA	
						(d)	subdivision not involving any works;	NA	
						(e)	development subject to the Telecommunications Code; and	NA	
						(f)	any development or works associated with road	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
							construction within a scenic road corridor.		
C9.0	**Attenuation**	C9.2.1	This code applies to:			C9.4.1	The following use or development is exempt from this code:		
		(a)	activities listed in Tables C9.1 and C9.2;	No		(a)	use or development assessed as a level 2 activity; and	NA	
		(b)	sensitive uses; and	No		(b)	additions or alterations to an existing building used for sensitive use, provided that the gross floor area does not increase by more than 50% or 100m², whichever is the greater, from that existing at the effective date.	NA	
		(c)	subdivision if it creates a lot where a sensitive use could be established, within an attenuation area.	No					
		C9.2.2	The code does not apply to attenuation areas between the activities listed in Tables C9.1 and C9.2 where those activities occur within the Light Industrial Zone, General Industrial Zone, Port and Marine Zone, and Utilities Zone.	No					
		C9.2.3	The code does not apply to sensitive uses occurring within the Light Industrial Zone, General Industrial Zone, Port and Marine Zone, and Utilities Zone.	No					
		C9.2.4	The code does not apply to a plant nursery or controlled environment agriculture activities occurring within the Rural Zone and Agriculture Zone.	No					

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
		C9.2.5	The code does not apply between a sensitive use and an attenuation area for an activity listed in Tables C9.1 or C9.2 if the sensitive use and the activity are located on the same site.	No					
C10.0	**Coastal Erosion**	C10.2.1	This code applies to:			C10.4.1	Excluding where development occurs on an actively mobile landform in the coastal zone, the following use or development is exempt from this code:		
		(a)	use and development of land within a coastal erosion hazard area; or	No		(a)	use or development that is building work or plumbing work as defined in the *Building Act 2016*, excluding:	NA	
		(b)	development identified in a report, that is lodged with an application, or required in response to a request under section 54 of the Act, as located on an actively mobile landform within the coastal zone.	No		(i)	a critical use, hazardous use, or vulnerable use;	NA	
		C10.2.2	The planning authority may only make a request under clause C10.2.1(b) where it reasonably believes, based on information in its possession, that the land is located on an actively mobile landform within the coastal zone.	No		(ii)	if located within a high coastal erosion hazard band; or	NA	
		C10.2.3	For the purposes of C10.5.1, Residential and Visitor Accommodation are not Use Classes that are reliant on a coastal location.	No		(iii)	coastal protection works.	NA	
						(b)	intensification of an existing use, if not for a critical, hazardous, or vulnerable use;	NA	
						(c)	alterations or extensions to an existing building located within a	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
							high coastal erosion hazard band, if:		
						(i)	the site coverage is not increased by more than 20m² from that existing at the effective date; and	NA	
						(ii)	not for a critical, hazardous, or vulnerable use;	NA	
						(d)	use or development of land for:	NA	
						(i)	Natural and Cultural Values Management;	NA	
						(ii)	Passive Recreation;	NA	
						(iii)	Port and Shipping in a proclaimed wharf area;	NA	
						(iv)	Resource Development, excluding use or development in the high coastal erosion hazard band that is building work or plumbing work as defined in the *Building Act 2016*; or	NA	
						(v)	minor utilities.	NA	
						(e)	planting or disturbance of vegetation on existing pasture or crop production land; or	NA	
						(f)	consolidation of lots.	NA	
C11.0	**Coastal Erosion**	C11.2.1	This code applies to use and development of land within a coastal inundation hazard area.	No		C11.4.1	The following use or development is exempt from this Code:		
		C11.2.2	This code applies to land in a coastal inundation investigation area where a suitably qualified person has provided a land survey showing an AHD for the land that falls within one of the coastal inundation hazard band levels shown in the coastal inundation hazard bands AHD	No		(a)	use or development that is building work or plumbing work as defined in the *Building Act 2016*, excluding:	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
			levels list in the relevant Local Provisions Schedule and the standards relevant to each band apply.						
		C11.2.3	This code does not apply to land in a coastal inundation investigation area where a suitably qualified person has provided a land survey showing an AHD for the land in excess of the low hazard band level relevant for that land, as shown in the coastal inundation hazard bands AHD levels list in the relevant Local Provisions Schedule.	No		(i)	a critical use, hazardous use, or vulnerable use;	NA	
		C11.2.4	For the purposes of C11.5.1 and C11.5.2, Residential or Visitor Accommodation are not Use Classes that are reliant on a coastal location.	No		(ii)	if located within a high coastal inundation hazard band; or	NA	
						(iii)	coastal protection works.	NA	
						(b)	intensification of an existing use, if not for a critical, hazardous, or vulnerable use;	NA	
						(c)	alterations or extensions to an existing building located within a high coastal inundation hazard band, if:	NA	
						(i)	the site coverage is not increased by more than 20m² from that existing at the effective date; and	NA	
						(ii)	not for a critical, hazardous, or vulnerable use;	NA	
						(d)	use or development of land for:	NA	
						(i)	Natural and Cultural Values Management;	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
						(ii)	Passive Recreation;	NA	
						(iii)	Port and Shipping in a proclaimed wharf area;	NA	
						(iv)	Resource Development; or	NA	
						(v)	minor utilities.	NA	
						(e)	planting or disturbance of vegetation on existing pasture or crop production land; or	NA	
						(f)	consolidation of lots.	NA	
C12.0	**Flood-Prone Areas Hazard**	C12.2.1	This code applies to development of land within a flood-prone hazard area.	No		C12.4.1	The following use or development is exempt from this code:		
		C12.2.2	This code applies to use of land within a flood-prone hazard area if for:	No		(a)	alterations or extensions to an existing building if:	NA	
		(a)	a change of use that converts a non-habitable building to a habitable building; or	No		(i)	the site coverage is not increased by more than 20m² from that existing at the effective date; and	NA	
		(b)	a new habitable room within an existing building.	No		(ii)	not for a critical, hazardous, or vulnerable use;	NA	
		C12.2.3	This code applies to use in a habitable building, or development of land, identified in a report prepared by a suitably qualified person, that is lodged with an application for a permit, or required in response to a request under section 54 of the Act, as subject to risk from flood or that has the potential to cause increased risk from flood.	No		(b)	use or development of land for:	NA	
		C12.2.4	The planning authority may only make a request under clause C12.2.3 where it reasonably believes, based on information in its possession, that the land is subject to risk from flood or has	No		(i)	Natural and Cultural Values Management;	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
			the potential to cause increased risk from flood.						
		C12.2.5	This code does not apply to land subject to the Coastal Inundation Hazard Code.	No		(ii)	Passive Recreation;	NA	
						(iii)	Port and Shipping in a proclaimed wharf area;	NA	
						(iv)	Resource Development, excluding a habitable building;	NA	
						(v)	minor utilities;	NA	
						(vi)	infrastructure for the generation of hydro-electricity; and	NA	
						(vii)	outbuildings;	NA	
						(c)	planting or disturbance of vegetation on existing pasture or crop production land; and	NA	
						(d)	consolidation of lots.	NA	
C13.0	**Bushfire-Prone Areas**	C13.2.1	This code applies to:			C13.4.1	The following use or development is exempt from this code:		
		(a)	subdivision of land that is located within, or partially within, a bushfire-prone area; and	No		(a)	any use or development that the TFS or an accredited person, having regard to the objective of all applicable standards in this code, certifies there is an insufficient increase in risk to the use or development from bushfire to warrant any specific bushfire protection measures; and	NA	
		(b)	a use, on land that is located within, or partially within, a bushfire-prone area, that is a vulnerable use or hazardous use.	No		(b)	adjustment of a boundary in accordance with clause 7.3 of this planning scheme.	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
C14.0	**Potentially Contaminated Land**	C14.2.1	This code applies to a sensitive use, a use listed in a Use Class in Table C14.1 as one of the specified uses, or development, on land that:			C14.4.1	The following use or development is exempt from this code:		
		(a)	is shown on an overlay map in the relevant Local Provisions Schedule as within an area of potentially contaminated land;	No		(a)	development:	NA	
		(b)	the planning authority knows to have been used for a potentially contaminating activity, by reference to:	No		(i)	to investigate whether a potentially contaminating activity has contaminated the land; or	NA	
		(i)	a notice issued in accordance with Part 5A of the *Environmental Management and Pollution Control Act 1994*; or	No		(ii)	in accordance with a notice issued in accordance with Part 5A of the *Environmental Management and Pollution Control Act 1994*;	NA	
		(ii)	a previous permit;	No		(b)	development that does not involve disturbance of more than 1m² of land;	NA	
		(c)	the planning authority reasonably suspects may be contaminated by reference to:	No		(c)	any use or development where a site history prepared by a site contamination practitioner or a person approved by the Director for the purpose of this code, has been provided to the planning authority and that site history confirms potentially contaminating activities did not contaminate the site;	NA	
		(i)	a notice issued in accordance with Part 5A of the *Environmental Management and Pollution Control Act 1994*; or	No		(d)	any use or development that the Director, a site contamination practitioner, or a person approved by the Director for the purpose of this code, having regard to the applicable standards in this code, has issued a certificate stating that there is insufficient increase in risk from contamination to	NA	

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
							warrant any specific remediation and protection measures; or		
		(ii)	advice from the Director that it is likely that contamination has migrated onto the land; or	No		(e)	any use or development that operates in accordance with an approval granted as a result of an assessment of that use or development by the Board of the Environment Protection Authority.	NA	
		(d)	has been identified as having been used, or may have been used, for a potentially contaminating activity, or as land onto which it is likely that contamination from a potentially contaminating activity has migrated:	No					
		(i)	in a report lodged with the application; or	No					
		(ii)	in a report prepared by a site contamination practitioner in response to a request under section 54 of the Act.	No					
		C14.2.2	The planning authority may only make a request under clause C14.2.1(d)(ii) where it reasonably believes, based on information in its possession that the land has been used, or may have been used, for one of the potentially contaminating activities listed in Table C14.2, or as land onto which it is likely that contamination from a potentially contaminating activity has migrated.	No					
C15.0	**Landslip Hazard**	C15.2.1	This code applies to:			C15.4.1	The following use or development is exempt from this code:		

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Code	Applicability Criteria		Applicable		Exemption Criteria		Exempt	
			Y/N	Analysis			Y/N	Analysis
	(a)	use or development of land within a landslip hazard area; or	No	The proposed development will not transect any landslip hazard areas.	(a)	use of land within a low or medium landslip hazard band, excluding for a critical use, hazardous use or vulnerable use;	No	
	(b)	use or development of land identified in a report, that is lodged with an application, or required in response to a request under section 54 of the Act, as having potential to cause or contribute to a landslip.	No		(b)	use or development of land for Extractive Industry if on a mining lease that is in force under the *Mineral Resources Development Act 1995*, excluding a hazardous use;	No	
	C15.2.2	The planning authority may only make a request under clause C15.2.1(b) where it reasonably believes, based on information in its possession, that the use or development of land has the potential to cause or contribute to landslip.	No		(c)	use of land for:		
					(i)	Natural and Cultural Values Management;	No	
					(ii)	Passive Recreation;	No	
					(iii)	Resource Development;	No	
					(iv)	Utilities;	No	
					(d)	development (including subdivision) on land:		
					(i)	within a low landslip hazard band, if for:	No	
					a.	building work or plumbing work as defined in the *Building Act 2016* including significant works related to the building work and plumbing work, or	No	
					b.	works if it does not involve significant works; or	No	
					(ii)	within a medium landslip hazard band, if for:		

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
						a.	building work or plumbing work as defined in the *Building Act 2016* including significant works related to the building work and plumbing work;	No	
						b.	subdivision if no additional lots are created, if it does not involve significant works;	No	
						c.	Resource Development, if it does not involve significant works;	No	
						d.	minor utilities or utilities associated with sewer, water, stormwater systems, electricity, gas, telecommunications and roads infrastructure, if it does not involve significant works; or	No	
						e.	any other works, if it does not involve significant works.	No	
C16.0	**Safeguarding of Airports**	C16.2.1	This code applies to:			C16.4.1	The following use or development is exempt from this code:		
		(a)	a sensitive use within an airport noise exposure area; and	No		(a)	development that is not more than the AHD height specified for the site of the development in the relevant airport obstacle limitation area.	Yes	The proposal satisfies the exemption relating to the Airport Obstacle Limitation Surface (OLS). The site is subject to a maximum OLS height of 211m AHD, while existing ground levels are approximately 160m AHD. The proposed development comprises a stormwater trunk main and associated drainage infrastructure, including underground pipelines, maintenance holes, excavation works and retaining structures located at or below existing ground level. The development does not involve any structures that project above the existing

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Code		Applicability Criteria		Applicable		Exemption Criteria		Exempt	
				Y/N	Analysis			Y/N	Analysis
		(b)	development within an airport obstacle limitation area.	Yes					land surface and will remain substantially below the applicable OLS height. Accordingly, the proposal will not penetrate the OLS, create an obstacle to aircraft operations or affect aviation safety.

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5.8 Code Assessment

5.8.1 Natural Assets Code

5.8.1.1 Development Standards for Buildings and Works

C7.6 Development Standards for Buildings and Works			
Standard		**Assessment**	**Compliance**
C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area			
A1	Buildings and works within a waterway and coastal protection area must:	The proposal includes a new stormwater outfall and associated works within a Waterway and Coastal Protection Area.	
	(a) be within a building area on a sealed plan approved under this planning scheme;	The works are not located within a building area on a sealed plan.	**Relies on Performance Criteria**
	(b) in relation to a Class 4 watercourse, be for a crossing or bridge not more than 5m in width; or	The works are not a crossing or bridge associated with a Class 4 watercourse.	Not Applicable
	(c) if within the spatial extent of tidal waters, be an extension to an existing boat ramp, car park, jetty, marina, marine farming shore facility or slipway that is not more than 20% of the area of the facility existing at the effective date.	The works are not within tidal waters.	Not Applicable
A2	Buildings and works within a future coastal refugia area must be located within a building area on a sealed plan approved under this planning scheme.	The site is not affected by a Future Coastal Refugia Area.	Not Applicable
A3	Development within a waterway and coastal protection area or a future coastal refugia area must not involve a new stormwater point discharge into a watercourse, wetland or lake.	The proposal includes a new stormwater discharge point into an existing unnamed tributary of Rose Rivulet.	**Relies on Performance Criteria**
A4	Dredging or reclamation must not occur within a waterway and coastal protection area or a future coastal refugia area.	The proposal does not involve dredging or reclamation. The works comprise installation of underground stormwater infrastructure and localised modifications associated with the outfall connection.	Not Applicable
A5	Coastal protection works or watercourse erosion or inundation protection works must not occur within a waterway and coastal	The proposal is not for coastal protection works or watercourse erosion or inundation protection works. Any scour protection and energy dissipation measures form	Not Applicable

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C7.6 Development Standards for Buildings and Works			
Standard		**Assessment**	**Compliance**
	protection area or a future coastal refugia area.	ancillary components of the stormwater outfall necessary to safely discharge stormwater and protect the integrity of the infrastructure.	
C7.6.2 Clearance within a priority vegetation area			
A1	Clearance of native vegetation within a priority vegetation area must be within a building area on a sealed plan approved under this planning scheme.	The site is not subject to a priority vegetation area.	Not Applicable

5.8.1.2 Development Standards for Subdivision

The application does not involve subdivision of land.

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6. Performance Criteria Assessment

6.1 Clause 21.3.1 - Performance Criteria P1

21.3.1 Discretionary uses	
Objective **That uses listed as Discretionary:** **(a) support agricultural use; and** **(b) protect land for agricultural use by minimising the conversion of land to non-agricultural use.**	
Performance Criteria P1	**Assessment**
A use listed as Discretionary, excluding Residential or Resource Development, must be required to locate on the site, for operational or security reasons or the need to contain or minimise impacts arising from the operation such as noise, dust, hours of operation or traffic movements, having regard to:	The proposed stormwater trunk main is essential utility infrastructure required to provide a strategic stormwater connection between the (proposed) Barclay Subdivision, the broader northern Evandale urban catchment and the receiving drainage network. The infrastructure has been specifically designed to convey stormwater runoff from the developing urban area to an approved discharge location within an existing unnamed tributary that ultimately drains to Rose Rivulet. The location of the infrastructure is therefore dictated by hydraulic, topographical and drainage requirements rather than land use preference.
(a) access to a specific naturally occurring resource on the site or on land in the vicinity of the site;	The proposal is not reliant upon access to a naturally occurring resource. This consideration is not relevant to the function of the development.
(b) access to infrastructure only available on the site or on land in the vicinity of the site;	The proposed location is fundamentally dependent on access to existing drainage infrastructure and the receiving watercourse. The trunk main is required to connect the upstream urban catchment to the approved downstream discharge point and receiving drainage system. The outfall location has been selected because it provides a direct connection to the unnamed tributary and broader drainage network that ultimately discharges to Rose Rivulet. The infrastructure cannot reasonably be located elsewhere without compromising its ability to perform its intended stormwater management function.
(c) access to a product or material related to an agricultural use;	This consideration is not relevant to the proposal.
(d) service or support for an agricultural use on the site or on land in the vicinity of the site;	While not intended to directly service agricultural activities, the proposal will provide a managed stormwater conveyance system that replaces uncontrolled overland flows and formalises drainage infrastructure within the catchment. The proposal has been designed to integrate with the surrounding rural environment while maintaining existing agricultural land uses.

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(e) the diversification or value adding of an agricultural use on the site or in the vicinity of the site; and	This consideration is not relevant to the proposal.
(f) provision of essential Emergency Services or Utilities.	The proposal constitutes essential utility infrastructure. The stormwater trunk main is required to address a long-standing drainage constraint affecting northern Evandale and to provide the trunk drainage capacity necessary to service existing and future urban development. The infrastructure will form part of the public stormwater network and is intended to be transferred to Northern Midlands Council following construction for ongoing management under the *Urban Drainage Act 2013*. Without the proposed trunk main, the orderly servicing and development of established residential land would be significantly constrained by the absence of a suitable stormwater outfall and conveyance system.

6.2 Clause 21.3.1 - Performance Criteria P2

21.3.1 Discretionary uses	
Objective **That uses listed as Discretionary:** **(a) support agricultural use; and** **(b) protect land for agricultural use by minimising the conversion of land to non-agricultural use.**	
Performance Criteria P2	**Assessment**
A use listed as Discretionary, excluding Residential, must minimise the conversion of agricultural land to non-agricultural use, having regard to:	The stormwater trunk main has been designed to minimise the conversion of agricultural land to non-agricultural use. The development comprises predominantly underground infrastructure, including buried pipelines extending through existing agricultural land. Above-ground elements are limited to maintenance holes, inspection pits and the outfall structure, resulting in a very small physical footprint relative to the size of the affected agricultural lots.
(a) the area of land being converted to non-agricultural use;	The area of land permanently occupied by the development is minimal. Once construction is complete, the pipeline corridor will be reinstated and returned to its existing agricultural condition, with only isolated maintenance structures remaining visible above ground. The proposal therefore results in only a negligible loss of productive agricultural land.
(b) whether the use precludes the land from being returned to an agricultural use;	The development does not permanently remove the majority of the affected land from agricultural production. Following reinstatement, agricultural activities can continue above and around the buried pipeline corridor. The infrastructure does

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	not sterilise the land and the vast majority of the site will remain available for ongoing agricultural use.
(c) whether the use confines or restrains existing or potential agricultural use on the site or adjoining sites.	The design of the proposed stormwater trunk main will allow the continued use of the land for agricultural purposes. As the infrastructure is largely subsurface, it will not materially constrain grazing, cropping or other routine agricultural activities across the site or adjoining properties. The limited above-ground infrastructure does not create a significant impediment to agricultural operations and allows the existing agricultural use of the land to continue and co-exist with the utility function of the development. Overall, the proposal represents a low-impact utility use that achieves its intended purpose while maintaining the ongoing productive use of the land for agriculture.

6.3 Clause 21.3.1 - Performance Criteria P3

21.3.1 Discretionary uses	
Objective **That uses listed as Discretionary:** **(a) support agricultural use; and** **(b) protect land for agricultural use by minimising the conversion of land to non-agricultural use.**	
Performance Criteria P3	**Assessment**
A use listed as Discretionary, excluding Residential, located on prime agricultural land must:	The site is identified as comprising class 4 agricultural land which is not identified as prime agricultural land. On this basis, Performance Criterion 21.3.1 P3 is not applicable in accordance with clause 5.6.2(b) of the Scheme. Notwithstanding this, the following assessment is provided. The proposed stormwater trunk main is appropriately categorised into the Utilities Use Class. The infrastructure is intended to form part of the public stormwater network and will provide a strategic drainage connection between the northern Evandale urban catchment and the receiving drainage system. The proposal is therefore consistent with the category of development expressly contemplated by P3(a) having regard to the following.
(a) be for Extractive Industry, Resource Development or Utilities, provided that:	The proposal is for Utilities.
(i) the area of land converted to the use is minimised;	The stormwater trunk main has been designed as predominantly underground infrastructure, resulting in a very limited permanent surface footprint. Above-ground infrastructure is confined

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	to maintenance holes, inspection pits and the outlet structure. Following construction, the pipeline corridor will be reinstated and returned to agricultural use. Consequently, only a negligible area of land is permanently converted from agricultural production.
(ii) adverse impacts on the surrounding agricultural use are minimised; and	The development has been designed to co-exist with surrounding agricultural activities. The buried pipeline alignment allows agricultural use to continue across the majority of the affected land, including grazing and cropping activities. The limited extent of above-ground infrastructure will not materially interfere with farm operations, agricultural access, land management practices or the productive use of adjoining land. As a result, adverse impacts on surrounding agricultural use are minimal.
(iii) the site is reasonably required for operational efficiency; or	The location of the stormwater trunk main is dictated by hydraulic, topographical and operational requirements. The infrastructure is required to connect the northern Evandale urban catchment to the receiving drainage network via the identified outfall location. The alignment follows the most practical and efficient route between the stormwater collection system and the receiving watercourse while achieving the required hydraulic performance and minimising impacts on landowners and the surrounding environment. The site is therefore reasonably required for the efficient operation of the infrastructure.
(b) be for a use that demonstrates a significant benefit to the region, having regard to the social, environmental and economic costs and benefits of the proposed use.	The proposal satisfies P3(a) as a Utility and therefore meets the Performance Criteria without the need to demonstrate a significant regional benefit under P3(b).

6.4 Clause C7.6.1 - Performance Criteria P1.1

C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area.	
Objective **That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets.**	
Performance Criteria P1.1	**Assessment**
Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to:	The Waterway and Coastal Protection Area is limited to the location of the proposed stormwater outfall and associated discharge infrastructure. The majority of the stormwater trunk main is located outside the overlay and is constructed as buried infrastructure through existing agricultural land. The outfall has been specifically designed to discharge stormwater in a controlled manner and incorporates an energy dissipation structure, rock-

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	lined stilling basin, rock check weir and revegetation measures to minimise impacts on the receiving environment. The proposal has also been informed by two Natural Values Assessments prepared by Enviro-dynamics and Elgin Associates.
(a) impacts caused by erosion, siltation, sedimentation and runoff;	The proposal has been designed to minimise erosion and sedimentation risks through the incorporation of engineered energy dissipation measures at the discharge point, including a stilling basin, scour protection and controlled discharge infrastructure. The outfall design specifically responds to predicted discharge velocities and flow rates, reducing the potential for streambank erosion and downstream sediment transport. Construction activities are able to be undertaken in accordance with a site-specific Soil and Water Management Plan and the environmental best practice measures contained within the Wetlands and Waterways Works Manual where required by Council. Revegetation of the discharge area will provide additional long-term erosion control and bank stabilisation.
(b) impacts on riparian or littoral vegetation;	The Natural Values Assessment confirms that vegetation surrounding the waterway is overwhelmingly dominated by introduced species, including gorse, blackberry, willow and hawthorn, with only isolated occurrences of native species recorded. No threatened flora, threatened vegetation communities or significant natural values were identified. The proposed discharge infrastructure has been located to avoid unnecessary vegetation disturbance and is not anticipated to require clearing of native vegetation. Furthermore, revegetation with locally appropriate native species is proposed around the discharge location, resulting in a long-term improvement in riparian condition.
(c) maintaining natural streambank and streambed condition, where it exists;	The works require localised modification of approximately 30m of streambank and streambed to facilitate the outfall connection and ensure appropriate drainage performance. However, these modifications are limited in extent and are accompanied by streambank stabilisation, revegetation and erosion control measures. The modified channel will be graded and rehabilitated in accordance with the Wetlands and Waterways Works Manual to ensure long-term stability and functionality.
(d) impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation;	The Natural Values Assessment found no significant in-stream habitat features that would be adversely affected by the proposal. No threatened fauna habitat was identified within the study area and the discharge point is located within a modified agricultural drain environment. The proposed works are therefore unlikely to result in any significant impact on in-stream habitat values.

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(e) the need to maintain fish passage, where known to exist;	The proposal has been specifically designed to discharge stormwater into an existing drainage line and maintain downstream conveyance of flows. The outfall structure, energy dissipation measures and associated channel works are intended to facilitate the orderly movement of stormwater without creating flow obstructions. Hydraulic design of the trunk main and outfall ensures that natural drainage patterns are maintained and that flows continue to be conveyed through the receiving watercourse.
(f) the need to avoid significantly impeding natural flow and drainage;	There is no evidence of known fish passage requirements at the discharge location. The receiving watercourse is an unnamed agricultural tributary and no fish habitat or fish passage values were identified during the Natural Values Assessment. Accordingly, the proposal is not expected to adversely affect fish passage.
(g) the need to avoid land filling of wetlands;	No wetlands occur within the area affected by the proposed works and no wetland filling is proposed. The development is confined to an existing drainage line and surrounding agricultural land.
(h) the need to group new facilities with existing facilities, where reasonably practical;	The proposal utilises an existing drainage corridor and discharges to an existing watercourse that already functions as part of the broader drainage network. The works are therefore located within an established drainage environment rather than creating a new drainage corridor elsewhere within the landscape.
(i) minimising cut and fill;	Earthworks within the Waterway and Coastal Protection Area are limited to those necessary to construct the outfall, install erosion protection measures and undertake minor channel modifications. The majority of the trunk main is underground and located outside the overlay area. Cut and fill has therefore been minimised to the extent reasonably practicable while still achieving the necessary hydraulic outcomes.
(j) building design that responds to the particular size, shape, contours or slope of the land;	The proposal responds directly to the topography and existing drainage characteristics of the site. The alignment of the stormwater trunk main and location of the outfall have been selected to utilise natural grades and direct stormwater to the receiving watercourse through gravity drainage, minimising the need for extensive landform modification.
(k) minimising impacts on coastal processes, including sand movement and wave action;	The proposal is not located within a coastal environment and has no capacity to affect coastal processes, sand movement or wave action.
(l) minimising the need for future works for the protection of natural assets, infrastructure and property;	The outfall incorporates permanent energy dissipation and scour protection measures designed to protect the receiving watercourse, downstream land, infrastructure and environmental values. The proposed revegetation program will further improve streambank stability and resilience. The Natural Values Assessment

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	concludes that, subject to implementation of these measures, no significant future protection works are anticipated beyond routine maintenance and monitoring.
(m) the environmental best practice guidelines in the Wetlands and Waterways Works Manual; and	The proposal has been assessed having regard to the Wetlands and Waterways Works Manual. Both Natural Values Assessments recommend implementation of the relevant environmental best practice guidelines relating to construction in waterways, excavation works, erosion management, stream crossings, rehabilitation and revegetation. These measures will be incorporated into the detailed design and construction management framework for the project.
(n) the guidelines in the Tasmanian Coastal Works Manual.	The proposal relates to a freshwater agricultural watercourse approximately 2.1 kilometres upstream of Rose Rivulet and does not involve coastal works or coastal protection infrastructure. Consequently, the Tasmanian Coastal Works Manual has limited relevance to the proposal and no adverse impacts on coastal values are anticipated.

6.5 Clause C7.6.1 - Performance Criteria P3

C7.6.1	**Buildings and works within a waterway and coastal protection area or a future coastal refugia area.**
Objective	
That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets.	
Performance Criteria P3	**Assessment**
Development within a waterway and coastal protection area or a future coastal refugia area involving a new stormwater point discharge into a watercourse, wetland or lake must avoid or minimise adverse impacts on natural assets, having regard to:	The proposed development includes a new stormwater point discharge to an unnamed tributary of Rose Rivulet within a Waterway and Coastal Protection Area. The discharge has been specifically designed to minimise impacts on natural assets through the incorporation of energy dissipation measures, scour protection, controlled discharge infrastructure and revegetation works. The proposal has also been informed by specialist Natural Values Assessments and hydraulic design investigations which conclude that impacts can be appropriately managed through design and construction measures.
(a) the need to minimise impacts on water quality; and	The proposal has been designed to minimise impacts on water quality during both construction and operation. Construction impacts will be managed through a site-specific Soil and Water Management Plan incorporating best practice erosion and sediment control measures in accordance with the Wetlands and Waterways Works Manual. During operation, stormwater will

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	be conveyed through Council's broader stormwater management system and discharged via a controlled outfall incorporating energy dissipation measures designed to prevent scour and sediment mobilisation. The receiving watercourse is a highly modified agricultural drainage line dominated by introduced vegetation, with no threatened flora, threatened fauna habitat or significant aquatic values identified during the Natural Values Assessment. No clearing of native vegetation is required and the proposed revegetation of the discharge area with locally appropriate native species will improve riparian condition and contribute to long-term waterway health.
(b) the need to mitigate and manage any impacts likely to arise from erosion, sedimentation or runoff.	The proposal incorporates a comprehensive suite of measures specifically intended to manage erosion, sedimentation and runoff. These include a purpose-designed outlet structure, internal energy dissipation, a rock-lined stilling basin, rock scour protection, a rock check weir and localised channel works to ensure stormwater is discharged in a controlled manner and at velocities that minimise erosion risk. The design also includes revegetation of the outfall area and downstream channel to improve bank stability and reduce sediment mobilisation. The supporting Natural Values Assessments conclude that, subject to implementation of these measures and adherence to the Wetlands and Waterways Works Manual, impacts associated with erosion, sedimentation and runoff can be effectively managed. The proposal therefore represents a significant improvement over unmanaged discharge conditions and is expected to maintain the long-term stability and function of the receiving watercourse.

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7. Conclusion

The application is seeking planning approval for a new stormwater trunk main which will traverse five (5) properties located at 778, 840, 866 and 876 White Hills Road, Evandale. The preceding report has determined that the application complies with all applicable Standards of the Scheme including the following performance criteria:

- **Clause 21.3.1 - Performance Criteria P1;**
- **Clause 21.3.1 - Performance Criteria P2;**
- **Clause 21.3.1 - Performance Criteria P3;**
- **Clause C7.6.1 - Performance Criteria P1.1; and**
- **Clause C7.6.1 - Performance Criteria P3.**

It is therefore contended that a **Discretionary** planning permit is able to be issued pursuant to clause **6.8.1**of the Scheme and sections **51** and **57**of the *Land Use Planning and Approvals Act 1993*.

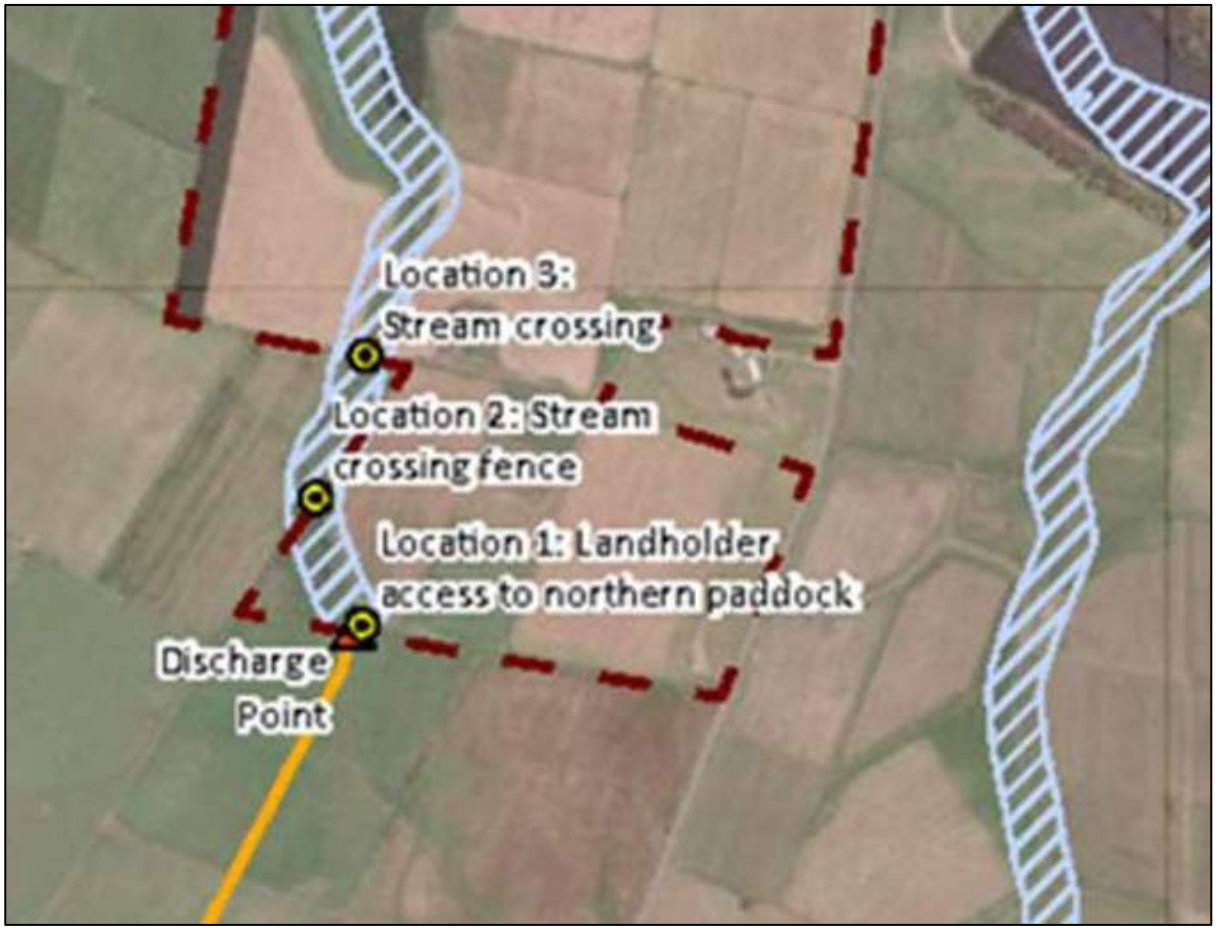
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8. Post Submission Matter

Following lodgement of the application, Council identified that the Natural Values Assessment prepared by Elgin Associates dated 24 July 2025 identifies works associated with the proposed stormwater infrastructure that extend onto additional land downstream of the principal development site. The application has therefore been reviewed to ensure that all land upon which works are proposed is appropriately identified as forming part of the application.

The Elgin Associates assessment relates to the proposed stormwater discharge from the subdivision into the unnamed tributary of Rose Rivulet and considers the works required downstream of the proposed stormwater outfall. In addition to the outfall and associated works, the assessment identifies two downstream locations where works to existing stream crossings are proposed (refer to Figure 6).

Figure 6 - excerpt of Figure 1 of the Elgin NVA illustrating Locations 1, 2 and 3 outfall discharge points.



At Location 2, Elgin Associates identifies an existing downstream culvert at a fence boundary and recommends that the culvert be removed and replaced with a stream crossing fence/flood gate. The purpose of these works is to facilitate downstream movement of debris and minimise the potential for backwater flooding that could otherwise affect the operation of the proposed stormwater controls.

At Location 3, Elgin Associates identifies a further crossing over the unnamed tributary which has been determined by IPD Consulting Pty Ltd to be undersized and requiring replacement. The replacement crossing is to be undertaken in accordance with the relevant best-practice guidelines contained within the Wetlands and Waterways Works Manual. The Natural Values Assessment further acknowledges that modification to the streambank and/or streambed will be required in association with upgrades to fencing and the river crossing/s.

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11.8.2026

Review of the cadastral boundaries associated with these works has identified that the two crossing locations occur at the following property boundaries:

- FR 188870/1 and FR 178935/1; and
- FR 178935/1 and FR 188870/2.

Accordingly, FR 188870/1 and FR 178935/1 are now expressly included as additional land forming part of the subject site/application, insofar as works identified within the Elgin Associates assessment are proposed on or across those titles (refer to Figure 7).

Figure 7 - aerial image illustrating the location and spatial extent of the two additional properties that form part of the application.



This does not represent an expansion of the substantive development or the introduction of new works following lodgement. Rather, it ensures that the cadastral extent of the application accurately captures the downstream works already identified and assessed within the Natural Values Assessment submitted in support of the proposal.

The inclusion of these titles also enables the relevant landowners to be recognised for the purposes of the application and any associated notification or consent requirements. The application documentation should therefore be read as applying to the principal stormwater pipe land together with the additional downstream titles affected by the stormwater and stream-crossing works described above.

Exhibited Received

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The Baker Group

Barclay Subdivision - Stormwater Outfall Design Report

November 2025

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Abbreviations

Abbreviation	Definition
AEP	Annual Exceedance Probability
ARR	Australian Rainfall and Runoff
Council	Northern Midlands Council
RCP	Representative Concentration Pathway
SSP	Shared Socioeconomic Pathway

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1. Overview

This design report serves to succinctly capture the existing information and current status of the proposed stormwater outfall for the Barclay subdivision development.

The Baker Group have engaged IPD Consulting Pty Ltd (IPD) to develop the proposed Barclay subdivision, comprising of a 10-stage subdivision with 108 residential lots. As such, a new trunk main is required to control the stormwater flows from the proposed subdivision and direct them to the approved discharge point at an unnamed creek nearby, which flows on to the Rose Rivulet.

1.1 Site Location & Access

The proposed Barclay subdivision is located on the Northern fringe of Evandale and will initially be accessed via Cambock Lane West and with the final stage connecting to White Hills Road. The proposed stormwater outfall will extend Northeast of the proposed subdivision as shown below in Figure 1-1.

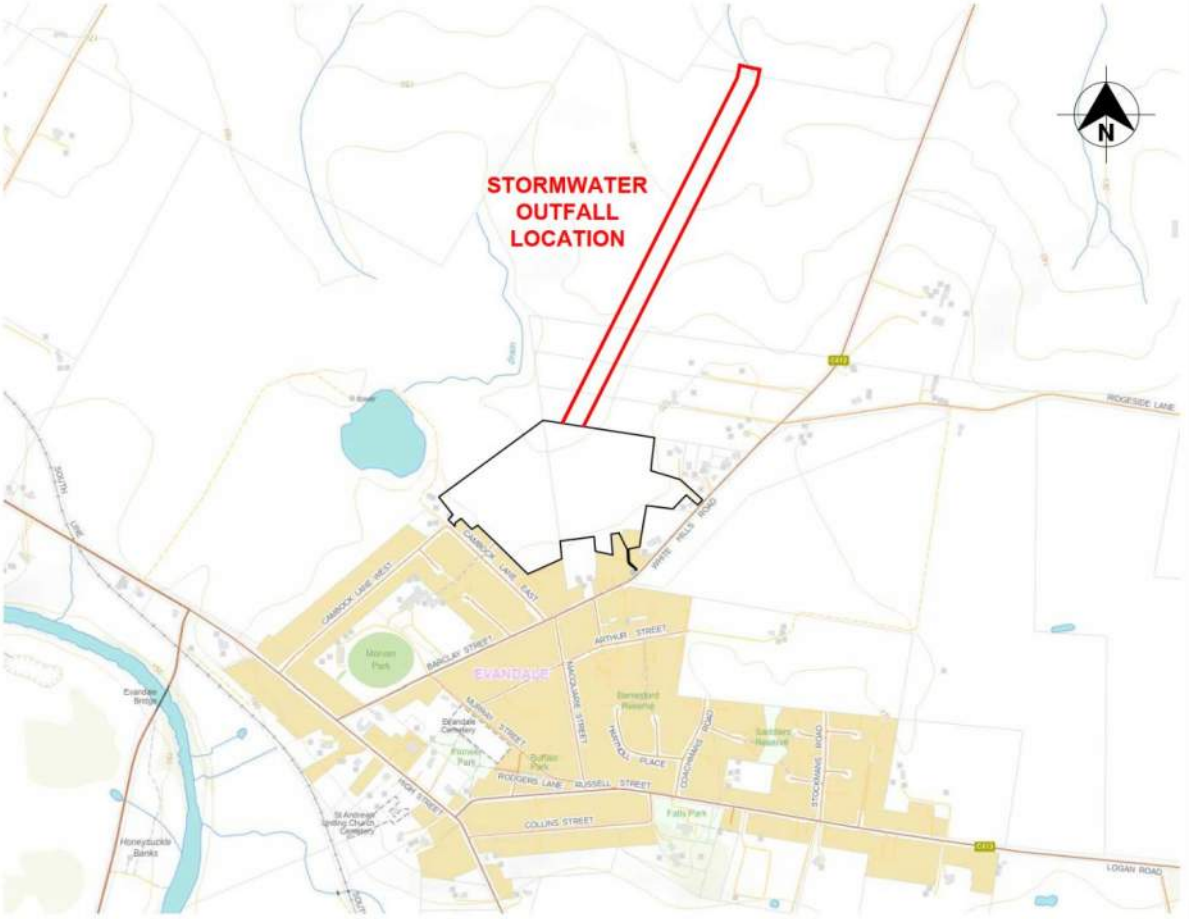


Figure 1-1: Barclay subdivision and stormwater outfall located North of Evandale (LISTmap, 2025).

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2. Project Understanding & Background

Northern Midlands Council (Council) and The Baker Group have engaged IPD to undertake a high-level assessment of the hydraulic capacity of the unnamed tributary downstream of the proposed Barclay Subdivision to determine its ability to accommodate the increased flows. The subdivision's pipe network is proposed to discharge to the White Hills Stormwater Trunk Main (a DN900 pipe) and into the unnamed tributary ~1km downstream of the development (Figure 2-1).

The existing unnamed tributary subsequently discharges ~2.1km downstream into Rose Rivulet. In addition to the proposed subdivision, the unnamed tributary collects runoff from an open drainage network throughout the local farmland.



Figure 2-1: Stormwater Trunk Main and Hydraulic Model Extent (shaded).

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2.1 Hydrology

Rainfall run-off modelling has been completed in two software packages:

- A 1-dimensional pit and pipe model was developed in InfoWorks ICM for the proposed subdivision and the existing council stormwater network. This modelling is discussed separately in the Stormwater Network Design Report (IPD, 2025).
- The local catchment and existing unnamed tributary have been modelled in TUFLOW software, with the findings from the InfoWorks 1D model informing the inflows into the TUFLOW model.

This section covers the TUFLOW model's hydrology.

2.2 Model Setup

To estimate the flow conditions in the downstream open drainage system a direct rainfall model has been built using TUFLOW. This applies the rainfall directly to each active cell in the model. The subdivision area has been set as inactive to prevent duplication of run-off.

Data for the modelling was collected from the Australian Rainfall & Runoff Data Hub (ARR, 2019). Hydrological details on the Data Hub are sourced from the Bureau of Meteorology (BoM, 2024).

Key Hydrological inputs are as follows:

- Initial Loss - 19mm
- Continuing Loss - 5.2mm/hr
- Temporal Patterns – Southern Slopes Tasmania
- Median Pre-Brust Rainfall (pre-burst for storm durations less than 60mins are estimated in line with Rahman et al 2002)
- ARR 2019 – RCP 8.5 – 16.3% Increase in Rainfall Intensity
- ARR4.2 – SSP3-7.0 – Long Term 2090 – 59% Increase for storms ≥1hr

2.3 Climate Change

To maintain consistency between models that have been developed prior to recent changes to the ARR guidelines, the impact of climate change has been modelled using a blanket 16.3% increase to rainfall intensity (ARR, 2019). This reflects the RCP8.5 (3.7°C temperature rise) scenario on the 2090 horizon warming scenario, which is the worst case under the ARR guidelines.

A sensitivity test has been carried out using the Shared Socioeconomic Pathway (SSP) 3-7.0 (3.3°C temperature rise) scenario on the 2090 horizon (ARR 4.2). This has been used to review the downstream impacts of the subdivision. SSP is newer and the current best practice approach for estimating the impacts of Climate Change as of the 4.2 update to ARR.

2.4 InfoWorks Model Inputs

Rainfall discharge from the subdivision has been modelled in InfoWorks ICM and has been directly applied to the 1d pipe network where no overland flow occurs. The detention basin overflow has been designed such that in all events up to and including the 1% AEP event, no overland flow will leave the basin. Some minor, unrouted areas bypass the reticulated network, as discussed in the separate Stormwater Network Design Report (IPD, 2025), however these flows are not related to trunk main capacity.

Exhibited

3. Hydraulics

A 2D hydraulic model has been developed in TUFLOW to estimate the flow behaviour of the system. The model predicts water flow depths, velocity and routes the flow based upon the underlying information – terrain and roughness coefficients. Refer to Appendix A for additional details on the setup of the TUFLOW model.

3.1 Modelling Results

Mapping outputs have been prepared to show peak depth, velocity and flood hazard for each of the AEPs that have been assessed. The maps can be seen in Appendix B.

The discussion will focus primarily on the 5% AEP design event (the capacity of the detention basin in the proposed subdivision).

3.1.1 Existing Case Modelling

The critical duration at the discharge into the unnamed tributary was found to be the 45-minute storm event. The median result was temporal pattern number three, which saw a peak flow in the open drain ranging from 4.62m^3/s at the reporting location shown below and 5.34m^3/s at the most downstream extent of the model (Figure 2-1). The existing case 5% AEP inundation and critical model locations are displayed in Figure 3-1.

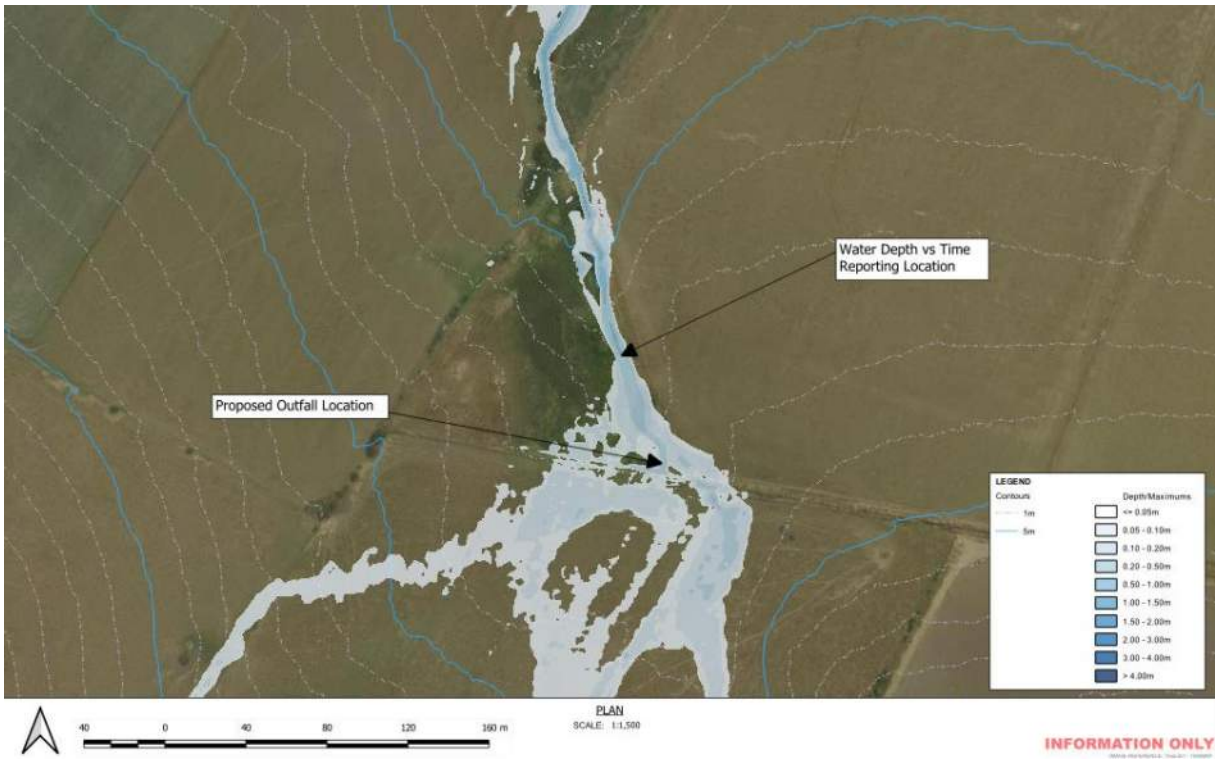


Figure 3-1: Key Model Locations

To determine the impacts of the development and proposed stormwater outfall, a direct comparison between the existing and developed case has been made downstream of the new outfall, with the locations shown above. Figure 3-2 This shows the water depth vs. time plot for the reporting location, with the dashed line highlighting the TP03 median event. The 45-minute storm event was assessed to be the critical duration of the contributing catchment at the outfall.

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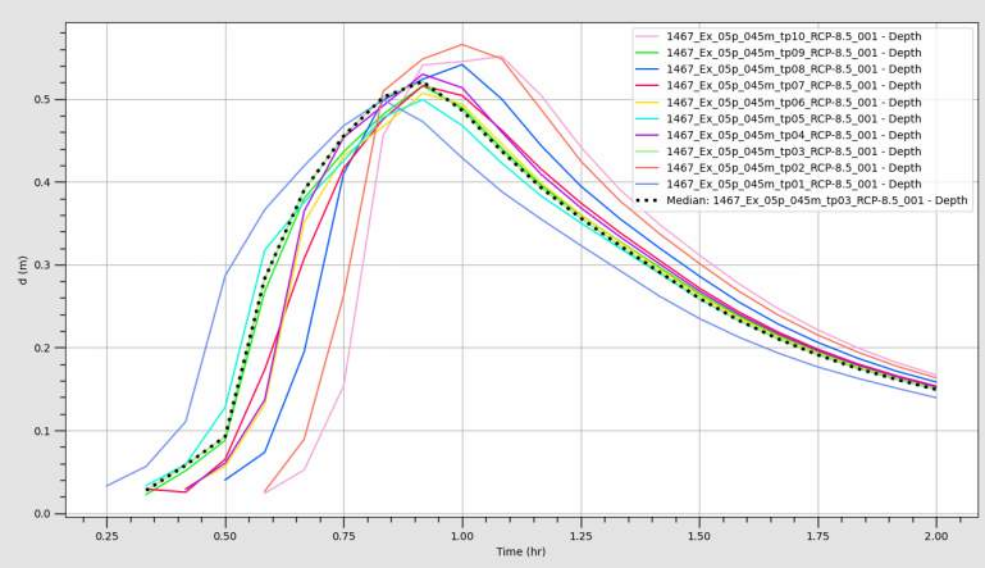


Figure 3-2: 5% AEP 45min – Depth vs Time at SW Outfall

The proposed stormwater outfall from the subdivision discharges into the existing unnamed tributary. This drain is generally winding, overgrown and does not have the capacity to convey stormwater runoff during large rainfall events. Utilising the TUFLOW model, IPD estimate that the drain has a capacity of around 0.6-0.8m^3/s before water breaks the banks. The model likely lacks the granularity required to accurately model this in bank flow behaviour due to its small size. Given however, that most of the flow is in the overbank area during the design events, this inaccuracy of the in-bank flow will have a negligible impact on the outcomes.

While the drain's capacity is minimal compared to the peak flow during rarer events, stormwater will simply flow in the overbank area with minimal disruption to the surrounding area and is contained within the wider depression of the tributary.

3.1.2 Developed Case Modelling

During the developed case modelling, the stormwater outfall has been added to the model and the inflows from the Subdivision have been directly applied to the pipe. The outfall has been designed to allow for effective drainage of the subdivision. To ensure drainage of the proposed trunk main, ~30m of the open drain will require lowering, or implementation of a drowned outflow, as shown in the current design.

The overall behaviour of the system does not change significantly between the existing and developed cases. The peak flow recorded at the downstream end of the model was 5.34 m^3/s in the existing case. At the same location in the developed case model, the flow reaches a maximum of 5.89 m^3/s, an increase of approximately 10%.

There are two factors driving this increase in peak flow; the first and most significant is the addition of 7.5ha of Evandale's public drainage network into the system, which hasn't been accounted for in the existing case model. This is discussed further in the model limitations section of Appendix A.

In addition, stormwater run-off generated on the subdivision site is now directly connected and piped to the discharge point. This has the effect of increasing the system response, meaning the upstream runoff area catches up to stormwater run-off generated lower down the catchment, increasing the instantaneous peak. The time to peak of the model has lowered by ~5 minutes. This combination is driving the slight increase in peak discharge.

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The maximum velocities in both cases are largely the same, typically within 1.5-2.5m/s. Velocities increase when the channel is more defined, where it is deeper and narrower. Immediately downstream of the outfall, the available flow area is restricted, and the velocities estimated by the model are in the range of 4.5m/s in both existing and developed case modelling.

3.1.3 Overland Flow

3.1.3.1 RCP 8.5

Modelling of the catchment during the design events shows a reduction in overland flow due to the detention basin. During the 5% AEP event there is no water overflowing from the detention basin and therefore no flow travelling through the properties directly downstream of the subdivision. This results in a decrease in water level of 10-100mm downstream of the site for the majority and some isolated patches where the level has decreased in the range of 100-200mm as shown in Figure 3-3 below.

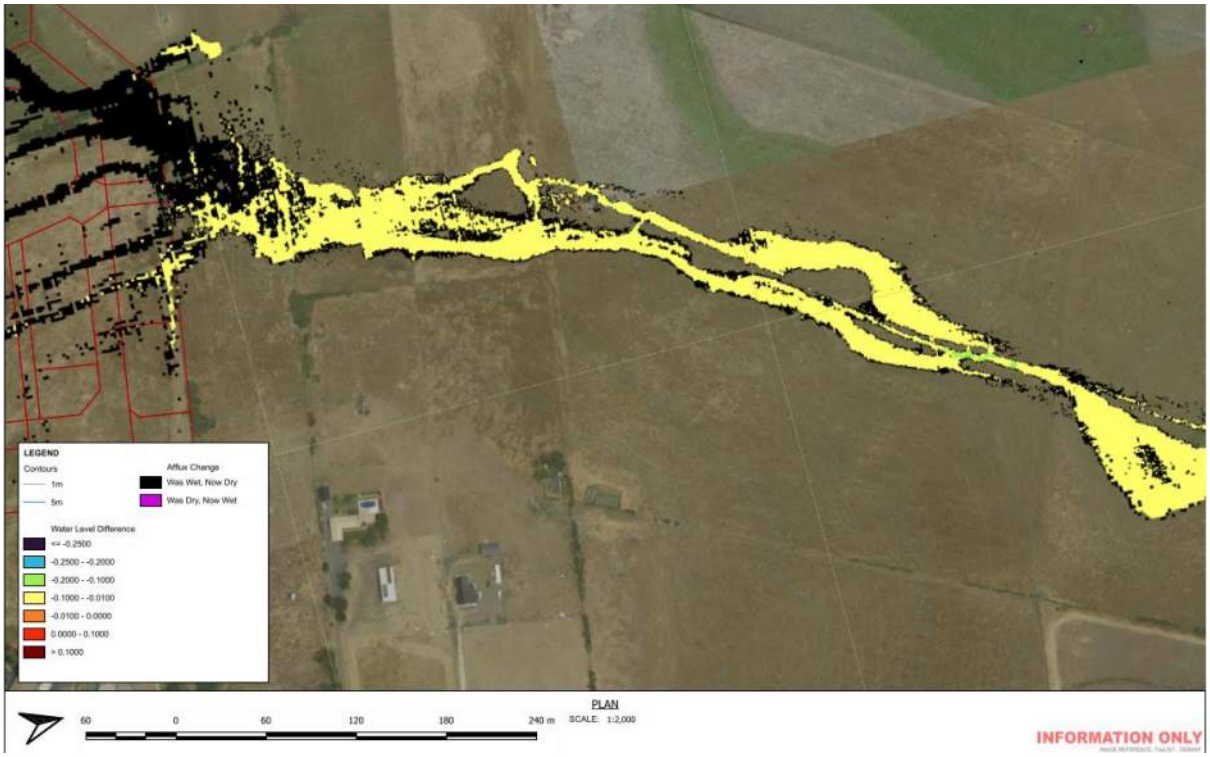


Figure 3-3: 5% AEP RCP8.5 Afflux

3.1.3.2 SSP3-7.0

Council have requested that additional scenarios are considered, with different climate change modifiers applied as per updates to the ARR4.2 guidelines. When reviewing the 5% AEP event with the SSP3-7.0 modifier the detention basin again does not spill overland. Instead, as the water level increases, it will rise to reach an elevated grated inlet structure which spills into the outfall directly. Due to the orifice, the pipe is throttled below its capacity, so it has headroom available to carry more flow. This results in there being no additional overland flow downstream of the subdivision, but the flow rate through the outfall increases. There is therefore a decrease in water level downstream of the subdivision as shown in Figure 3-4.

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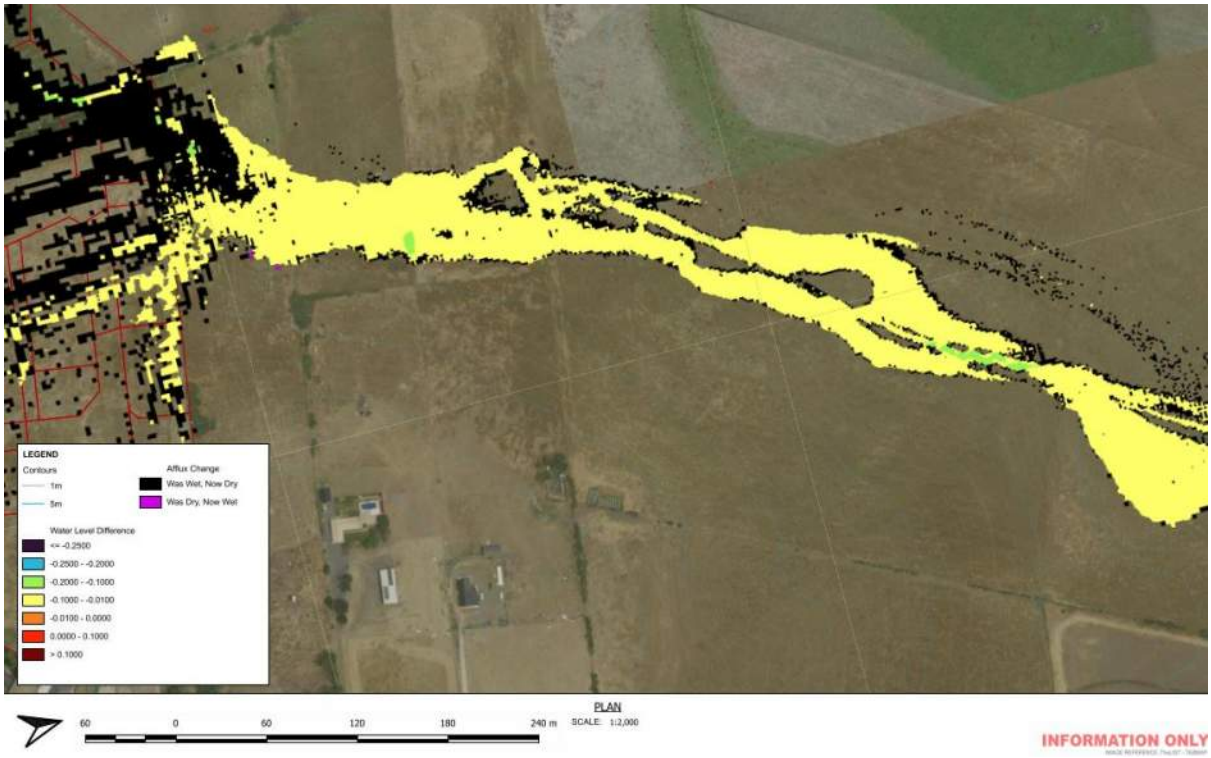


Figure 3-4: 5% AEP SSP3-7.0 Afflux

3.1.4 Flood Hazard

Flood hazard mapping has been carried out with the ratings calculated based on the guidance in the Australian Rainfall and Runoff Guidelines 2019. Flood hazard is a measure of danger to people and property and is separated into six hazard categories as outlined in Figure 3-5.

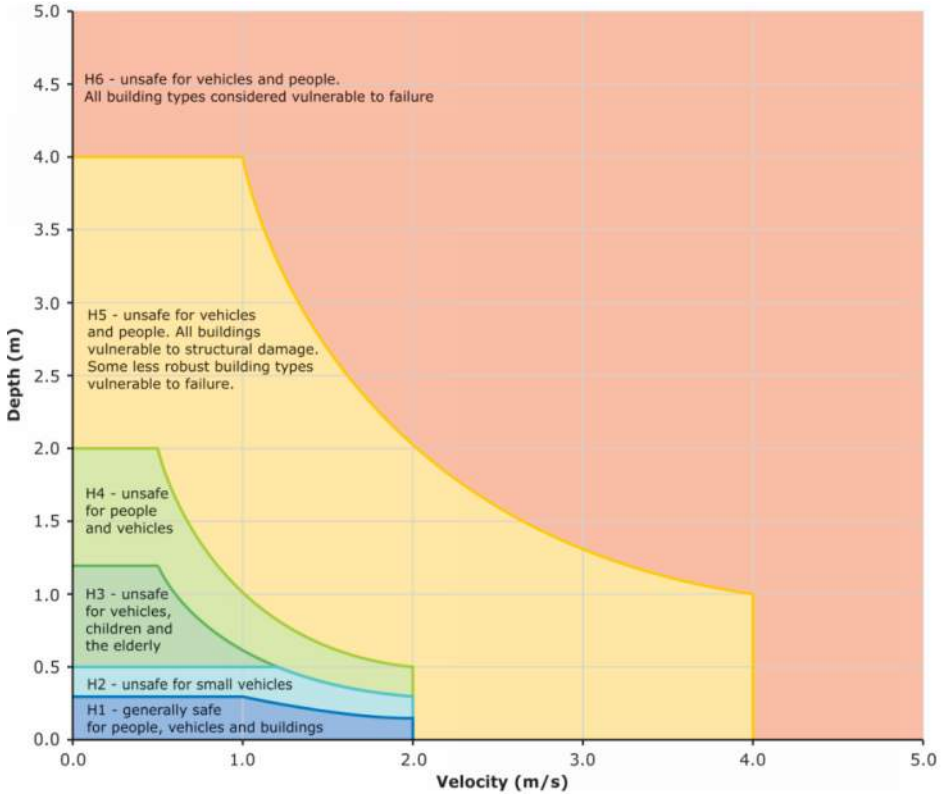


Figure 3-5: Combined Flood Hazard Curves (G P Smith, 2014).

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In general, flood hazard ratings remain unchanged from the existing case. In the open area directly below the proposed subdivision, hazard ratings will fall due to the reduced overland flows. Within the drainage channel during the 5% AEP events, existing or developed, the flood hazard category is H5 and, therefore, unsafe. As the drain is running through open farmland this is not seen as a risk to the public. Farm operations and animals may be impacted by this, but the risk level has not changed.

During events greater than 5% AEP, the proposed subdivision detention basin will spill into a trunk main which then connects into the outfall. All routed flows from the subdivision can all be contained within the proposed outfall pipe without spilling overland.

3.1.5 Afflux

An assessment of the proposed development's impact upon downstream water levels was carried out, and minor increases in maximum water depth downstream of the outfall were observed. For most of the drains, the water level change is between 10-20mm, with some isolated pockets of water level rising between 20-30mm. Once downstream, nearby the existing triple culvert road crossing, where the channel narrows, the water level rises further, with levels rising 30-60mm above their pre-development levels. For detailed mapping, refer Appendix B.

3.1.6 Stormwater Outfall

The flow through the proposed White Hills Stormwater Trunk Main sees a maximum flow rate in the design event of 0.92m^3/s and has a maximum unmitigated velocity of 4m/s at the pipe discharge. There will however be different flow conditions, not necessarily caused by the design event, which will see velocities exceed this and should be considered during the detailed design phase.

4. Hydraulic Structures – Existing

There are two culvert structures along the creek that have been modelled and assessed. The first is a culvert penetration through a fence shown in Figure 4-1. The capacity of this culvert is minimal compared with the flows within the channel. This culvert should be replaced with a stream crossing fence or similar, refer to Appendix C for an example drawing.



Figure 4-1: Culvert with fence penetration.



Figure 4-2: Triple culvert at a paddock crossing.

The second culvert structure on the open drain is a triple culvert, which consists of three barrels of varying sizes made of varying materials, shown in Figure 4-2. For simplicity, it has been modelled as a triple DN375 culvert made from concrete.

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These culverts are undersized for the existing case and require replacement to meet the desired level of service. IPD has assessed the crossing using an inlet-controlled nomograph for pipe culverts. To pass the 5% AEP (5.65 m^3/s) event, twin DN1200 culverts with a depth to invert of approximately 1.8m would be required, which would give a capacity of ~6m^3/s.

This will require a complete replacement of the road and fences and the building up of an embankment. It may be better served by installing a floodway with a low-flow culvert and suitable rock scour protection.

The design basis for the structures requires further clarification prior to progressing with any upgrades.

5. Natural Values Assessment

The development needs to show compliance with C7.0 Natural Assets Code of the Tasmanian Planning Scheme (C7.0 Natural Assets Code, 2025). Section C7.6 Development Standards for Buildings and Works, outlines the acceptable solutions and performance criteria that must be adhered to in order to develop the land and install a new stormwater discharge point into a protected area. The relevant section from this part is shown below with the responses to each performance criteria included at the bottom of Table 5-1.

Table 5-1: C7.6 Development Standards for Buildings and Works.

Objective: That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets.	
Acceptable Solutions	Performance Criteria
A1 Buildings and works within a waterway and coastal protection area must: (a) be within a building area on a sealed plan approved under this planning scheme; (b) in relation to a Class 4 watercourse, be for a crossing or bridge not more than 5m in width; or (c) if within the spatial extent of tidal waters, be an extension to an existing boat ramp, car park, jetty, marina, marine farming shore facility or slipway that is not more than 20% of the area of the facility existing at the effective date.	**P1.1** Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to: (a) impacts caused by erosion, siltation, sedimentation and runoff; (b) impacts on riparian or littoral vegetation; (c) maintaining natural streambank and streambed condition, where it exists; (d) impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation; (e) the need to avoid significantly impeding natural flow and drainage; (f) the need to maintain fish passage, where known to exist; (g) the need to avoid land filling of wetlands; (h) the need to group new facilities with existing facilities, where reasonably practical;

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	(i) minimising cut and fill; (j) building design that responds to the particular size, shape, contours or slope of the land; (k) minimising impacts on coastal processes, including sand movement and wave action; (l) minimising the need for future works for the protection of natural assets, infrastructure and property; (m) the environmental best practice guidelines in he Wetlands and Waterways Works Manual; and (n) the guidelines in the Tasmanian Coastal Works Manual. **P1.2** Buildings and works within the spatial extent of tidal waters must be for a use that relies upon a coastal location to fulfil its purpose, having regard to: (a) the need to access a specific resource in a coastal location; (b) the need to operate a marine farming shore facility; (c) the need to access infrastructure available in a coastal location; (d) the need to service a marine or coastal related activity; (e) provision of essential utility or marine infrastructure; or (f) provisions of open space or for marine-related educational, research, or recreational facilities.

Performance Criteria Responses:

P1.1(a) – During construction, siltation and erosion run off shall be managed by a Soil and Erosion Management Plan as required by the Municipal Authority.

P1.1(b) – Building areas will be clear of any riparian or littoral vegetation. Works associated with the new stormwater outfall will include scour protection and bank stabilisation to ensure that regrowth of vegetation will occur.

P1.1(c) – The existing creek will be locally changed to suit the new outfall depth, which will include some deepening of the channel to achieve fall. There will be no downstream changes to the streambanks and the detention basin will limit the flows to their existing levels meaning the flow condition will remain unchanged.

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P1.1(d) – As stated above there will only be impacts upon the natural condition directly at the outfall. This will be limited to at most 30m downstream of the outfall and should see no large trees removed or stream banks changed. This will be subject to detailed design of the outlet.

P1.1(e) – There are no works proposed to occur that might impede flow or drainage.

P1.1(f) – There are no works proposed to occur that might impede fish passage.

P1.1(g) – There are no wetlands within the proposed building envelope and none that will be impacted by the proposed works

P1.1(h) – There are no existing facilities on the site

P1.1(i) – Cut and filling will be limited where possible, and all works at the outfall will be carried out in dry months to minimise in bank deterioration during construction. Further, the outfall will be revegetated as part of the works.

P1.1(j) – Building design shall be carried out by a registered building practitioner and be in keeping with the surrounding environment.

P1.1(k) – The site is not located on the coast.

P1.1(l) – Future works would not be required and would be subject to approval under this code.

P1.1(m) – Works will be carried out in accordance with the best practice guidelines.

P1.1(n) – Works are not within a coastal area.

P1.2(a) – Works are not within a tidal zone.

P1.2(b) – Works are not within a tidal zone.

P1.2(c) – Works are not within a tidal area.

5.1 Discussion

The proposed subdivision and White Hille Stormwater Trunk Main have only a minor effect on the existing downstream drainage system. The existing open drainage network currently can accept the increases in flow without any significant impact on users and stakeholders.

IPD envisages that the concept design of the Stormwater Trunk Main discharge will be further developed with consideration to maintaining the desired amenity of the adjacent landholder, which would likely include localised planting of natives and the like.

Additionally, two independent consultants were engaged to provide natural value assessments of the unnamed creek where the outfall will discharge into. These assessments were undertaken by Elgin Associates and Enviro-dynamics, their reports can be seen in Appendix D and Appendix E respectively. A summary of their findings is as follows;

1. The vegetation along the waterway is composed of introduced species of fauna, such as gorse, blackberry, willows and hawthorn. It is recommended that the area from the discharge outlet to 40m downstream should be revegetated with local native species to improve resilience of the waterway and reduce the risk of erosion and downstream sedimentation.
2. The fence penetration, previously shown in Figure 4-1 should be replaced with a stream crossing/flood gate to allow downstream movement of debris.

Exhibited

3. Modifications to the streambank and deepening of the streambed from the outlet to approximately 30m downstream is required in the unnamed tributary. Fencing around the streambank modifications will also be required.
4. No threatened flora or fauna species or the habitat for such species were found while conducting the assessment.

Exhibited

6. Proposed Trunk Main

6.1 Pipe Network

The proposed Barclay Subdivision stormwater network will direct stormwater flows to the northern boundary and into the buried White Hille Stormwater Trunk Main. Consisting of approximately 945m of Corrugated Polypropylene rubber ring jointed pipework and 13 Maintenance Holes (MH), the pipeline crosses farmland before discharging into an unnamed tributary that feeds into Rose Rivulet. Figure 6-1 shows an overview of the trunk main alignment, while the design drawings can be seen in Appendix F.

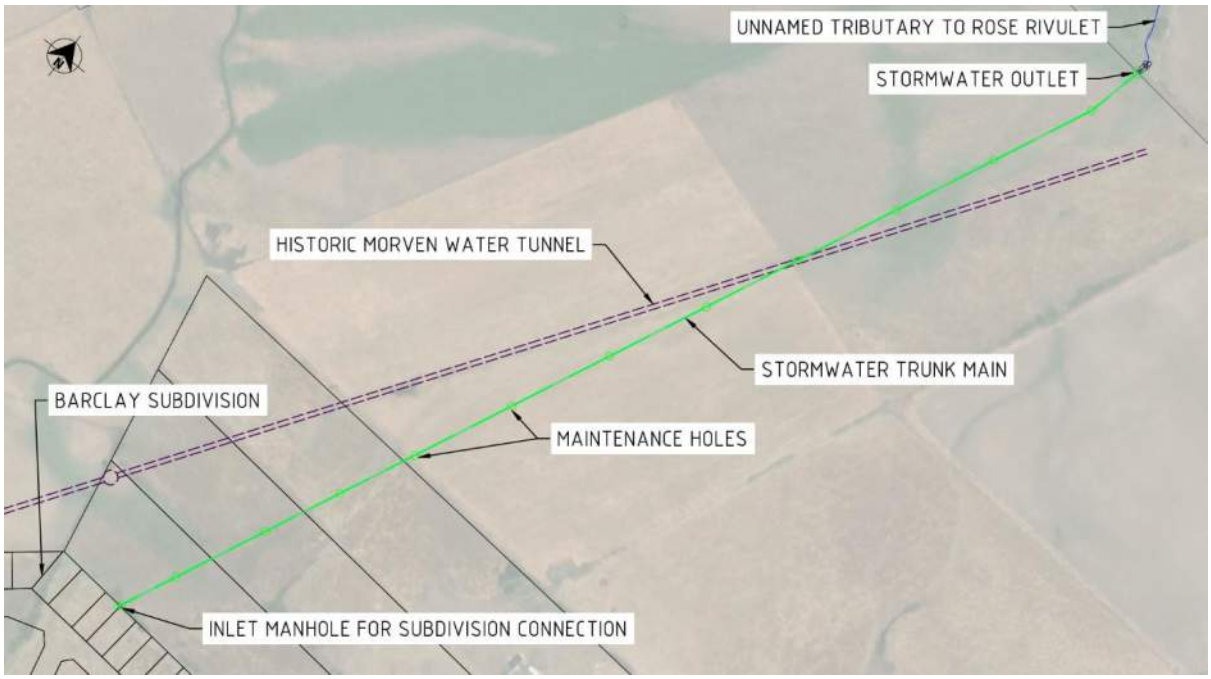


Figure 6-1: White Hille Stormwater Trunk Main overview.

The trunk main will consist of the major components outlined below Table 6-1.

Table 6-1: Trunk Main major components.

Item	Location	Quantity / Length
DN1800 Concrete Maintenance Hole	Pipeline outlet	1
DN1500 Concrete Maintenance Hole	Throughout pipeline alignment	12
DN900 Corrugated Polypropylene SN8	Remainder pipeline	~ 810 m
DN1050 Corrugated Polypropylene SN8	Inlet of pipeline	~ 135 m

The larger DN1050 corrugated pipe at the inlet manhole will manage the subdivision inflows, routing the stormwater downstream of the residential lots before reducing to DN900 for the remainder of the trunk main. This ensures that suitable capacities can be achieved in the flatter grades of the residential area and that any potential surcharge and overland flows would occur downstream of housing. The DN1500 maintenance holes are spaced approximately 90 m apart along the alignment, with the larger DN1800 MH used as a bubbler pit at the trunk main outfall.

Exhibited

6.2 Outlet Configuration

To reduce the velocity of the flow at the discharge outlet, an energy dissipator has been implemented into the outlet MH design. Mass concrete benching will be used inside the MH to dissipate energy at the discharge of the trunk main, slowing the water velocity before exiting through the side block-out outlet, as shown below in Figure 6-2.

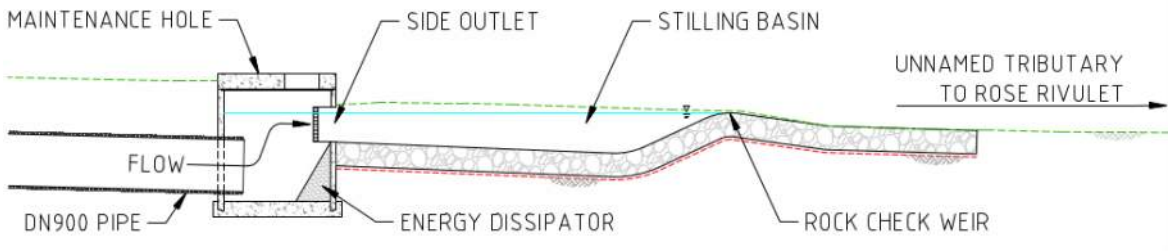


Figure 6-2: Section view of outlet MH with energy dissipator and side outlet into stilling basin.

6.3 Rock Stilling Basin

Located at the exit of the outlet MH is a rock pad stilling basin to further dissipate the energy and velocity of the water flow. The stilling basin will slow exit velocity and prevent erosion and damage to the downstream area by using a rock check weir to dissipate the remaining energy as it exits from the stilling basin into the unnamed tributary feeding into the Rose Rivulet (Figure 6-3).

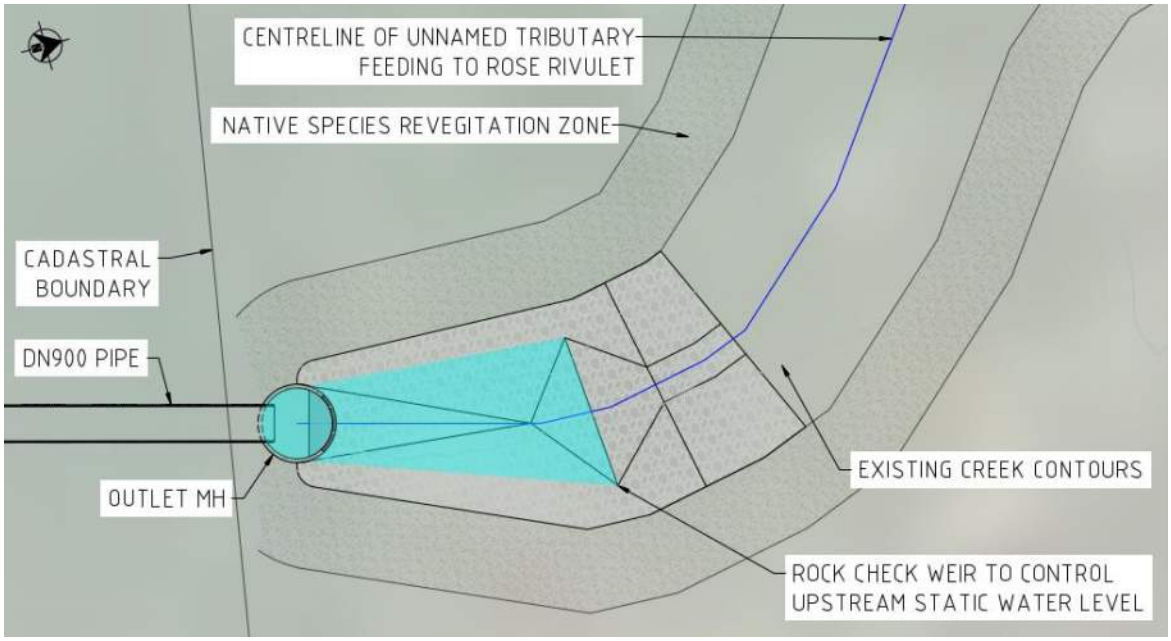


Figure 6-3: Rock stilling basin at MH outlet.

Details of the rock pad can be seen below in Table 6-2.

Table 6-2: Rock pad stilling basin details.

Description	Distance (m)	Description	Distance (m)
Outlet MH to weir crest	4.2	Rock pad width at outlet	3.2
Weir crest width	3.2	Rock pad width at weir crest	5.2
Stilling basin to weir crest depth	0.8	Rock pad downstream of weir crest	3.0

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6.4 Morven Water Tunnel

The historical Morven water tunnel, which extends from Evandale towards White Hills (Figure 6-1), was constructed in 1837 by convicts. The horizontal adit has nine vertical shafts spaced approximately 150m apart and was believed to be 1.3km long. Construction was abandoned before the tunnel could be completed, with the exact length unknown due to collapses within the tunnel (THC, 2011). Remnants of eight brick lined shafts have survived, with only two remaining open to a depth of between 22-24m deep.

The proposed trunk main will cross the alignment of the Morven tunnel at approximately chainage 625m from the inlet to the trunk main. Heritage Tasmania has provided shape files of the tunnel's alignment, which have been overlaid onto the design drawings for reference. The depth of the tunnel below ground level is unknown at the location where the trunk main is to cross the tunnel.

To ensure that the tunnel is not damaged during excavations, the contractor is to provide a construction management plan prior to commencement of excavations works.

Exhibited

7. References

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IPD Consulting. (2025). *Stormwater Network Design Report.*

LISTmap. (2025). *Map*. Retrieved from LISTmap Land Information System Tasmania: https://maps.thelist.tas.gov.au/listmap/app/list/map

THC. (2011). *Evandale to Launceston Water Scheme.* Hobart: Tasmanian Heritage Counsil.

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Appendix A

TUFLOW 2D Hydraulic Model Setup

1 Model Setup & Inputs

The model has been built using a variety of sources. The DEM is a combination of:

- 2014 LiDAR flown for the Northeast Irrigation Scheme
- Site survey carried out by Cohen and Associates

Other adjustments have been made within the TUFLOW model to enable the correct operation of drainage structures, such as culverts. Other key hydraulic features of the model are:

- 2D Cell Size 2m x 2m (with refinements down to 0.5m x 0.5m)
- Model roughness areas have been delineated using aerial photography, see Figure A-1.
- Mannings Roughness values have been adopted in line with Chow 1959



Figure A-1: Model Roughness Areas

The downstream boundary condition has been input as a normal slope boundary where the model automates the outflow calculation based upon a user input downstream slope (3.8%).

1.1 Model Limitations

There are two main limitations in two-dimensional hydraulic modelling which will be discussed here.

1.1.1 Evandale Stormwater Network

The two-dimensional TUFLOW model has been developed to accurately model the downstream extents of the catchment. There are however elements of the Evandale public drainage system that have not been incorporated into this model. Because of this the outflows from the public stormwater system are not included in the existing case runs in the TUFLOW model. They have been accounted for in the 1D InfoWorks model which has been used to design the detention basin. There will therefore be a reduced level of discharge in the existing case runs in the TUFLOW model.

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This will have the effect of increasing the differences between the pre and post runs. The differences should be relatively minor but should be considered when reviewing the developments impact on the downstream drainage system. In Figure A-2 below, the blue line is the TUFLOW model boundary, and the orange segments are the drainage catchments that are routed to the development site through Council's drainage network. There is approximately 7.5ha of additional catchment area directed to the development site that has not been considered in the TUFLOW model's pre-development runs.

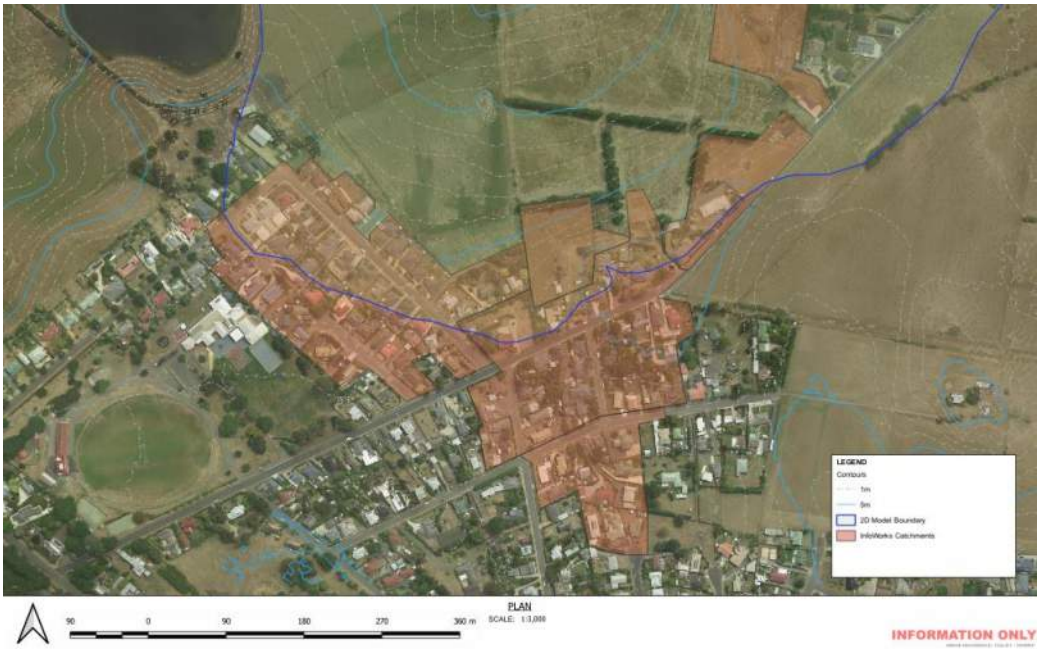


Figure A-2: Model Boundary Extents

To avoid doubling up, during the development case modelling, the subdivision itself has been made inactive in the TUFLOW model, preventing rainfall from being applied to the area and therefore causing runoff that would be accounted for in the InfoWorks model.

1.1.2 Open Channel Survey

While survey was carried out on the site, it is only for a limited section of the creek and in some areas, does not appear to accurately represent a natural creek formation. Where there are obstructions in the DEM, these have been smoothed out to allow for a continuous flow path, this however has been estimated and not inspected for real world accuracy. As such the modifications made to the DEM have been minor, to not overly bias any results.

For optimal modelling of creeks and rivers a 2D model should have more than six cells across the flow path. The cell size has been reduced down to 0.5m x 0.5m in the main channel. The cell size has been selected based upon the key areas of interest where the creek has a top width around 2.5-3.0m. As the creek is a natural formation it meanders and changes in width several times. In some cases, the creek narrows to only a single metre in width meaning the 2D model will not be able to accurately estimate flow in the channel at these locations.

In 2D modelling a trade-off has to be made, overly reducing the cell size will substantially increase model run times and increase the likelihood of instability in the model. Furthermore, the TUFLOW solver uses shallow water equations which work best when there is minimal vertical movement of water. If the depth in the model exceeds the cell size by any great margin the solution may not be realistic. So, the cell size has been selected based upon the key features, optimising for run time and chosen to not bias the results.

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Appendix B

TUFLOW Model Figures

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40 0 40 80 120 160 m

PLAN

SCALE: 1:1,500

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IMAGE REFERENCE: TheLIST - TASMAP

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BAKER

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BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 5% AEP - Peak Depth - Existing

DRAWING TYPE
SKETCH

SCALE AT A3
1:1,500

DRAWING REFERENCE NUMBER
1467-1

REVISION
A

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LEGEND

Contours
- 1m
- 5m

Band 1
- <= 0.25m/s
- 0.25 - 0.50m/s
- 0.50 - 0.75m/s
- 0.75 - 1.00m/s
- 1.00 - 2.00m/s
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40 0 40 80 120 160 m

PLAN

SCALE: 1:1,500

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PLAN

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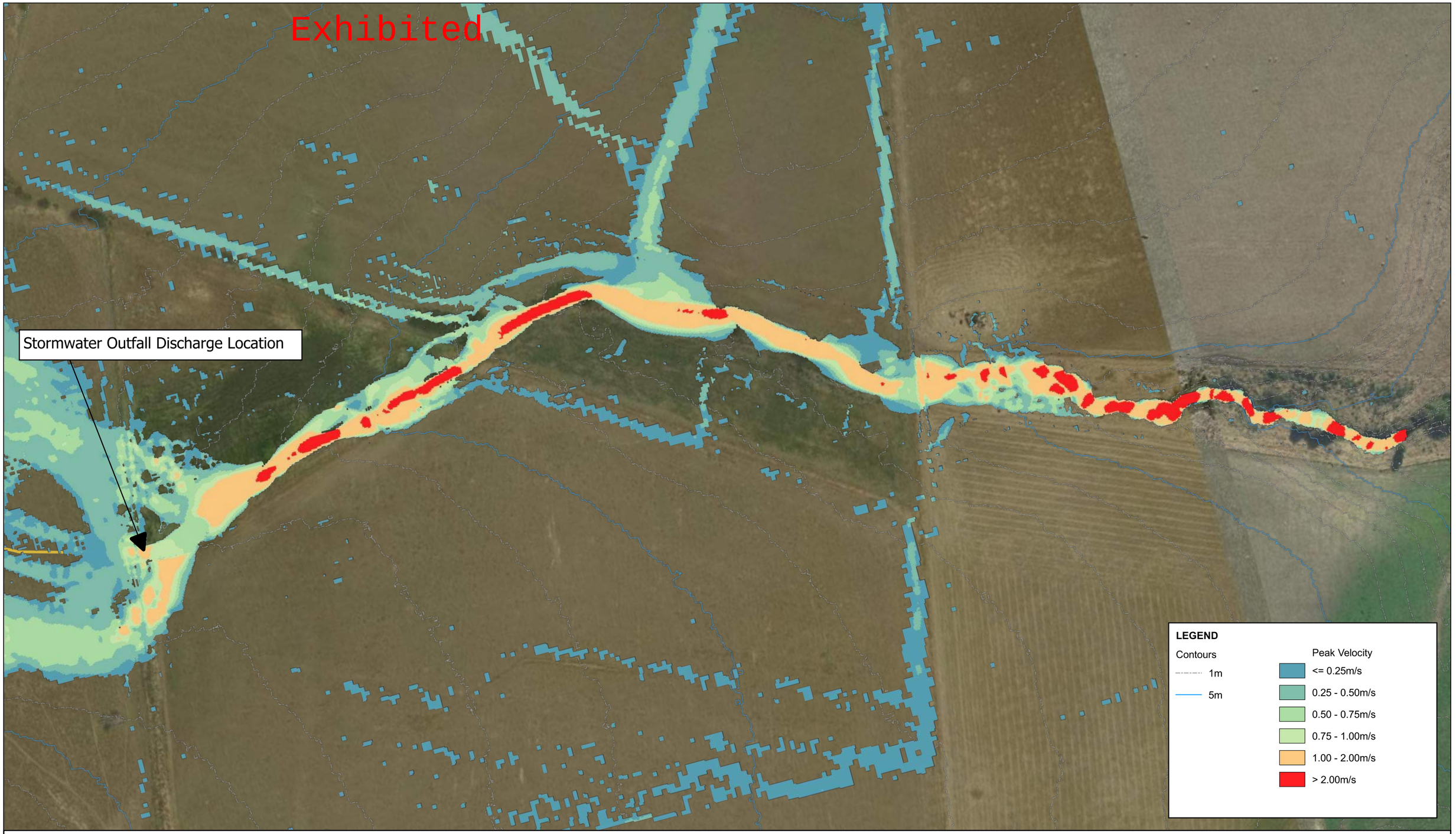
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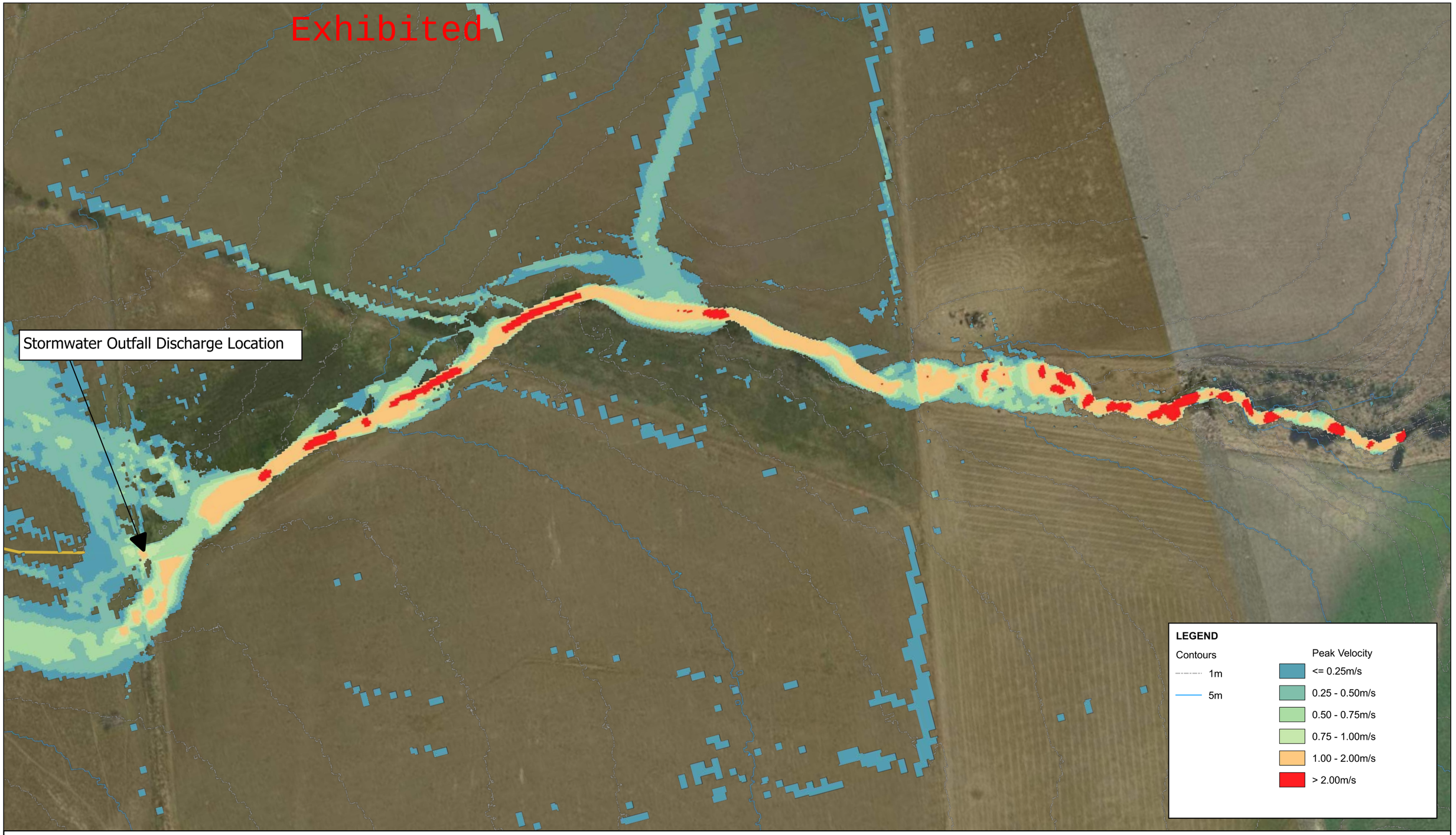
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APPROVED	MAW	14/10/24

NORTHERN MIDLANDS COUNCIL

BAKER

PROJECT NAME
BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 10% AEP - Peak Velocity - Developed

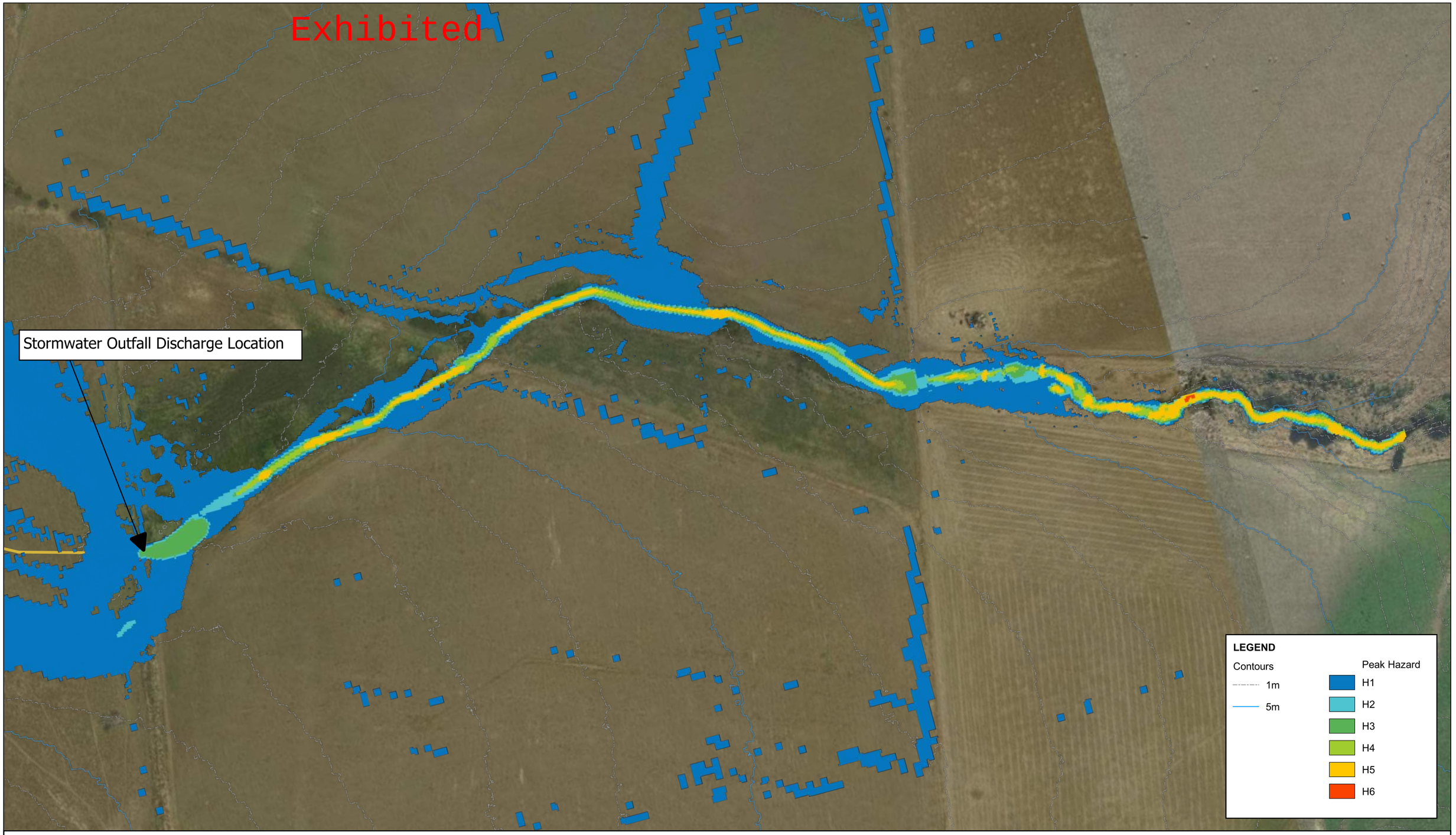
DRAWING TYPE
SKETCH

SCALE AT A3
1:1,500

DRAWING REFERENCE NUMBER
1467-1

REVISION
A

Exhibited



PLAN

SCALE: 1:1,500

40 0 40 80 120 160 m

INFORMATION ONLY

IMAGE REFERENCE: TheLIST - TASMAP

REV	REVISION DETAILS	DATE	BY	APPROVED
A	First Issue	14/10/024	HGW	MAW

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LEVEL 2, 126 CHARLES STREET
LAUNCESTON., TASMANIA
P.O. BOX 1371 LAUNCESTON TAS 7250
PHONE: 0419 574 975
EMAIL: admin@ipdconsulting.com.au

SIGNED		DATE
DESIGN	HGW	14/10/24
DRAWN	HGW	14/10/24
CHECKED	MAW	14/10/24
APPROVED	MAW	14/10/24

PROJECT NAME
BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 10% AEP - Peak Hazard - Developed

DRAWING TYPE
SKETCH

SCALE AT A3
1:1,500

DRAWING REFERENCE NUMBER
1467-1

REVISION
A

Exhibited



40 0 40 80 120 160 m

PLAN

SCALE: 1:1,500

INFORMATION ONLY

IMAGE REFERENCE: TheLIST - TASMAP

REV	REVISION DETAILS	DATE	BY	APPROVED
A	First Issue	14/10/024	HGW	MAW

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SIGNED		
DESIGN	HGW	14/10/24
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CHECKED	MAW	14/10/24
APPROVED	MAW	14/10/24

NORTHERN MIDLANDS COUNCIL

BAKER

PROJECT NAME
BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 20% AEP - Peak Depth - Developed

DRAWING TYPE
SKETCH

SCALE AT A3
1:1,500

DRAWING REFERENCE NUMBER
1467-1

REVISION
A

Exhibited



PLAN

40 0 40 80 120 160 m

SCALE: 1:1,500

INFORMATION ONLY

IMAGE REFERENCE: TheLIST - TASMAP

REV	REVISION DETAILS	DATE	BY	APPROVED
A	First Issue	14/10/024	HGW	MAW

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NORTHERN MIDLANDS COUNCIL

BAKER

PROJECT NAME
BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 20% AEP - Peak Velocity - Developed

DRAWING TYPE
SKETCH

SCALE AT A3
1:1,500

DRAWING REFERENCE NUMBER
1467-1

REVISION
A

Exhibited



PLAN

SCALE: 1:1,500

40 0 40 80 120 160 m

INFORMATION ONLY

IMAGE REFERENCE: TheLIST - TASMAP

REV	REVISION DETAILS	DATE	BY	APPROVED
A	First Issue	14/10/024	HGW	MAW

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APPROVED	MAW	14/10/24

NORTHERN MIDLANDS COUNCIL

BAKER

PROJECT NAME
BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 20% AEP - Peak Hazard - Developed

DRAWING TYPE
SKETCH

SCALE AT A3
1:1,500

DRAWING REFERENCE NUMBER
1467-1

REVISION
A

Exhibited

LEGEND

Contours
- 1m
- 5m

Afflux Change
- Was Wet, Now Dry
- Was Dry, Now Wet

Water Level Difference
- <= -0.2500
- -0.2500 - -0.2000
- -0.2000 - -0.1000
- -0.1000 - -0.0100
- -0.0100 - 0.0000
- 0.0000 - 0.1000
- > 0.1000

60 0 60 120 180 240 m

PLAN

SCALE: 1:2,000

INFORMATION ONLY

IMAGE REFERENCE: TheLIST - TASMAP

REV	REVISION DETAILS	DATE	BY	APPROVED
A	First Issue	14/10/024	HGW	MAW

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DESIGN	HGW		14/10/24
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CHECKED	MAW		14/10/24
APPROVED	MAW		14/10/24

NORTHERN MIDLANDS COUNCIL

BAKER

PROJECT NAME
BARCLAY SUBDIVISION - STORMWATER OUTFALL

DRAWING TITLE
1467 - 5% AEP - Afflux - Near Subdivision

DRAWING TYPE
SKETCH

SCALE AT A3
1:2,000

DRAWING REFERENCE NUMBER
1467-1

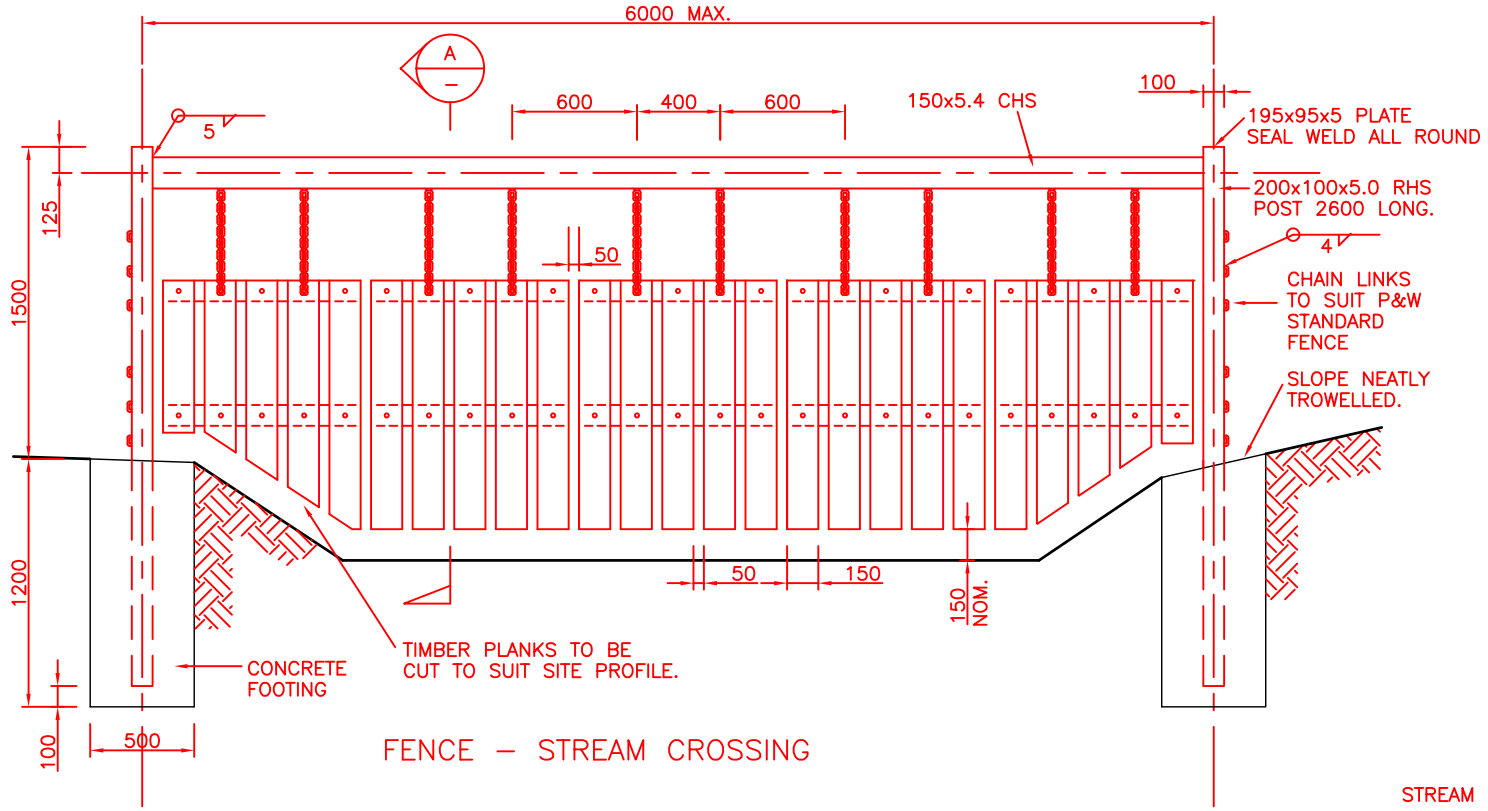
REVISION
A

Exhibited

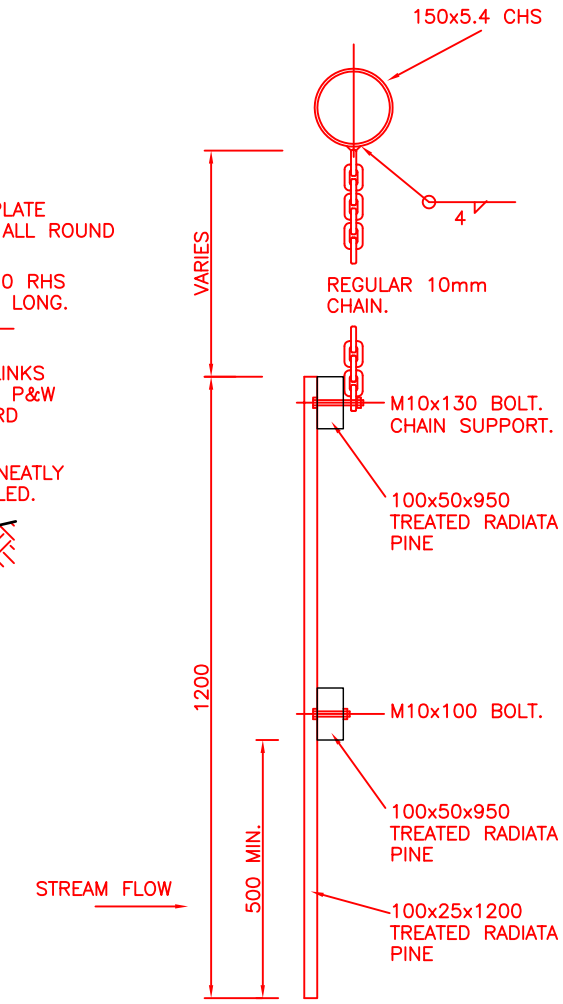
Appendix C

DSG Standard Drawing – Fence Stream Crossing

Exhibited



FENCE – STREAM CROSSING



SECTION

NOTES:

1. GRADE N25 CONCRETE.
2. ALL STEELWORK TO BE GALVANISED. ALL WELDS TO BE COATED WITH ZINC RICH PAINT.
3. STREAM PROFILE SHOWN IS INDICATIVE ONLY.
4. SUPPLY GALVANISED BOLTS WITH NUTS & WASHERS.

No.	AMENDMENTS	CHECKED	DATE	APPROVED

DRAFTING		DESIGN	
DRAWN	DATE	DESIGNED	DATE
W. O'BRIEN	JULY 93	G. ROBERTS	JULY 93
CHECKED	DATE	RECOMMENDED/CHECKED	DATE
A. WHITE		G. NICHOLS	30/8/93
APPROVED	DATE	ACCEPTED	DATE
W. SCHOE	31/8/93		

DEPARTMENT OF INFRASTRUCTURE, ENERGY AND RESOURCES, TASMANIA

FENCE STREAM CROSSING.

FROM LINK No. / DISTANCE	TO LINK No. / DISTANCE
CONTRACT No.	SHEET No.

DRG. No. 3402–15/P11

Exhibited

Appendix D

Elgin Associates – Natural Values Assessment

Exhibited

24 July 2025

Paul Godier
Northern Midlands Council
13 Smith Street
Longford, Tasmania 7301

Natural Values Assessment – Waterway and Coastal Protection Area
Proposed Works – Stormwater Outfall at 778 White Hills Road, Evandale (PID 3398202)

A 110-lot subdivision is proposed at 43 Cambock Lane, Evandale, PID 3061474 (the proposed development). The proposed development's stormwater network plans to discharge stormwater from both the subdivision and Council stormwater assets into an unnamed tributary of Rose Rivulet. Stormwater is to be conveyed from the proposed development via a DN900 pipe and discharged ~1km downstream of the development at 778 White Hills Road, Evandale, PID 3398202 (Figure 1). The unnamed tributary is mapped as a 'waterway and coastal protection area' under Tasmanian Planning Scheme (the Planning Scheme) and triggers assessment against the Natural Assets Code.

Elgin have undertaken an assessment of the stormwater outfall associated with the proposal against P1.1 (a), (c), (l), and (m) of the Planning Scheme, with the remaining Performance Criterion assessed by Enviro-Dynamics Pty Ltd and addressed in a separate letter.

C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area

Objective: That buildings and works within a waterway and coastal protection area or future coastal refugia area will not have an unnecessary or unacceptable impact on natural assets.

P1.1 Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to:

- *a) Impacts caused by erosion, siltation, sedimentation and runoff;*
- *c) Maintaining natural streambank and streambed condition, where it exists;*
- *l) Minimising the need for future works for the protection of natural assets, infrastructure and property;*
- *m) The environmental best practice guidelines in the Wetlands and Waterways Works Manual.*

Exhibited

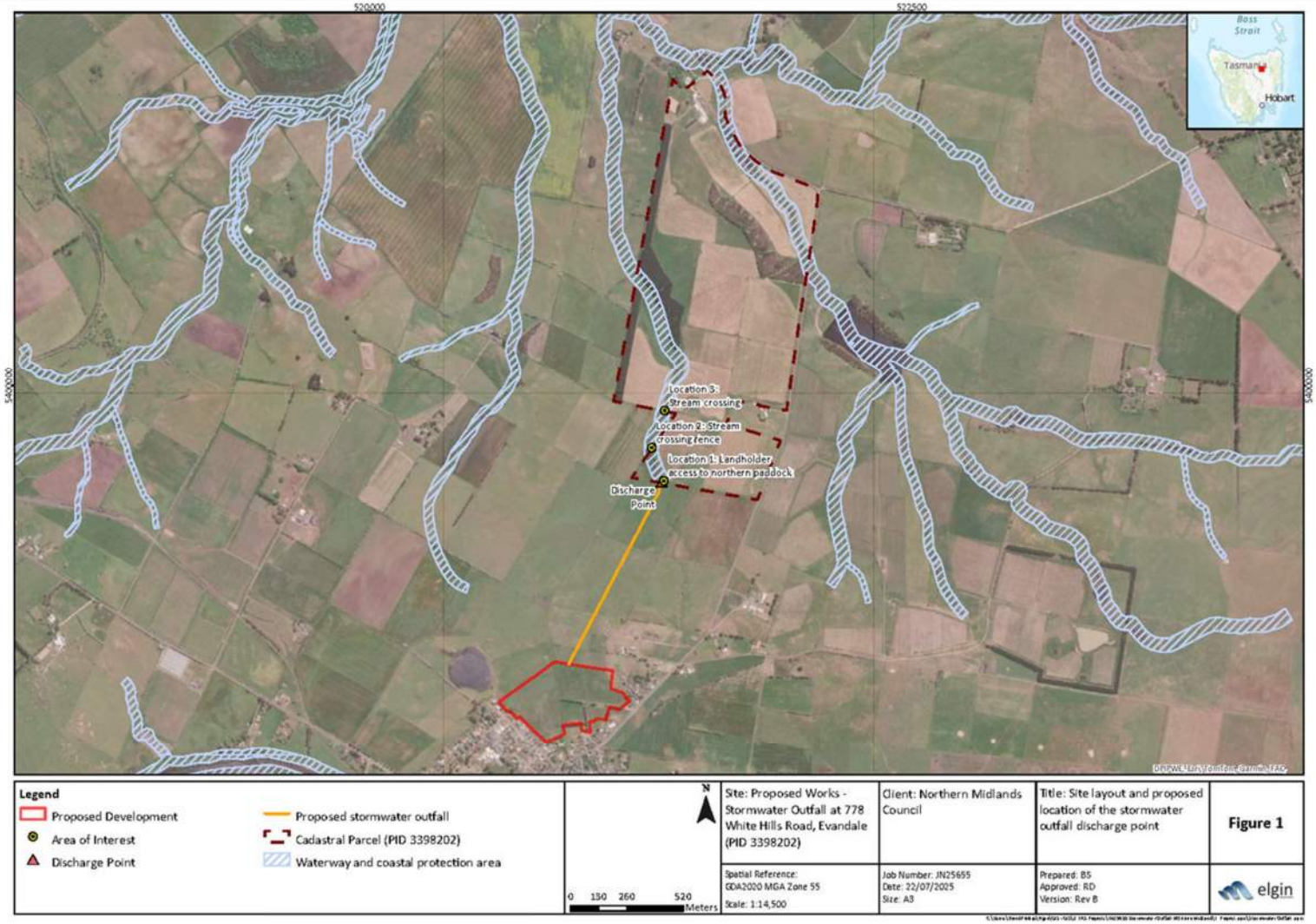


Figure 1. Site layout and proposed location of the stormwater outfall discharge point.

Exhibited

Performance Criterion	a) Impacts caused by erosion, siltation, sedimentation and runoff

The proposed stormwater outfall and associated works should only be approved with an appropriate, site-specific Soil and Water Management Plan that details management measures for each activity and includes best practice guidelines as outlined in the *Wetlands and Waterways Works Manual,* specifically:

- Module 2. *Environmental Best Practice Guidelines 2. Construction Practices in Waterways and Wetlands.*
- Module 3. *Environmental Best Practice Guidelines 3: Excavating in Waterways*
- Module 5. *Environmental Best Practice Guidelines 5: Siting and Designing Stream Crossings*

Additional information on soil and water management on building and construction sites can be found on the NRM South website (https://nrmsouth.org.au/wp-content/uploads/2021/01/Soil-and-Water-factsheets_combined.pdf).

Modifications to Receiving Environment

Approximately 30 m of the unnamed tributary (referred to as an open drain in proposed development documentation) north of the discharge point will be lowered to allow water from the outfall to drain from the outlet.

Proposed Stormwater Outfall Discharge Point

The outfall will require an energy dissipation structure that accounts for the stormwater discharge rates and velocities modelled by IPD Consulting Pty Ltd. The following is recommended:

- Installation of appropriate scour protection at the pipe outlet, such as appropriately sized riprap rock armouring. Where geotextile fabric underlying rock armouring is used it must be installed in such a manner that the geotextile does not become exposed overtime (e.g. from erosion and movement of rock scour protection).
- Installation of a detention basin designed to diffuse flow (and not concentrate flow) and allow for controlled, steady-state discharge into the unnamed tributary.
- Fencing of the detention basin to prevent access and disturbance by livestock.
- Revegetating the perimeter of the detention basin and 40 m downstream of the discharge point and detention basin to stabilise the streambank and reduce erosion potential in the receiving environment. Species selection should be guided by a suitably qualified person.

Landholder Access (Location 1 on Figure 1)

The landholder accesses the southern-most paddock along the southern boundary fence, which is the proposed location of the stormwater outfall (Figure 2). Detailed design of the detention basin must ensure landholder access to the paddock is maintained. A stream crossing may be required and should be negotiated with the landholder. Should a stream crossing be installed, best practice guidelines as outlined in the *Wetlands and Waterways Works Manual* (specifically Modules 2, 3, and 5) should be implemented.

Exhibited

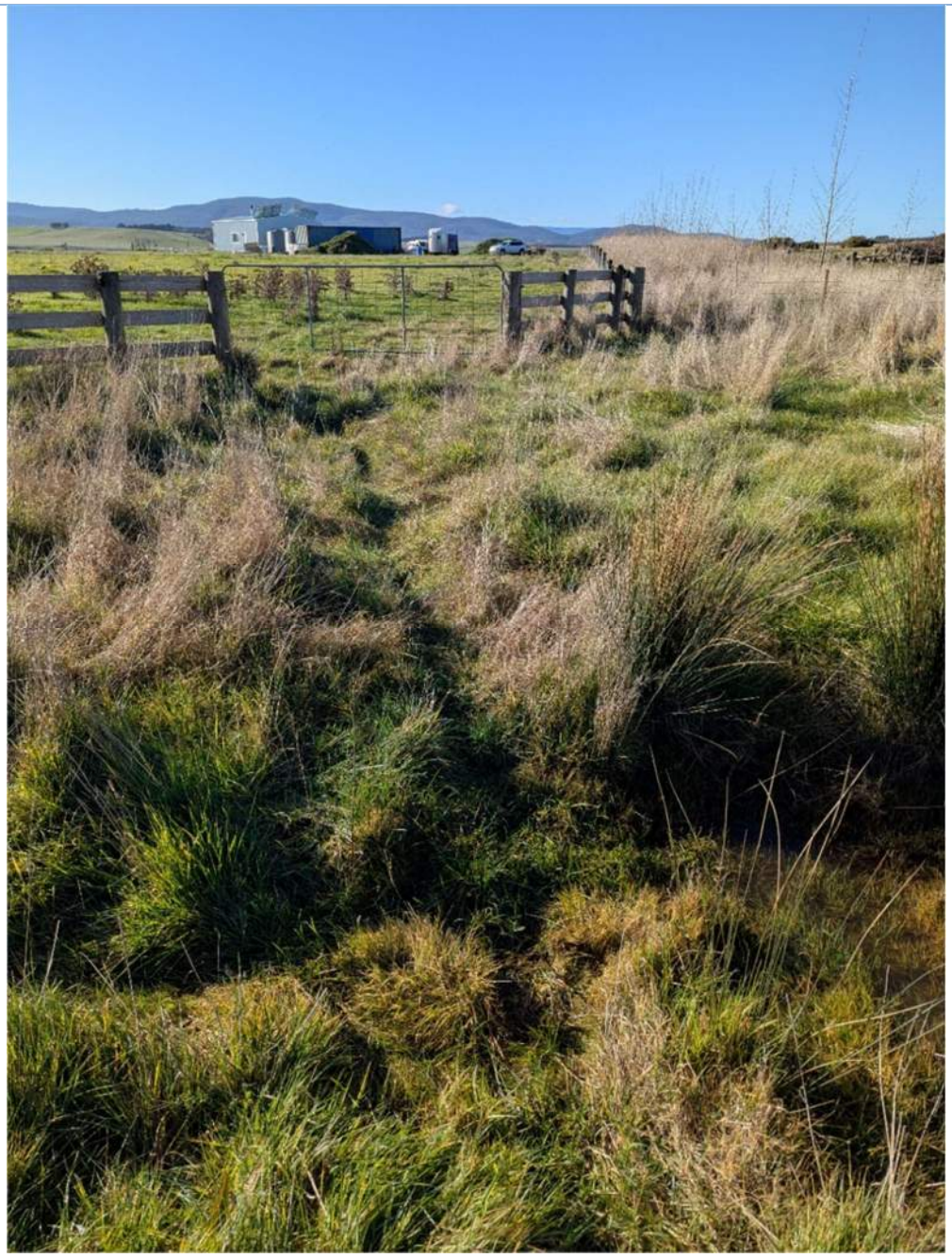


Figure 2. Landholder access to the southern-most paddock at the location of the proposed stormwater outfall.

Stream crossing fence (Location 2 on Figure 1)

The downstream culvert at the fence boundary between 778 White Hills Road, Evandale and a neighbouring property should be removed and replaced with a stream crossing fence/flood gate that allows downstream movement of debris (Figure 3). This will minimise the risk of backwater flooding that could reduce the efficacy of controls implemented at the discharge point.



Figure 3. Downstream culvert at fence boundary.

Exhibited

Stream crossing (Location 3 on Figure 1)

IPD Consulting Pty Ltd determined that the crossing over the unnamed tributary, downstream of the proposed stormwater outfall, is undersized and requires replacement (Figure 4). A new stream crossing should implement best practice guidelines as outlined in the *Wetlands and Waterways Works Manual* (specifically Modules 2, 3, and 5).



Figure 4. Crossing of unnamed tributary.

Performance Criterion	c) Maintaining natural streambank and streambed condition, where it exists

Modification to approximately 30m of streambank and deepening of approximately 30m of streambed in the unnamed tributary will be required for the installation of the stormwater outfall. Modification to the streambank and/or streambed will also be required for upgrades to fencing and river crossing/s.

The following is recommended:

- Implementation of best practice guidelines as outlined in the *Wetlands and Waterways Works Manual,* specifically Modules 2, 3, and 5.
- Modified streambanks graded to no steeper than 1H:3L.
- No geotextile fabric is used on the banks or in the streambed.
- Disturbed streambank is revegetated, with species selected by a suitably qualitied person.

Exhibited

Performance Criterion	l) Minimising the need for future works for the protection of natural assets, infrastructure and property
It is assumed that where the stormwater control and dissipation measures detailed in this report are applied, no further works to manage streambank and streambed erosion or loss of function will be required. Regular monitoring and maintenance of revegetation and implementation of weed management will be required, as well as occasional maintenance for the detention basin and culverts. To prevent biosecurity incursions and further weed incursions, strict washdown protocols should be implemented for all vehicles, machinery, and equipment used during the work.	
Performance Criterion	m) The environmental best practice guidelines in the Wetlands and Waterways Works Manual;
See (a) and (c) above.	

Closing

Should you have any questions please contact Ruginia on 0401 257 552.

Kind regards,





Ruginia Duffy
Senior Environmental Scientist
Elgin Associates
28 Letitia Street, North Hobart
TAS, 7000

Tim Smith
Principal Environmental Geologist
Elgin Associates
28 Letitia Street, North Hobart
TAS, 7000

Exhibited

Appendix E

Enviro-dynamics – Natural Values Assessment

Exhibited

envirodynamics
environmental solutions for a changing world

Natural Values Assessment of 778 White Hills Road, Evandale to address the waterway and coastal protection area overlay.

Date: August 2025

Attention: Paul Godier – Senior Planner Northern Midlands Council

---

Dear Paul,

This advice is provided in response to a request from the Northern Midlands Council regarding the proposed stormwater discharge associated with a subdivision at Cambock Lane, Evandale. The stormwater is intended to discharge into an unnamed waterway located on 778 White Hills Road, Evandale. This waterway is subject to a Waterway and Coastal Protection Area overlay, as defined under the Tasmanian Planning Scheme – Northern Midlands Local Provisions Schedule (Figure 1).

A site inspection was conducted on 15 July to assess the natural values of the waterway at the proposed discharge point and further north along the waterway. The surrounding landscape is primarily agricultural, and the riparian vegetation is largely composed of introduced species. Dominant species along the banks include gorse (*Ulex europaeus*), blackberry (*Rubus fruticosus* agg.), willows (*Salix* spp.), and hawthorn (*Crataegus monogyna*). Only two native species were recorded in the area: a species of *Juncus* and a solitary *Eucalyptus ovata* (swamp gum). No threatened flora or fauna species, nor any potential habitat for such species, were observed during the assessment.

At the southern end of the waterway, where the stormwater will be discharged, the land is relatively flat, with ground cover consisting mainly of pasture grasses and some large willows. Progressing northward, the waterway becomes more incised, with steeper banks and increasingly dense vegetation along the margins.

Exhibited

Natural Assets Code

C7.6.1 Buildings and works within a waterway and coastal protection area or a future coastal refugia area.

Response: Acceptable solutions cannot be met; therefore, performance criteria must be addressed.

P1.1 - Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to:

a) impacts caused by erosion, siltation, sedimentation and runoff;

Response: Outside of the scope of this assessment.

b) impacts on riparian or littoral vegetation;

Response: The surrounding vegetation is predominantly introduced species. Weed species such as gorse, blackberry, willow and hawthorn dominate the bank edges. There are no native vegetation communities present.

c) maintaining natural streambank and streambed condition, where it exists;

Response: Outside of the scope of this assessment.

d) impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation;

Response: There will be no impacts to the in-stream habitat.

e) the need to avoid significantly impeding natural flow and drainage;

Response: Outside of the scope of this assessment.

f) the need to maintain fish passage, where known to exist;

Response: N/A

g) the need to avoid land filling of wetlands;

Response: No wetlands are present.

h) the need to group new facilities with existing facilities, where reasonably practical;

Response: N/A

Exhibited

i) minimising cut and fill;

Response: N/A.

j) building design that responds to the particular size, shape, contours or slope of the land;

Response: N/A

k) minimising impacts on coastal processes, including sand movement and wave action;

Response: N/A

l) minimising the need for future works for the protection of natural assets, infrastructure and property;

Response: N/A

m) the environmental best practice guidelines in the Wetlands and Waterways Works Manual; and

Response: Best practise guidelines, as laid out in the Wetlands and Waterways Works Manual should be followed.

n) the guidelines in the Tasmanian Coastal Works Manual.

Response: N/A

P3 - Development within a waterway and coastal protection area or a future coastal refugia area involving a new stormwater point discharge into a watercourse, wetland or lake must avoid or minimise adverse impacts on natural assets, having regard to:

a) the need to minimise impacts on water quality; and

Response: Outside the scope of this assessment

b) the need to mitigate and manage any impacts likely to arise from erosion, sedimentation or runoff.

Response: Outside the scope of this assessment.

Exhibited

Conclusion and recommendations

The vegetation along the waterway proposed to receive stormwater discharge is predominantly composed of introduced species. Although non-native, this vegetation may provide shelter and habitat for native fauna. The proposed stormwater discharge is not anticipated to impact the existing vegetation, as no clearing or physical disturbance is required.

However, to improve the resilience of the waterway, it is strongly recommended that the southern section, where the stormwater will enter, be actively revegetated with locally appropriate native species (Figure 1). Targeted revegetation in this area would significantly reduce the risk of erosion and downstream sedimentation resulting from increased flows, while also contributing to improved habitat quality and long-term waterway health.

Should you require any further information please don't hesitate to contact me.

Fiona Walsh
Botanist / Environmental Consultant
Enviro-dynamics
fiona.walsh@enviro-dynamics.com.au

Exhibited



Figure 1: Study area and recommended revegetation area

Exhibited

Appendix F

White Hills Stormwater Trunk Main - Drawings

Exhibited

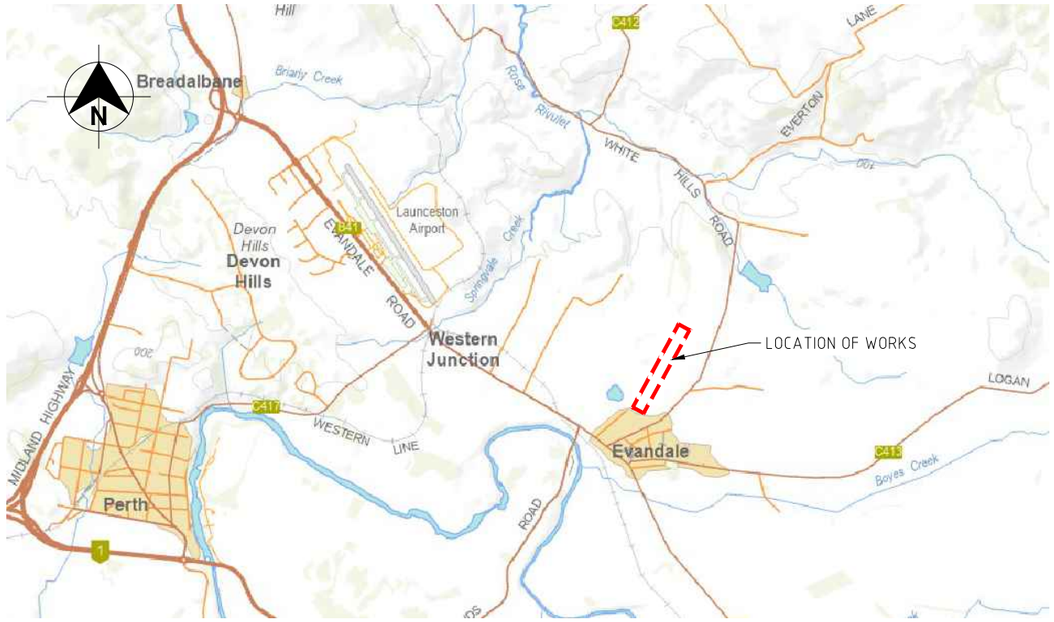
WHITE HILLS STORMWATER TRUNK MAIN

WHITE HILLS ROAD, EVANDALE, TAS, 7212

FOR

THE BAKER GROUP

OCTOBER 2025



LOCALITY PLAN

SCALE - N.T.S

DRAWING LIST		
DRAWING NUMBER	DRAWING TITLE	REVISION
1467-SW-001	COVER SHEET	A
1467-SW-010	GENERAL NOTES	A
1467-SW-020	KEY VIEW PLAN	A
1467-SW-030	LONGSECTION (1 OF 9)	A
1467-SW-031	LONGSECTION (2 OF 9)	A
1467-SW-032	LONGSECTION (3 OF 9)	A
1467-SW-033	LONGSECTION (4 OF 9)	A
1467-SW-034	LONGSECTION (5 OF 9)	A
1467-SW-035	LONGSECTION (6 OF 9)	A
1467-SW-036	LONGSECTION (7 OF 9)	A
1467-SW-037	LONGSECTION (8 OF 9)	A
1467-SW-038	LONGSECTION (9 OF 9)	A
1467-SW-050	TRENCH DETAILS	A
1467-SW-060	OUTLET DETAILS (1 OF 2)	A
1467-SW-061	OUTLET DETAILS (2 OF 2)	A
1467-SW-070	TYPICAL MANHOLE DETAILS	A

WARNING

BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THE EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

BEFORE YOU DIG www.byda.com.au

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

DO NOT SCALE
DIMENSIONS IN MILLIMETRES
DRAWING PRACTICES TO AS1100 - 1992
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THE BAKER GROUP

ipd consulting
ABN: 96 121 714 878
LEVEL 2, 126 CHARLES STREET
LAUNCESTON. TASMANIA
P.O. BOX 1371 LAUNCESTON TAS. 7250
PHONE. 0419 574 975
EMAIL. admin@ipdconsulting.com.au

PROJECT NAME: WHITE HILLS STORMWATER TRUNK MAIN

DRAWING TITLE: COVER SHEET

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
N.T.S	1467-SW-001	1 OF 1	CI	A

I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD (PIPELINE)\DRG\1467 - DISCHARGE PIPELINE_REV A

PLOTTED: 26.11.2025

Exhibited

GENERAL NOTES:

1. THESE NOTES SHALL BE READ IN CONJUNCTION WITH OTHER ENGINEERING DRAWINGS, SPECIFICATIONS AND OTHER WRITTEN INSTRUCTIONS ISSUED FOR THIS PROJECT.
2. IN THE CASE OF DISCREPANCY BETWEEN DOCUMENTS, REFER TO SUPERINTENDENT FOR DIRECTION BEFORE PROCEEDING WITH WORKS.
3. DETAILS OF REQUIRED ON-SITE CHANGES ARE TO BE SUBMITTED FOR APPROVAL BEFORE PROCEEDING. APPROVAL DOES NOT AUTHORISE A VARIATION TO THE CONTRACT.
4. WORKS TO BE UNDERTAKEN IN A SAFE MANNER IN ACCORDANCE WITH WORK HEALTH AND SAFETY ACT 2012 AND THE RELEVANT REGULATIONS (WORK HEALTH AND SAFETY REGULATIONS 2022) AND CODES OF PRACTICE.
5. THE CONTRACTOR IS REMINDED OF THEIR RESPONSIBILITY FOR OCCUPATIONAL HEALTH AND SAFETY OF SITE PERSONNEL AND GENERAL PUBLIC IN ACCORDANCE WITH THE WORK HEALTH AND SAFETY ACT 2012, LEGISLATIVE REQUIREMENTS, ASSOCIATED REGULATIONS AND CODES OF PRACTICE, INDUSTRIAL AGREEMENTS AND ACCEPTED INDUSTRY PRACTICE.
6. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM (A.H.D).
7. ALL CO-ORDINATES ARE TO GDA2020 MGA55.
8. DIMENSIONS FOR THE WORKS SHALL NOT BE OBTAINED BY SCALING THE DRAWINGS.
9. ANY SETTING OUT DIMENSIONS SHALL BE VERIFIED BY A LICENSED SURVEYOR BEFORE COMMENCEMENT OF WORKS.
10. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED, IMPLIED OR ANY OTHER DIMENSION.
11. NOT ALL DETAILS ARE SHOWN ON DRAWINGS; CONTRACTOR TO REFER TO RELEVANT STANDARDS AND CODES AS LISTED ON THIS DRAWING SET.
12. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE REQUIREMENT OF THE CURRENT EDITIONS, INCLUDING AMENDMENTS, OF THE RELEVANT AUSTRALIAN STANDARDS AND AUSTRALIAN CODES OF PRACTICES.
13. ALL INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND RECOMMENDATIONS.
14. OBTAIN NECESSARY PERMITS AND APPROVALS FROM RELEVANT AUTHORITIES PRIOR TO THE COMMENCEMENT OF WORKS. PROVIDE NOTICE TO RELEVANT AUTHORITIES PRIOR TO COMMENCING WORKS ON SITE.
15. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ANY SURPLUS MATERIAL OFF SITE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.
16. THE CONTRACTOR IS TO MAKE GOOD ANY DAMAGES TO EXISTING ELEMENTS AT THE COMPLETION OF THE WORKS.
17. THE CONTRACTOR SHALL BUILD, FABRICATE, CONSTRUCT AND PROCURE ONLY FROM 'FOR CONSTRUCTION' DRAWINGS.
18. TRENCHING AND BACKFILL NOTES HAVE BEEN PROVIDED AS A GUIDING SUMMARY OF AS2566.1 AND WSA 03. WHERE THERE IS CONFLICT BETWEEN STANDARDS AS2566 TAKES PRECEDENCE OVER WSA. THE DESIGNER SHALL PROVIDE A DESIGN THAT IS IN ACCORDANCE WITH THE REQUIRED STANDARDS AND PERMITS.
19. THIS PROJECT IS WITHIN 5 PROPERTIES. ACCESS TO SITE WILL BE AS NEGOTIATED WITH COUNCIL AND THE LANDOWNER.

AS CONSTRUCTED DRAWINGS:

1. THE CONTRACTOR WILL BE RESPONSIBLE FOR PRODUCING "AS CONSTRUCTED" DRAWINGS TO THE STANDARD REQUIRED BY THE NORTHERN MIDLANDS COUNCIL. THE DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY EITHER A CIVIL ENGINEER OR SURVEYOR.

STORMWATER:

1. GENERAL

1.1. ALL STORMWATER WORKS TO BE IN ACCORDANCE WITH THE TASMANIAN SUBDIVISION GUIDELINES 2013, TASMANIAN STANDARD DRAWINGS VERSION 3 (LGAT), TASMANIAN STANDARD SPECIFICATIONS 2020 AND DEPARTMENT OF STATE GROWTH SPECIFICATIONS AND GUIDELINES.

1.2. ANY DEPARTURES FROM THESE STANDARDS, SPECIFICATIONS AND GUIDELINES REQUIRES THE PRIOR WRITTEN APPROVAL OF THE SUPERINTENDENT AND THE DESIGN ENGINEER.

2. TRENCHING AND BACKFILL

2.1. ALL TRENCHES ARE TO BE EXCAVATED AND BACKFILLED IN ACCORDANCE WITH THESE DESIGN DRAWINGS AND THE TASMANIAN MUNICIPAL STANDARD DRAWINGS AND SPECIFICATIONS.

3. MANHOLES

3.1. MANHOLES ARE TO BE DN1500. PRECAST CONCRETE INSTALLED TO TASMANIAN STANDARD DRAWINGS (LGAT), GUIDELINES AND SPECIFICATIONS UNLESS NOTED OTHERWISE.

3.2. ALL MANHOLES IN TRAFFICABLE AREAS ARE TO BE FITTED WITH HEAVY DUTY 'CLASS D' GATIC COVERS AND SURROUNDS.

3.3. BENCHING TO BE IN ACCORDANCE WITH TSD-SW03-v3.

4. INSPECTIONS & TESTING

4.1. ALL STORMWATER WORKS SHALL BE VISUALLY INSPECTED BY THE DESIGN ENGINEER PRIOR TO BACKFILLING INCLUDING BUT NOT LIMITED TO THE ITEMS OUTLINED IN THE TABLE BELOW.

4.2. THE CONTRACTOR SHALL CCTV ALL PIPES INCLUDING JETTING AND FLUSHING OF MAINS. THE CCTV FOOTAGE AND REPORT SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR APPROVAL.

4.3. A MINIMUM 48 HOURS NOTICE MUST BE PROVIDED TO THE SUPERINTENDENT AND COUNCIL PRIOR TO INSPECTIONS & TESTING.

4.4. ANY DISCREPANCIES FOUND MUST BE RECTIFIED BY THE CONTRACTOR AT THEIR OWN COST.

EARTHWORKS:

1. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL SHORING, PLANKING AND STRUTTING, DEWATERING DEVICES, BARRICADES, SIGNS, LIGHTS ETC. NECESSARY TO KEEP WORKS IN A SAFE AND STABLE CONDITION AND FOR THE PROTECTION OF THE PUBLIC.
2. ALL AREAS SHOWN ON THE DRAWINGS TO BE CUT OR FILLED ARE TO BE STRIPPED OF TOPSOIL TO A DEPTH OF 200 mm. UPON COMPLETION OF THE BULK EARTHWORKS, THE TOPSOIL IS TO BE SPREAD TO A DEPTH OF 100 mm OVER THE AREA AND GRADED TO FINISHED LEVELS SHOWN ON THE DRAWINGS WITH A MINIMUM SLOPE OF 1 IN 200 FOR DRAINAGE. ANY LOCALISED PONDING SHALL BE RECTIFIED AS DIRECTED BY THE DESIGN ENGINEER.
3. ALL FILLING IS TO BE COMPACTED IN 150 mm EQUAL LAYERS TO MINIMUM 95% STANDARD DRY DENSITY (SDD) WITH APPROVED MATERIAL.
4. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF SURPLUS TOP SOIL, CUT MATERIAL AND UNSUITABLE MATERIAL OFF SITE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.

INSPECTIONS & TESTING SCHEDULE FOR COUNCIL INFRASTRUCTURE

NO.	TITLE	DESCRIPTION	CONTRACTOR	CERT. ENG.	COUNCIL	DATE
G1	PRE-START MEETING	A MEETING WITH COUNCILS REPRESENTATIVE, CONTRACTOR & CERTIFYING ENGINEER PRIOR TO COMMENCEMENT OF CONSTRUCTION.				
G2	PRACTICAL COMPLETION	A FINAL SITE INSPECTION WITH COUNCILS REPRESENTATIVE, CONTRACTOR & CERTIFYING ENGINEER.				
SW1	PIPEWORKS	A VISUAL INSPECTION TO CONFIRM INSTALLED PIPE AS REQUIRED.				
SW2	PIPE BEDDING	A VISUAL INSPECTION (WITH MEASUREMENT WHERE PRACTICAL) OF BEDDING MATERIAL AND DEPTH.				
SW3	TRENCH BACKFILL	A VISUAL INSPECTION OF TRENCHING BACKFILL IN TRAFFICABLE AND NON-TRAFFICABLE LOCATIONS AS APPLICABLE.				
SW4	MANHOLES & BENCHING	A VISUAL INSPECTION OF MANHOLES & BENCHING TO ENSURE COMPLIANCE.				
SW5	CCTV	CCTV AS DESCRIBED IN STORMWATER NOTE 4.2.				

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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THE BAKER GROUP

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PHONE. 0419 574 975
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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

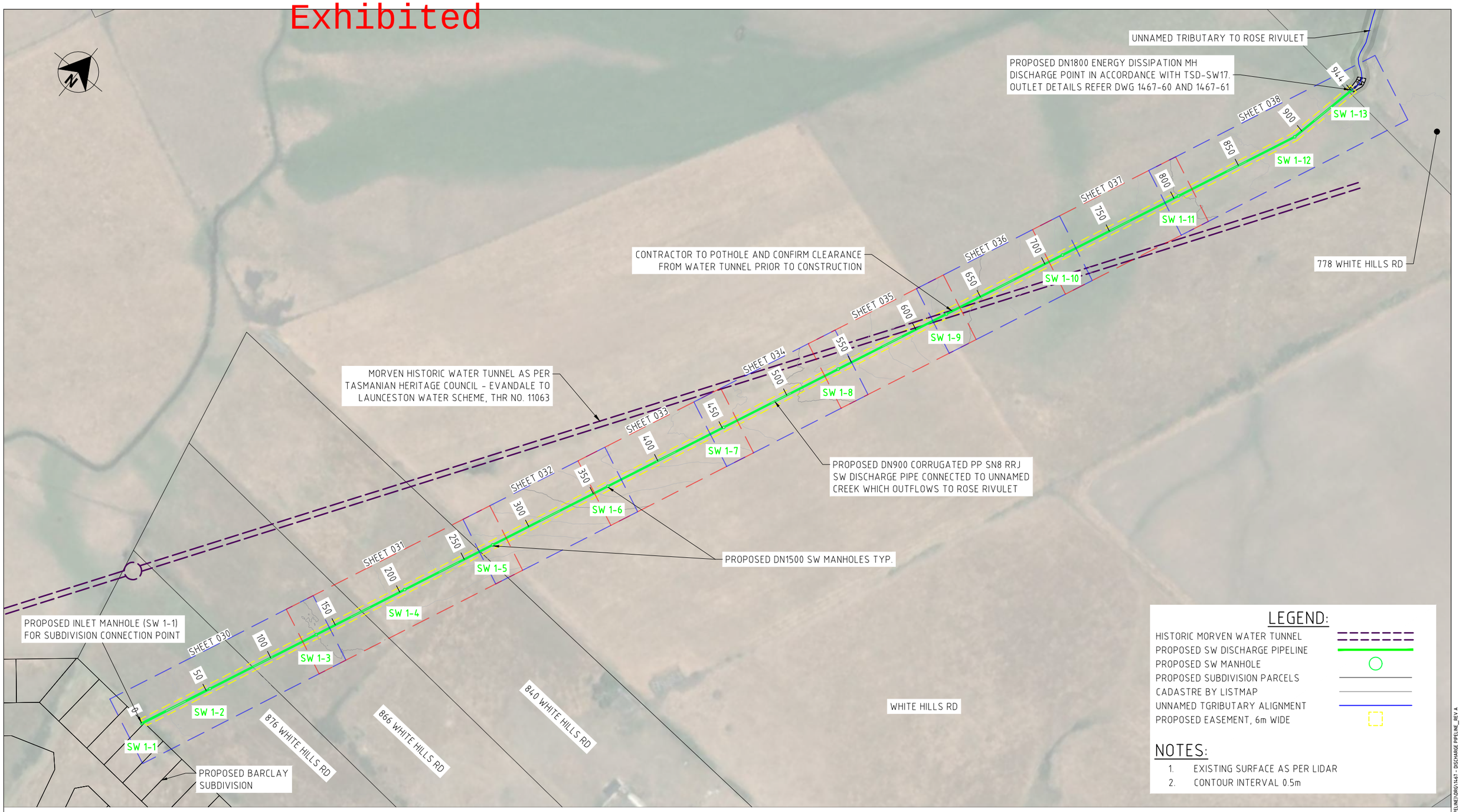
DRAWING TITLE
GENERAL NOTES

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
N.T.S	1467-SW-010	1 OF 1	CI	A

\\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD (PIPELINE)\DRG\1467 - DISCHARGE PIPELINE_REV A

PLOTTED: 26.11.2025

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LEGEND:

- HISTORIC MORVEN WATER TUNNEL
- PROPOSED SW DISCHARGE PIPELINE
- PROPOSED SW MANHOLE
- PROPOSED SUBDIVISION PARCELS
- CADASTRE BY LISTMAP
- UNNAMED TGRIBUTARY ALIGNMENT
- PROPOSED EASEMENT, 6m WIDE

NOTES:

1. EXISTING SURFACE AS PER LIDAR
2. CONTOUR INTERVAL 0.5m

WARNING
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KEY VIEW PLAN

SCALE - 1:2500

0 25 50 75 100 125 METRES
SCALE 1:2500

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
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APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

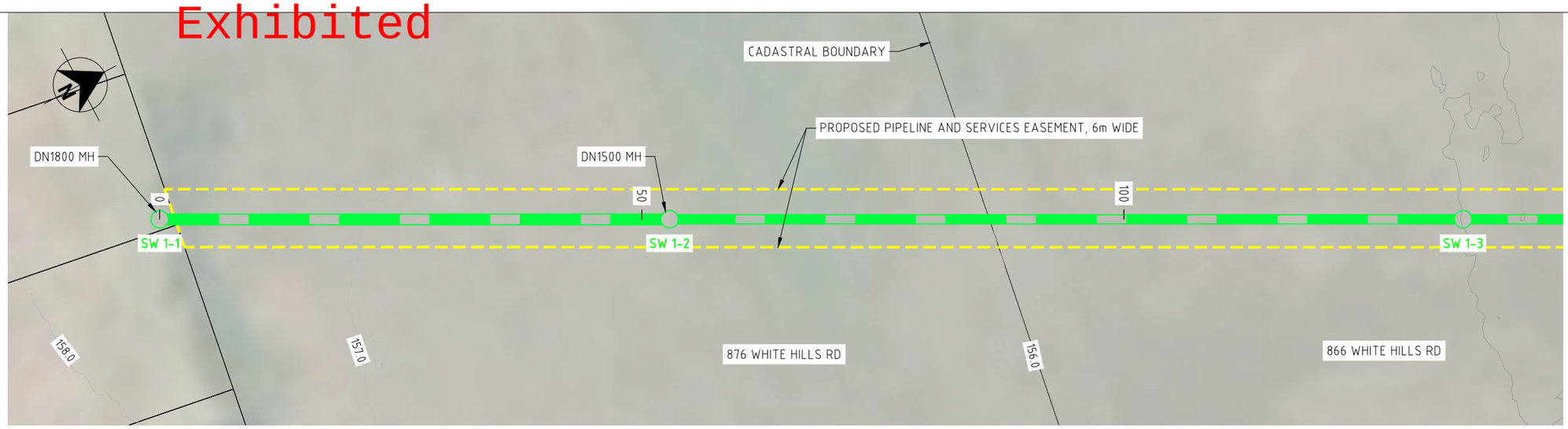
DRAWING TITLE
KEY VIEW PLAN

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
1:2500	1467-SW-020	1 OF 1	CI	A

PLOTTED: 26.11.2025

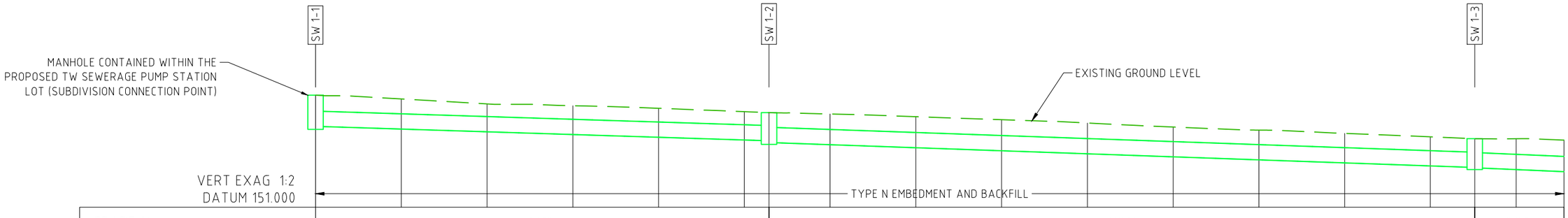
I:\PROJECTS\1467 - BAKER GROUP - CAMBOCK LANE SUBDIVISION\03 - DESIGN\3.2.2 CAD PIPELINE\DRGS\1467 - DISCHARGE PIPELINE_REV A

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PLAN - SHEET 1

SCALE 1:500



GRADE %	1.60%	1.77%	2.15%
PIPE DETAILS	DN1050 CORRUGATED POLYPROPYLENE SN8 RRJ	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	157.53 / 156.52	155.00	
INVERT LEVEL	155.64 / 154.79	154.77 / 153.31	153.29 / 151.82
COVER	0.82 / 0.64	0.83 / 0.76	0.78 / 0.76
DEPTH TO INVERT	1.90 / 1.72	1.75 / 1.68	1.70 / 1.68
CHAINAGE	0.00 / 52.88	135.17	
LENGTH	52.88m	82.29m	68.62m

LONGITUDINAL SECTION - SHEET 1

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
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CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

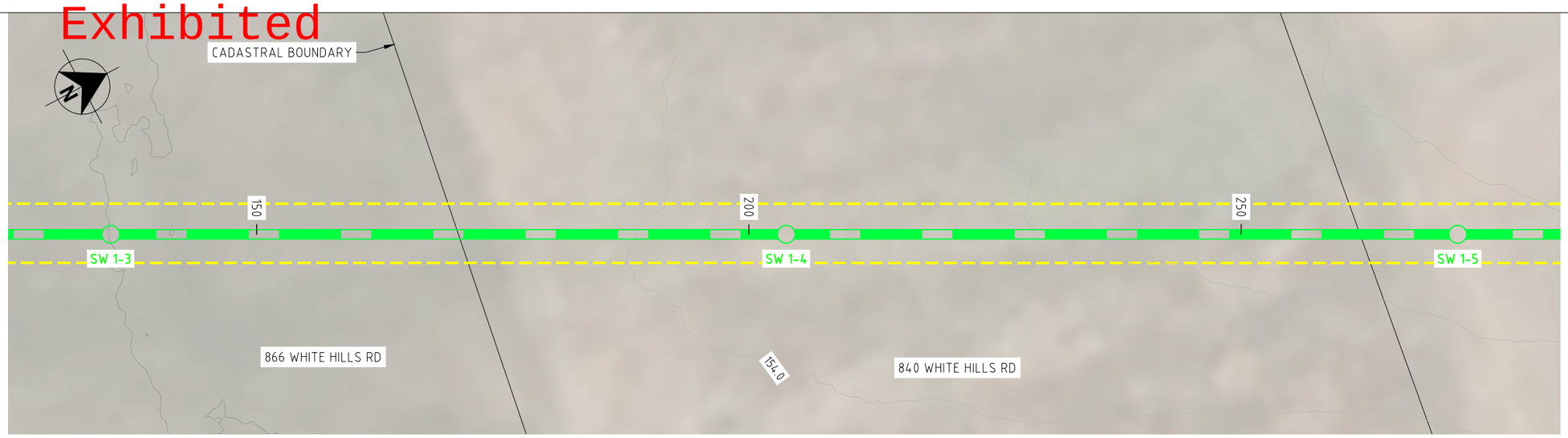
DRAWING TITLE
LONGSECTION (1 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-030	1 OF 9	CI	A

PLOTTED: 26.11.2025

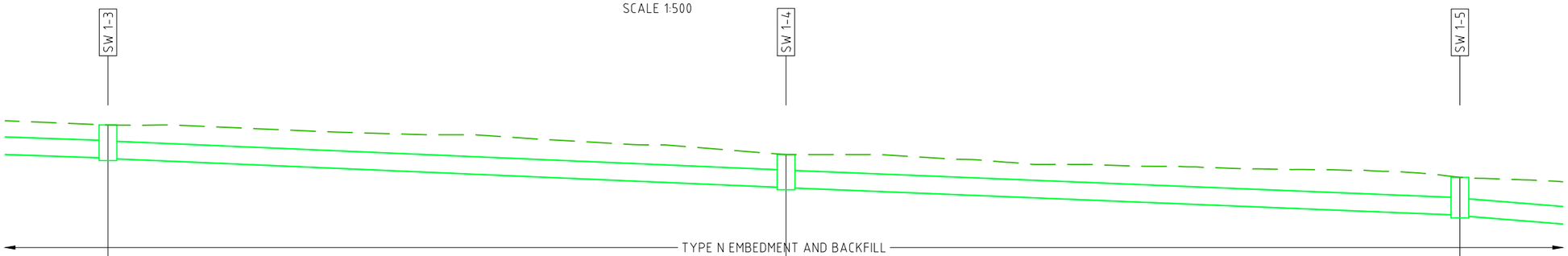
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PLAN - SHEET 2

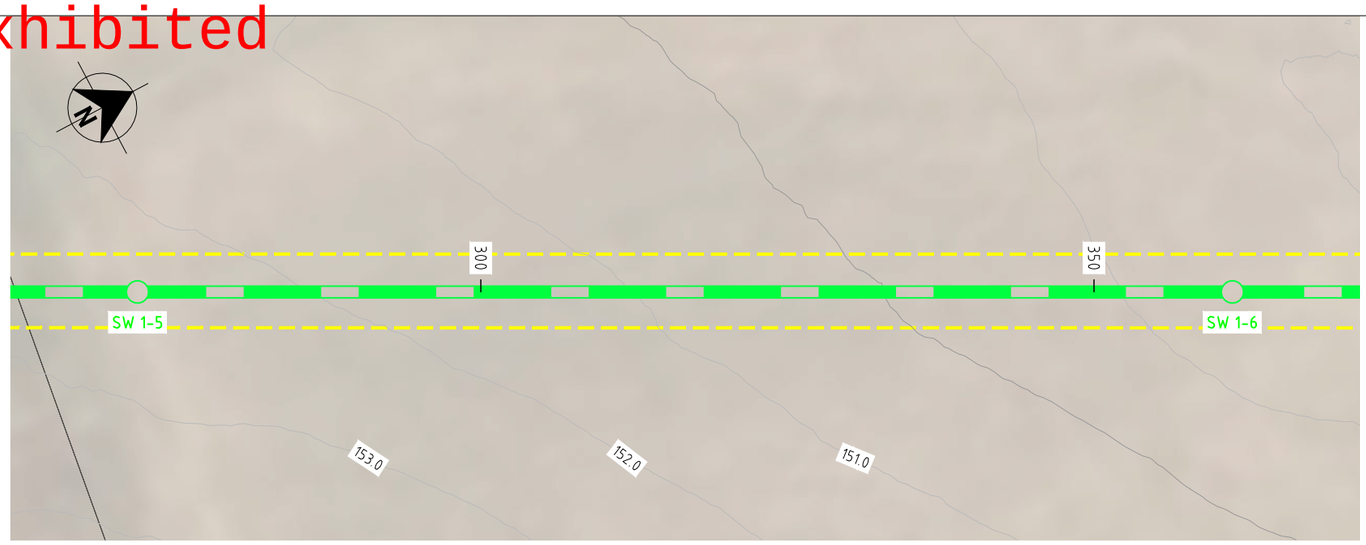
SCALE 1:500



VERT EXAG 1:2
DATUM 148.0

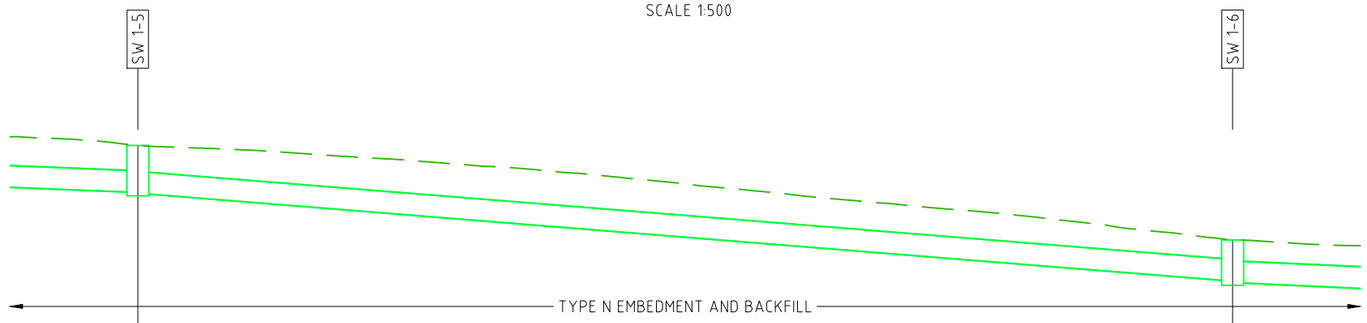
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PLAN - SHEET 3

SCALE 1:500



VERT EXAG 1:2
DATUM 145.0

GRADE %	2.04%	4.02%	2.29%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	152.35	148.50	
INVERT LEVEL	151.82 / 150.43	150.40 / 146.81	146.75 / 144.70
COVER	0.76 / 1.00	1.03 / 0.77	0.82 / 0.80
DEPTH TO INVERT	1.69 / 1.92	1.95 / 1.69	1.75 / 1.72
CHAINAGE	272.00	361.28	
LENGTH	68.21m	89.28m	89.80m

LONGITUDINAL SECTION - SHEET 3

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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EMAIL. admin@ipdconsulting.com.au

PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

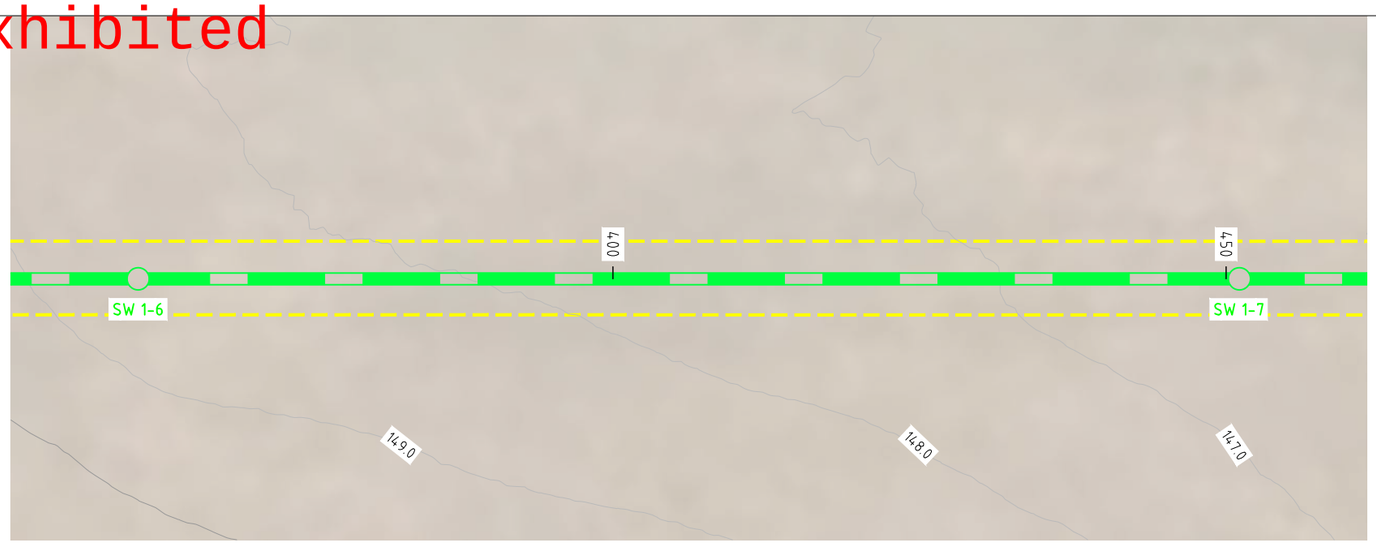
DRAWING TITLE
LONGSECTION (3 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-032	3 OF 9	CI	A

PLOTTED: 26.11.2025

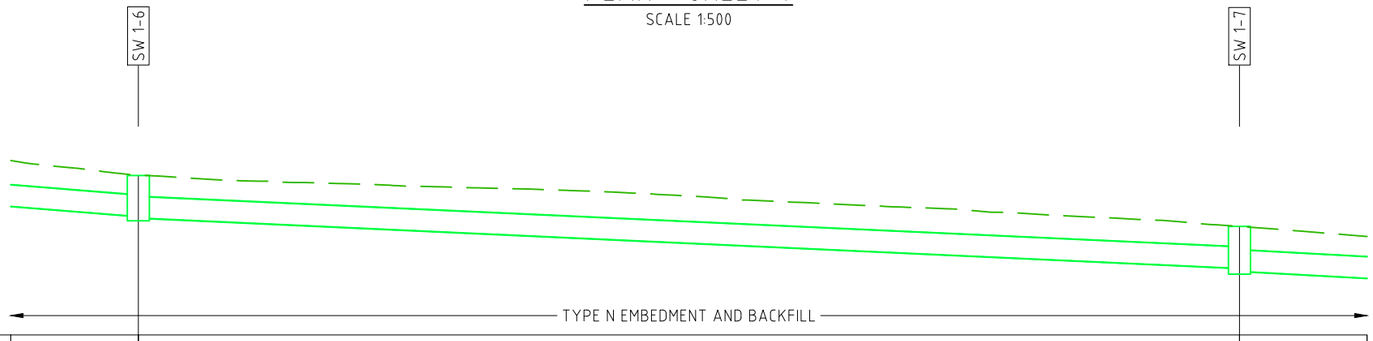
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PLAN - SHEET 4

SCALE 1:500



VERT EXAG 1:2
DATUM 142.0

GRADE %	4.02%	2.29%	2.72%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	148.50	146.42	
INVERT LEVEL	150.40 / 146.81	146.75 / 144.70	144.58 / 142.17
COVER	1.03 / 0.77	0.82 / 0.80	0.92 / 0.81
DEPTH TO INVERT	1.95 / 1.69	1.75 / 1.72	1.84 / 1.74
CHAINAGE	361.28	451.08	
LENGTH	89.28m	89.80m	88.70m

LONGITUDINAL SECTION - SHEET 4

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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PHONE. 0419 574 975
EMAIL. admin@ipdconsulting.com.au

PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

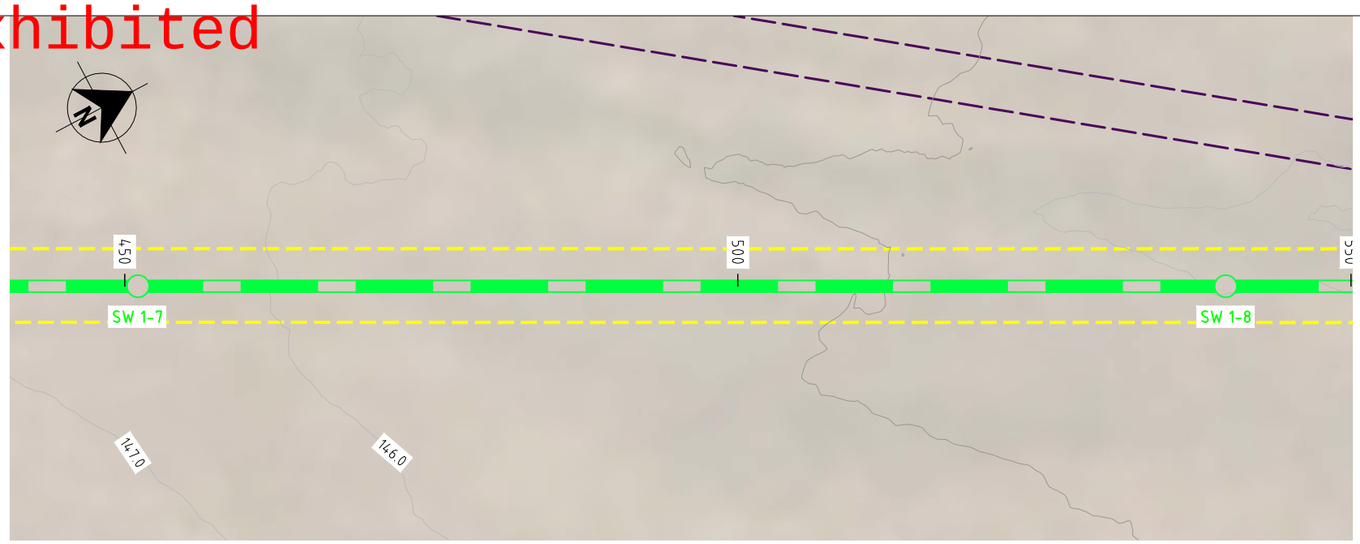
DRAWING TITLE
LONGSECTION (4 OF 9)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
A.S.	1467-SW-033	4 OF 9	CI	A

PLOTTED: 26.11.2025

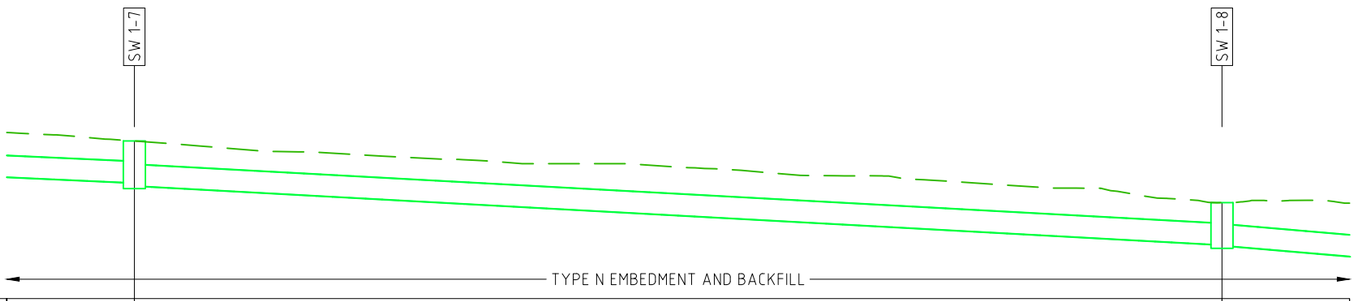
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PLAN - SHEET 5

SCALE 1:500

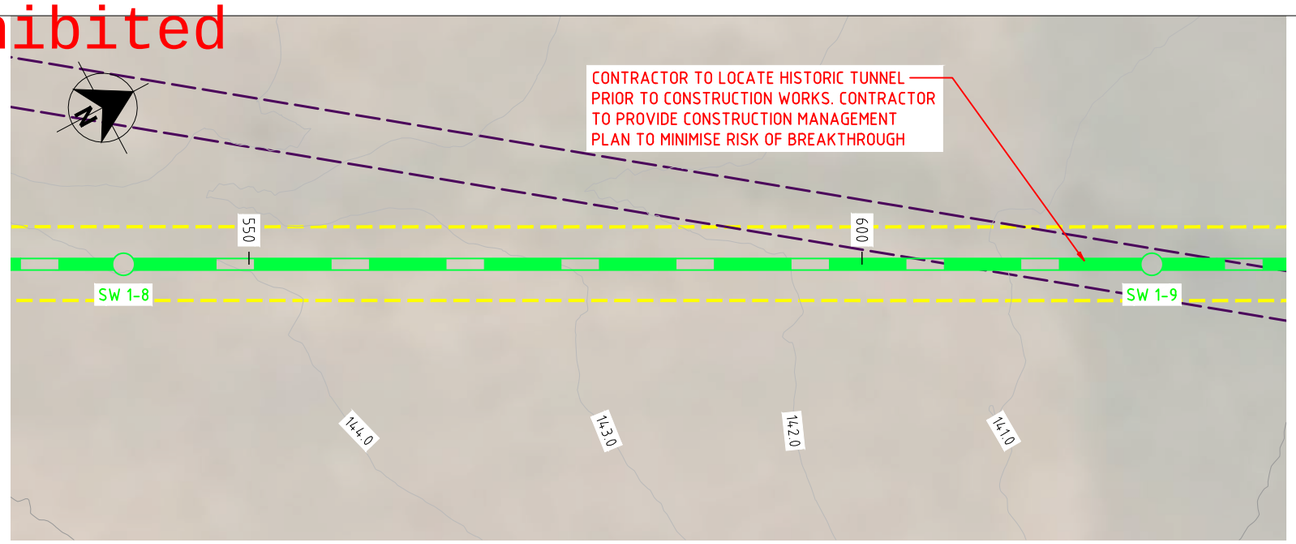


VERT EXAG 1:2
DATUM 140.0

TYPE N EMBEDMENT AND BACKFILL

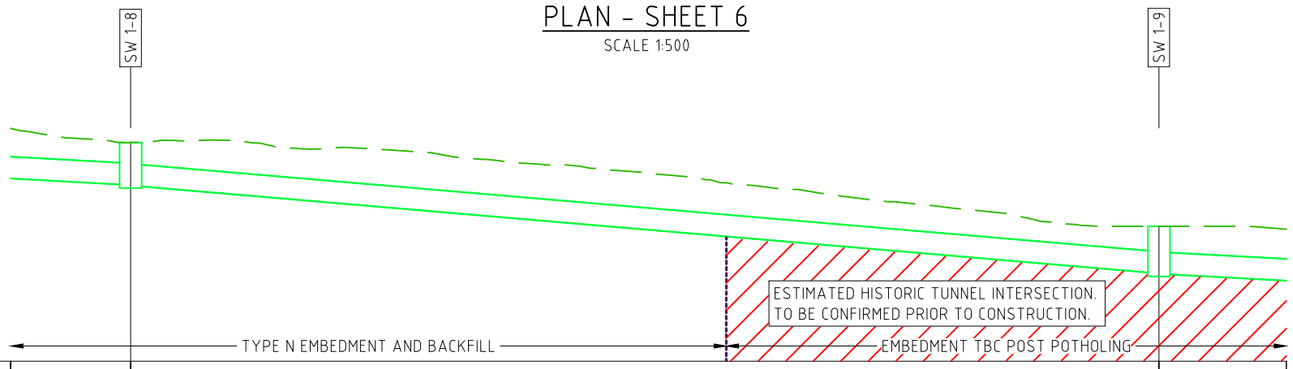
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PLAN - SHEET 6

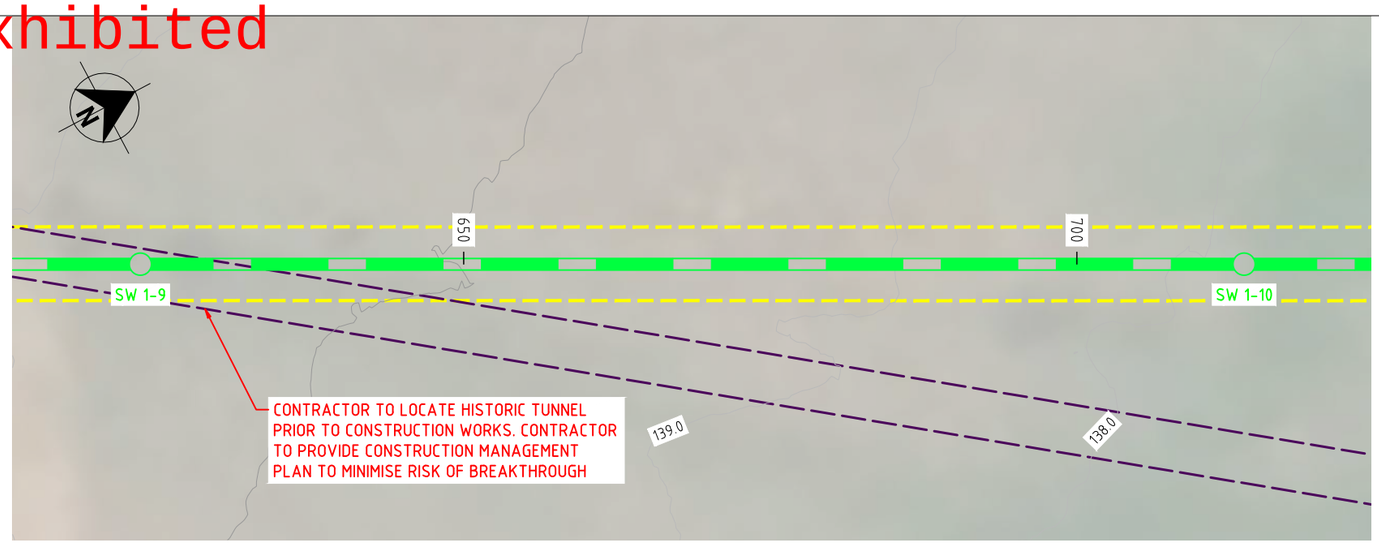
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VERT EXAG 1:2
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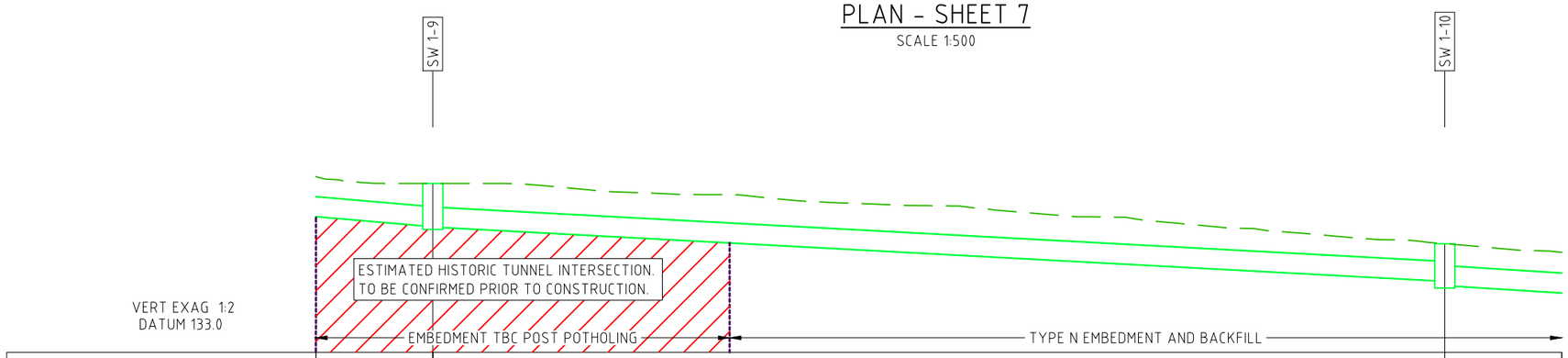
| | | |

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PLAN - SHEET 7

SCALE 1:500



GRADE %	4.27%	2.68%	3.14%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	140.50	137.82	
INVERT LEVEL	142.15 / 138.57	138.56 / 136.14	135.95 / 133.12
COVER	0.83 / 1.00	1.02 / 0.75	0.94 / 0.96
DEPTH TO INVERT	1.76 / 1.92	1.94 / 1.68	1.87 / 1.88
CHAINAGE	623.63	713.63	
LENGTH	83.85m	90.00m	90.00m

LONGITUDINAL SECTION - SHEET 7

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

DA SUBMISSION

REV	DATE	DESCRIPTION	DRN	CHK
A	17.11.25	DA SUBMISSION	MPW	DM

		DATE
DRAWN	MPW	17.09.25
CHECKED	SF	17.09.25
DESIGNED	DM	17.09.25
DESIGN APP.	SF	17.09.25
APPROVED	SF	17.09.25

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PROJECT NAME
WHITE HILLS STORMWATER TRUNK MAIN

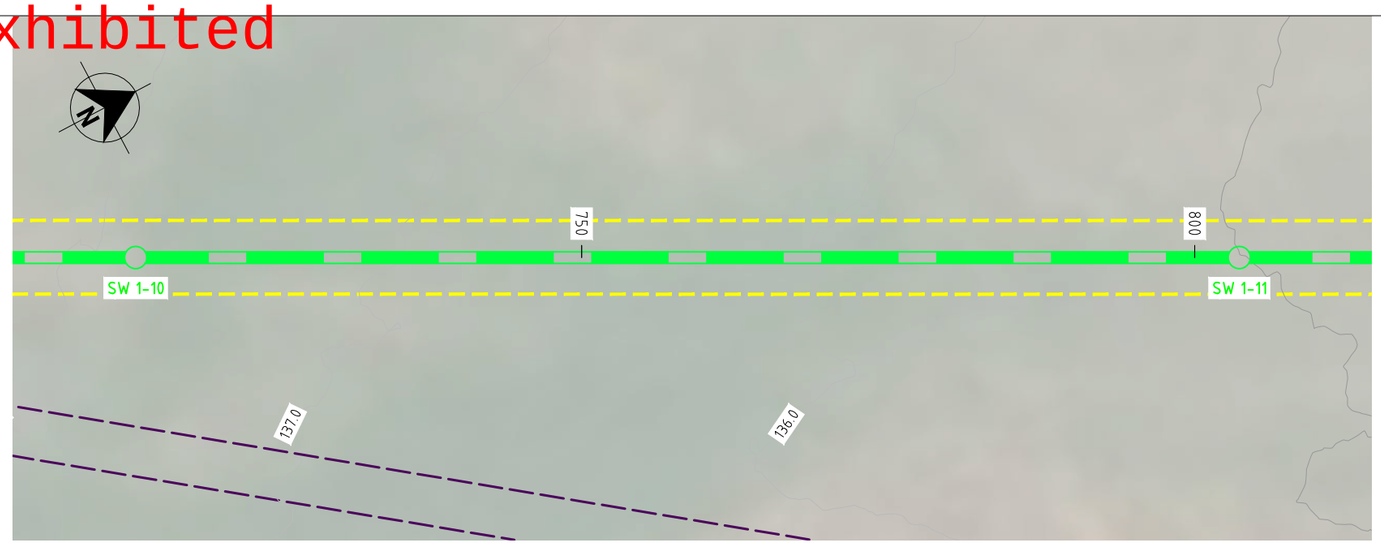
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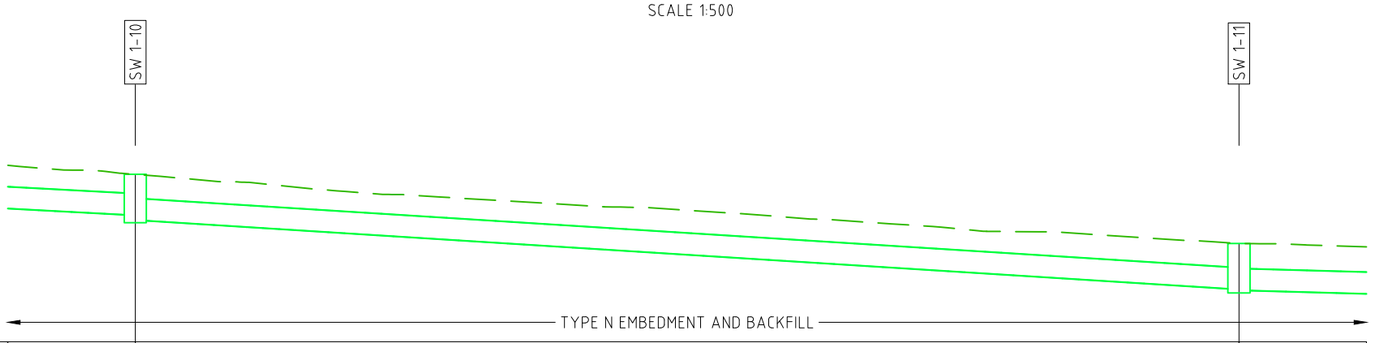
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PLAN - SHEET 8

SCALE 1:500



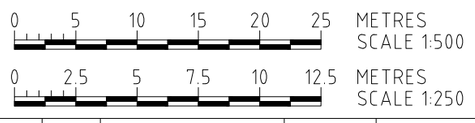
GRADE %	2.68%	3.14%	1.38%
PIPE DETAILS		DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	
FINISHED SURAFCE LEVEL	137.82	135.01	
INVERT LEVEL	138.56 / 136.14	135.95 / 133.12	133.09 / 131.85
COVER	1.02 / 0.75	0.94 / 0.96	0.99 / 0.73
DEPTH TO INVERT	1.94 / 1.68	1.87 / 1.88	1.92 / 1.65
CHAINAGE	713.63	803.63	
LENGTH	90.00m	90.00m	90.00m

LONGITUDINAL SECTION - SHEET 8

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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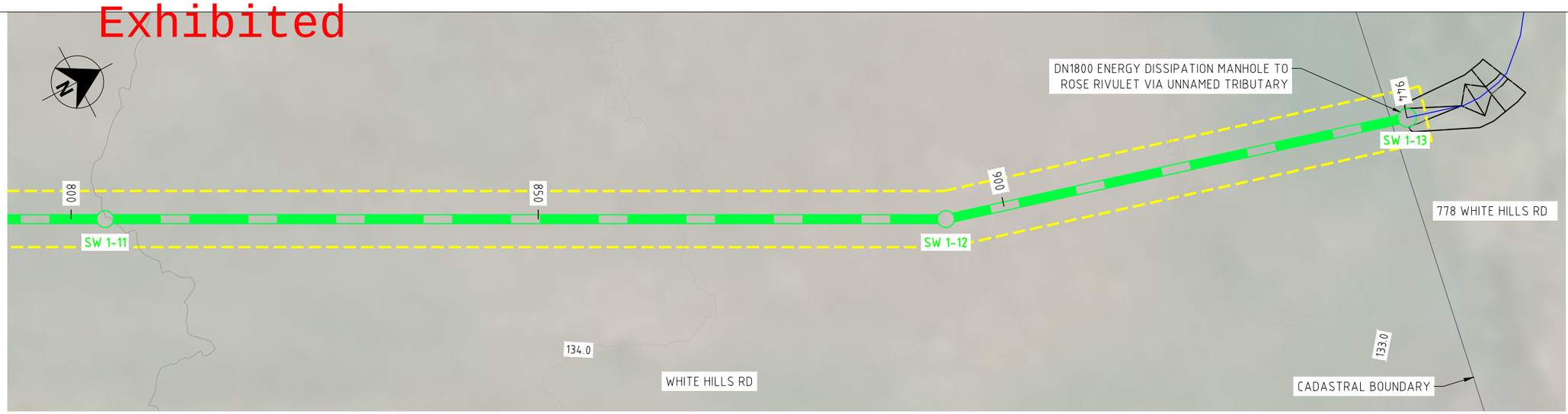
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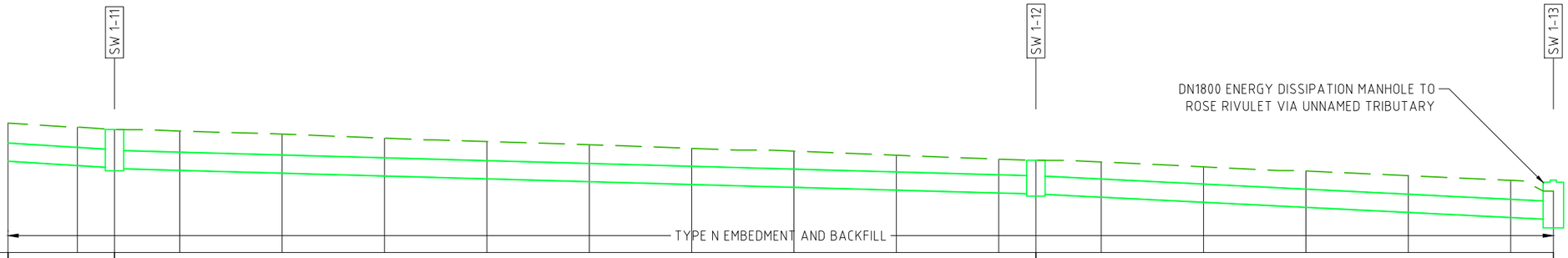
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PLAN - SHEET 9

SCALE 1:500



VERT EXAG 1:2
DATUM 129.000

GRADE %	3.14%	1.38%	2.48%
PIPE DETAILS	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ	DN900 CORRUGATED POLYPROPYLENE SN8 RRJ
FINISHED SURAFCE LEVEL	135.01	133.50	132.54
INVERT LEVEL	135.95 / 133.12	133.09 / 131.85	131.85 / 130.60
COVER	0.94 / 0.96	0.99 / 0.73	0.73 / 0.47
DEPTH TO INVERT	1.87 / 1.88	1.92 / 1.65	1.65 / 1.40
CHAINAGE	803.63	893.63	944.17
LENGTH	90.00m	90.00m	50.54m

LONGITUDINAL SECTION - SHEET 9

HORIZONTAL SCALE 1:500
VERTICAL SCALE 1:250

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0 5 10 15 20 25 METRES
SCALE 1:500

0 2.5 5 7.5 10 12.5 METRES
SCALE 1:250

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SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
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GENERAL NOTES:

A. SIDES OF EXCAVATION TO BE KEPT VERTICAL TO AT LEAST 150 ABOVE THE PIPE.
B. ALL ROCK INTRUSIONS OUT OF TRENCH WALL MUST BE REMOVED PRIOR TO ANY PIPE LAYING OPERATIONS.
C. ANY FOREIGN MATTER SUCH AS VEGETATION OR LITTER SHALL BE REMOVED FROM THE TRENCH PRIOR TO PIPE LAYING AND BACKFILL.
D. MARKER TAPE IS REQUIRED WHERE THE STORMWATER IS NOT THE DEEPEST SERVICE.
E. PLACE MARKER TAPE AT 1.5M DEEP OR ON FIRST BACKFILL LAYER, WHICHEVER IS SHALLOWER.

TABLE 201-D: TRENCH DIMENSIONS

STORMWATER SIZE (DN)	L b :BEDDING DEPTH		L c :OVERLAY	L c :SIDE SUPPORT	
	MINIMUM	MAXIMUM	(MINIMUM)	MINIMUM	MAXIMUM
> 900	150	250	200[2]/ 300[3]	300	550

TRENCH DIMENSION NOTES:

1. IF MAXIMUM BEDDING DEPTH IS EXCEEDED, FILL OVER EXCAVATION WITH SPECIAL EMBEDMENT AS PER MRWA-S-202
2. THE FIRST MINIMUM OVERLAY FIGURE IS THE MINIMUM OVERLAY REQUIRED WHEN WALK BEHIND TRENCH BACKFILL COMPACTION EQUIPMENT IS TO USED.
3. THE SECOND MINIMUM OVERLAY FIGURE IS THE MINIMUM REQUIRED WHEN:
   a. RIDE ON TRENCH BACKFILL EQUIPMENT IS USED; OR
   b. THE SEWERAGE PIPE IS IN A ROAD CARRIAGEWAY. THIS ASSUMES THAT THE FIRST BACKFILL LAYER WILL BE AT LEAST 200 THICK (WHEN COMPACTED) SO THAT THERE IS A TOTAL COVER >500 DURING MECHANICAL COMPACTION.

TABLE 201-C: MINIMUM COVER (H)

LOCATION	MINIMUM COVER (mm)
NON TRAFFICABLE AREAS	700

MINIMUM COVER NOTES:

1. MINIMUM COVER BASED ON TASMANIAN IRRIGATION MINIMUM COVER THROUGH AGRICULTURAL AREAS.

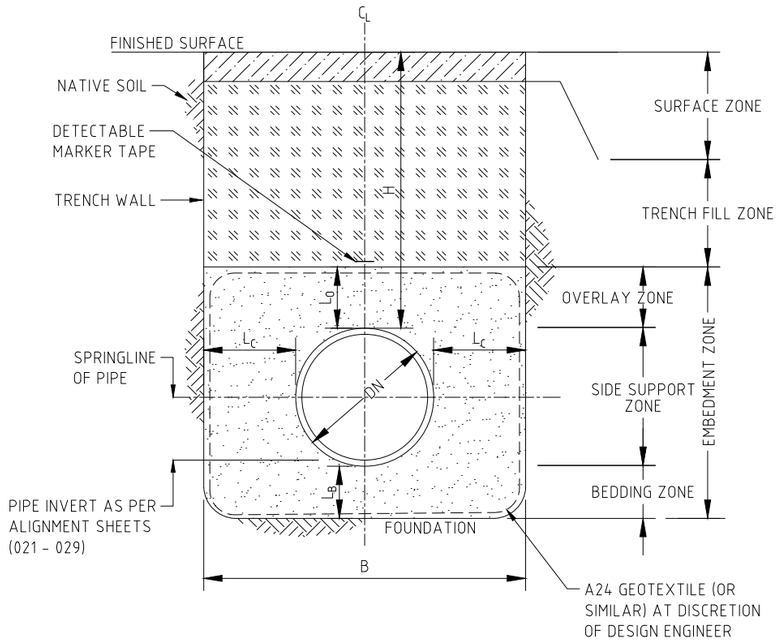


TABLE 201-B: NON TRAFFICABLE AREAS (TYPE N)

TRENCH ZONE	PREFERRED MATERIALS		METHOD OF PLACEMENT	MIN. COMPACTION REQUIREMENT
SURFACE ZONE	CoL	TOPSOIL NOMINALLY 100mm THICK. REINSTATE WITH GRASS OR AS NOMINATED BY LANDOWNER		90% R_D
TRENCH FILL ZONE	REFER TO BACKFILL SPECIFICATION - MRWA SPECIFICATION 04.03. - FOR BACKFILL < 1.5m DEEP, SELECTED OR ORDINARY FILL. A. SELECTED FILL. MATERIAL THAT IS FREE FROM ORGANIC OR OTHER DELETERIOUS MATERIAL, OBTAINED FROM EXCAVATION OR IMPORTED, WITH A PARTICLE SIZE OF ROCK NOT GREATER THAN 20mm, OR FOR OTHER THAN ROCK NOT GREATER THAN 75mm (REFER AS2566.2-2002). B. ORDINARY FILL. MATERIAL OBTAINED FROM EXCAVATION OR IMPORTED THAT CONTAINS NOT MORE THAN 20% BY MASS OF ROCK FRAGMENTS WITH SIZE BETWEEN 75mm AND 150mm, WITH NO ROCK OR CLAY FRAGMENTS GREATER THAN 150mm (REFER AS2566.2-2002). - FOR BACKFILL > 1.5m DEEP, AS PER PROJECT SPECIFIC BACKFILL SPECIFICATION.	REFER TO BACKFILL SPECIFICATION - MRWA SPECIFICATION 04.03. - FOR BACKFILL < 1.5m DEEP, SELECTED OR ORDINARY FILL PLACED AS REQUIRED TO MEET THE NOMINATED COMPACTION DENSITY. - FOR BACKFILL > 1.5m DEEP, PLACE AS SPECIFIED IN THE PROJECT SPECIFIC BACKFILL SPECIFICATION. PLACE AND COMPACT IN LAYERS AND MOISTURE CONDITION AS REQUIRED. WHERE HAND HELD OR WALK BEHIND COMPACTION EQUIPMENT IS USED IN THE BACKFILL ZONE, AVOID COMPACTION WITHIN 300MM OF TOP OF PIPE. WHERE HEAVIER COMPACTION IS USED IN THE BACKFILL ZONE, AVOID COMPACTION WITHIN 500mm FROM THE TOP OF PIPE.	95% R_D TOP 600mm 90% R_D
EMBEDMENT ZONE	STORMWATER: - EMBEDMENT MATERIAL COMPLYING WITH MRWA-W-203 TABLE 203-B AND LGAT TSD-G01 - SELECTED MATERIALS SHALL BE WORKED AROUND THE PIPE TO ENSURE ALL VOIDS AT HAUNCHES ARE FILLED AND THE PIPE IS PROVIDED WITH GOOD SUPPORT ALONG ITS ENTIRE LENGTH. - EMBEDMENT TO BE PLACED UNDER THE HAUNCHES BY SHOVEL OR FORK AND COMPACTED TO THE REQUIRED DENSITY.			60% $_b$

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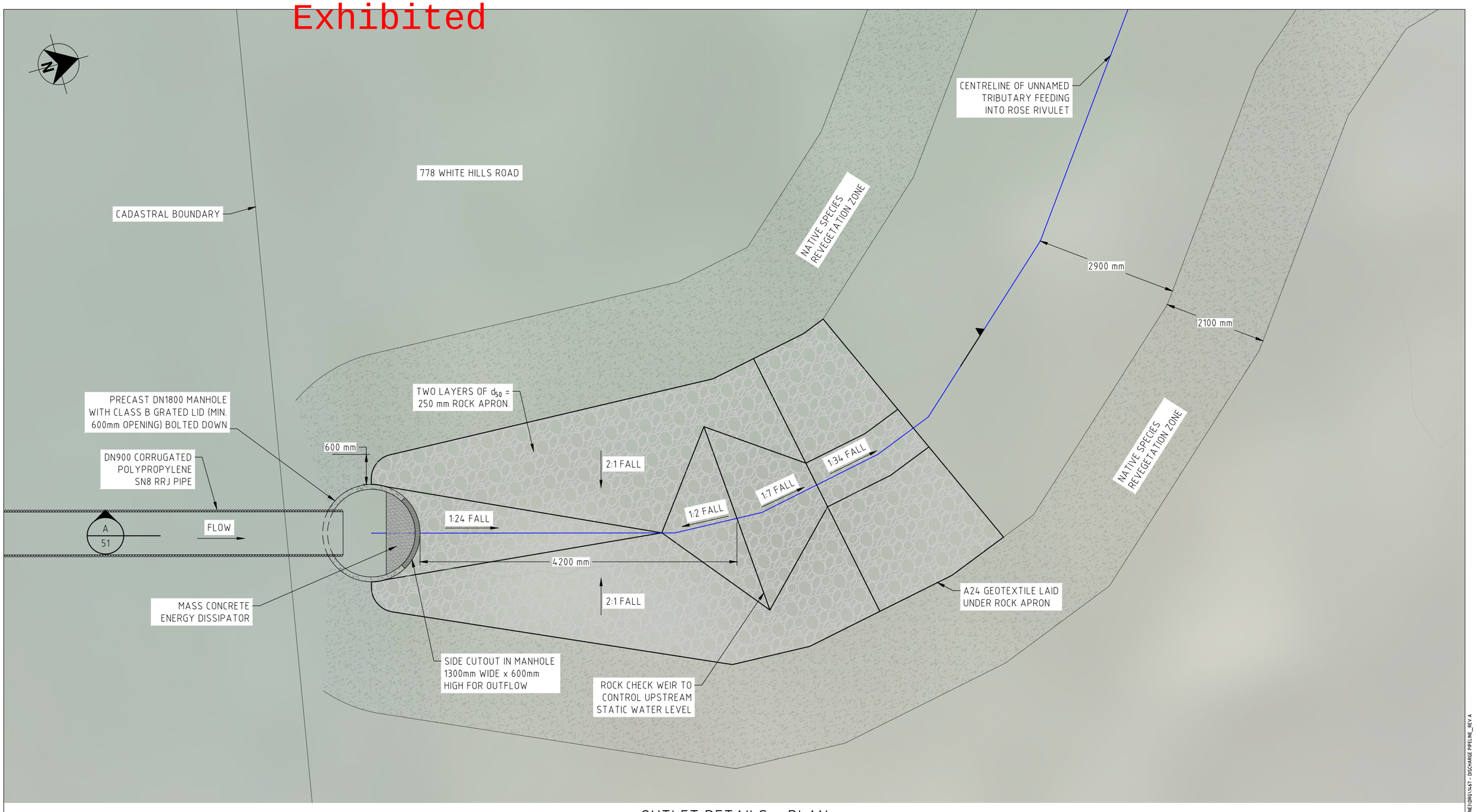
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TRENCH DETAILS

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
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OUTLET DETAILS - PLAN

SCALE - 1:75

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0 0.75 1.5 2.25 3.0 3.75 METRES
SCALE 1:75

NOTES:

1. MINIMUM CONCRETE GRADE - N25

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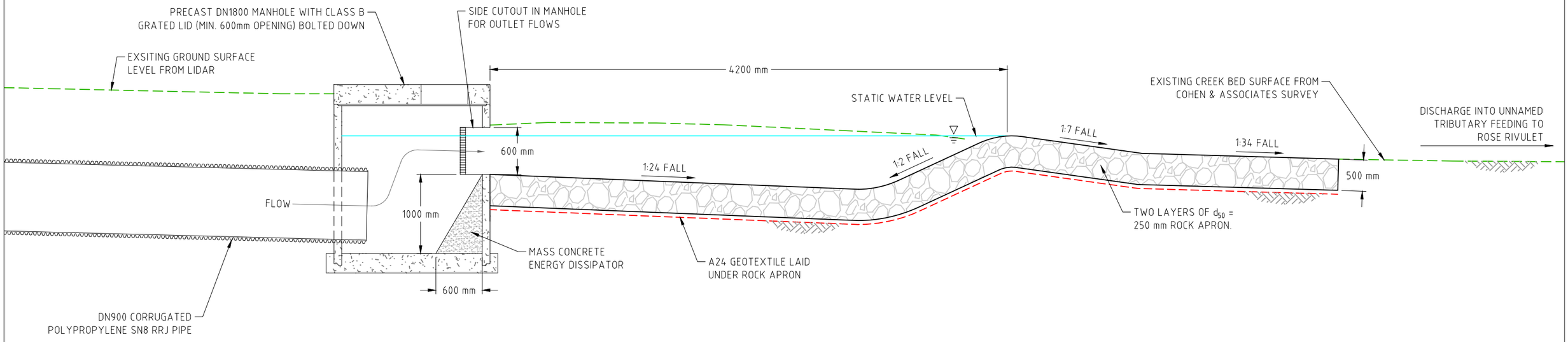
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OUTLET DETAILS (1 OF 2)

SCALE AT A3	DRAWING NUMBER	SHEET	DISCIPLINE	REVISION
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OUTLET DETAILS - SECTION (A 50)

SCALE 1:50

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0 0.5 1 1.5 2 2.5 METRES
SCALE 1:50

NOTES:

1. MINIMUM CONCRETE GRADE - N25

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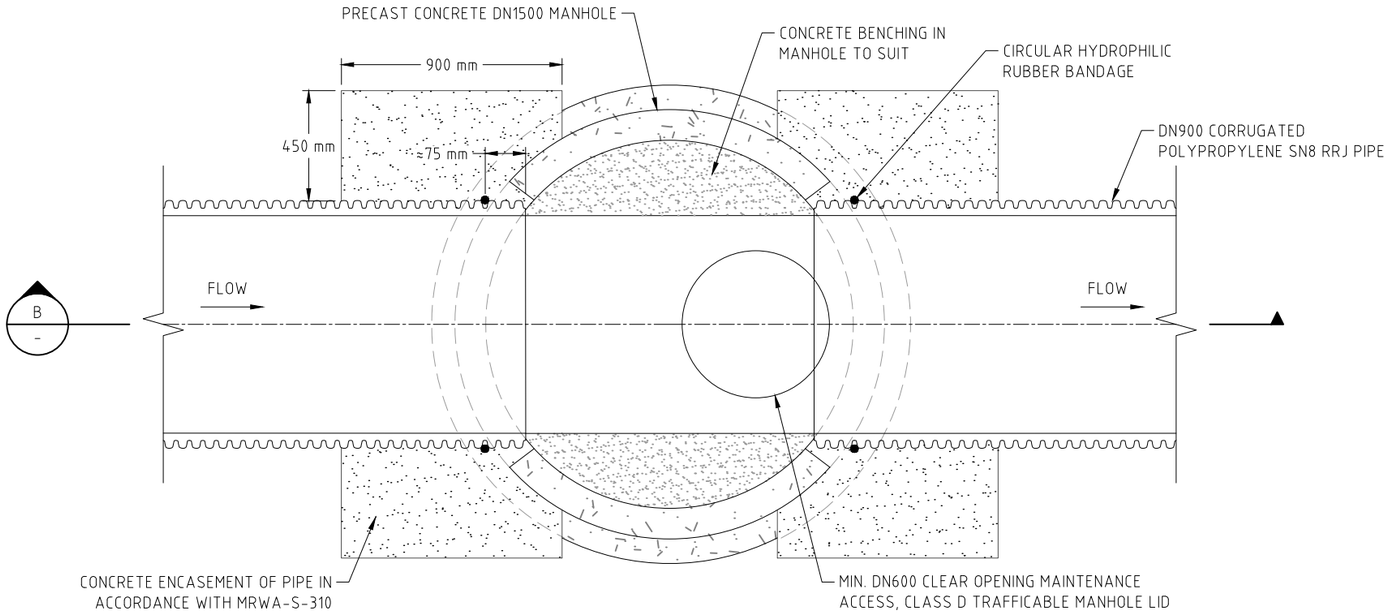
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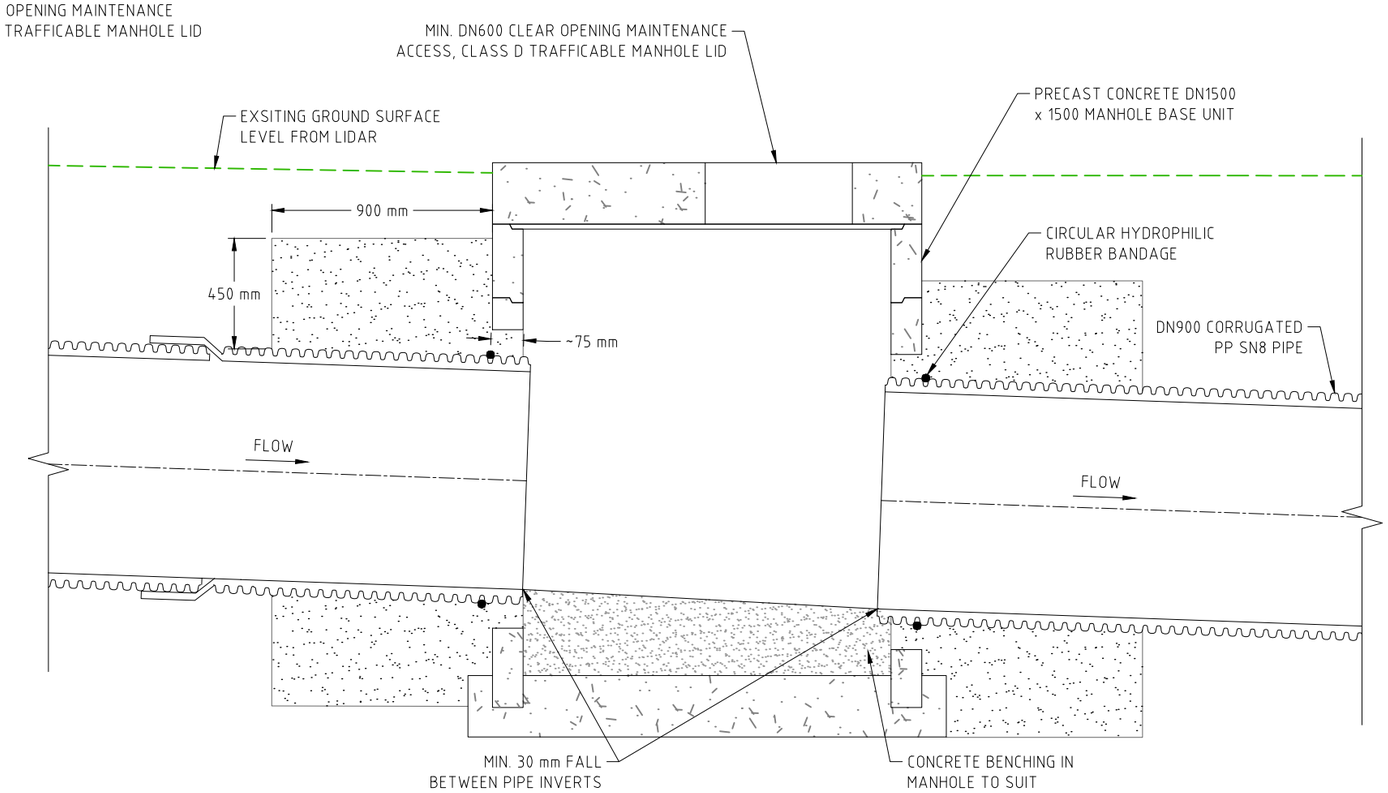
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PLAN VIEW
SCALE - 1:25



SECTION
SCALE 1:25
B
-

MANHOLE GENERAL NOTES:

CONCRETE:
1. MINIMUM CONCRETE GRADE - N25.

MANHOLES:
1. JOINTS - APPLY EPOXY/NON SHRINK GROUT TO FORM WATER TIGHT JOINT.
2. INTERNAL SURFACE - REMOVE MORTOR OR CONCRETE SPLASHES AND FILL AIR POCKETS AND CAVITIES WITH GROUT.

ACCESS COVER:
1. POSITION ACCESS OPENING CENTRAL TO PIPE ALIGNMENT.
2. LIGHTLY GREASE LID CONTACT SURFACE.

ENCASEMENT:
1. CONCRETE ENCASEMENT AROUND PIPE CONNECTION IN ACCORDANCE WITH MRWA-S-310.

BACKFILL:
1. ALL BACKFILL AROUND MANHOLES TO BE AS PER TRENCH SPECIFICATION.

MANHOLE FALL:
1. FALL THROUGH MANHOLES TO BE A MINIMUM OF 30mm BETWEEN PIPE INVERTS.

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0 0.25 0.5 0.75 1 1.25 METRES
SCALE 1:25

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TYPICAL MANHOLE DETAILS

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The Baker Group

Barclay Subdivision – Stormwater Network Design Report

November 2025

IPD Consulting Pty Ltd
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Project:	Barclay Subdivision
Subject:	Stormwater Network
Document	Design Report
Document Version	Revision A
Job No.	1467

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Abbreviations

Abbreviation	Definition
AEP	Annual Exceedance Probability
AR&R	Australian Rainfall and Runoff
EY	Each Year
Council	Northern Midlands Council
PSD	Permissible Site Discharge
RCP	Representative Concentration Pathway
SSP	Shared Socioeconomic Pathway
WSUD	Water Sensitive Urban Design

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1. Project Overview

IPD Consulting Pty Ltd (IPD) have been engaged by the Baker Group to develop the design of the proposed 108 lot Barclay Subdivision. IPD have been developing the design collaboratively in conjunction with the Northern Midlands Council (Council) for several years. This report is to summarise the basis of design as determined through ongoing consultation with the Council in the pre–Development Application (DA) design stage.

1.1 Background

The subdivision will require a new point source discharge and stormwater trunk main to be installed through private property. The new trunk main and subdivision stormwater network will also service the existing council catchment, which currently discharges onto the development site into dispersion drains. As such, cost sharing for the proposed White Hills Stormwater Trunk Main has been negotiated between The Baker Group and Council for the outfall based on contributing area.

1.2 Site Location & Access

The Barclay subdivision is located on the Northern fringe of Evandale and will initially be accessed via Cambock Lane West, with the final stages connecting to White Hills Road (Figure 1-1).



Figure 1-1: Proposed Barclay subdivision located in Evandale.

Exhibited

1.3 Project Development Context

The Barclay Subdivision has been in development, in collaboration with Council since as early as 2017. A significant portion of the subdivision's stormwater catchment comprises of existing Council stormwater, discharging to the development site with no approved outfall. As such, Council and the developer have a shared interest in providing a new stormwater trunk main and outfall to the recognised watercourse the north of the development site.

IPD has been collaboratively progressing the design of the subdivision, stormwater network, detention system, and new stormwater outfall in accordance with the pre-development advice and feedback received from Council.

During the design period, the stormwater management best practice guideline (Australian Rainfall and Runoff) released a new version, ARR4.2, which changed the way future climates and rainfall intensities are estimated, increasing the overall rainfall in many events. At this point in time, the development layout had already been largely completed, and additional area was not available to accommodate the increasing detention requirements. As such, Council agreed to accept IPD's existing proposal to utilise the older Representative Concentration Pathway (RCP) climate change estimates for the purpose of calculating the required stormwater detention volume. This agreement was conditional on demonstrating that the higher flow rates in the newer Shared Socioeconomic Pathway (SSP) events could be managed without causing a risk to life or property up to the 1% AEP event.

A full summary of the basis of design as agreed Council during the preliminary design phase is summarised in section 2.1.

Exhibited

2. Stormwater Network Overview

2.1 Stormwater Design Basis

Through previous correspondence with Council, IPD understand the requirements for the stormwater network as the following:

1. The pre-development storm event is the 5% AEP storm event, and permissible site discharge is the peak site discharge during this event during present day rainfall.
2. Post development models are to consider climate change using the Representative Concentration Pathway (RCP) 8.5 (3.7°C temperature rise) scenario on the 2090 horizon. This climate scenario increases rainfall intensity by 16.3% for post-development models.
3. The basin shall detain the above-mentioned storm event, with flows not flooding from the WSUD area into the basin floor more than once a month, i.e. no flooding in the 12EY event.
4. Tasmanian State Stormwater Strategy and the Tasmanian planning Scheme's requirements for WSUD
5. Overflow analysis of the detention basin during the 1% AEP SSP3-7.0 (3.3°C temperature rise) (ARR 4.2) must be undertaken, with the basin shown to be safe for people and vehicles up to this event.
6. IPD to report on changes to the flow regime experienced to 876 White Hills Road in current year, RCP8.5 (3.7°C temperature rise) and SSP3-7.0 (3.3°C temperature rise) in frequent and infrequent events and a range of AEP's
7. IPD to report on the change in discharge to the unnamed creek at 778 White Hills Road in the current year, RCP8.5 and SSP3-7.0 in frequent and infrequent events. This is discussed further in separate, Stormwater Outfall Design Report. (IPD Consulting, 2025)

2.2 Key Issues & Background

The proposed 108 lot subdivision must address both quantity and quality issues relating to stormwater runoff for the site to satisfy the requirements of the planning scheme and Council. Specifically, the development must ensure that discharge rates are not increased for the agreed design storm events, and that the quality of discharged water is maintained at the discharge into the unnamed creek, approximately 1km downstream of the development.

Historically, the existing Council catchment upstream of the proposed development discharges untreated and unattenuated stormwater runoff to the proposed development site via soakage trenches or overland flow. The proposed development will accept these flows and provide a piped network, detention, and treatment train to which the existing Council catchment can connect. The existing Council catchment constitutes 53% of the total catchment area.

Exhibited

3. Pre-Development Scenario

3.1 Stormwater Modelling

IPD have prepared an InfoWorks ICM model of the catchment area using the existing levels of the development site. The model has been developed using Council's stormwater GIS information modified to reflect some key pipe size differences as observed onsite. Elements such as overland flow paths have been added to ensure a realistic amount of stormwater is reaching the site. Provision has also been made to allow flows surcharging outside the surface catchment to exit the network. The extent of the surface catchment is shown in Figure 3-1, with flows surcharging from the pipe network beyond this extent treated as exiting the network. A detailed description of the model parameters is provided in Appendix A.

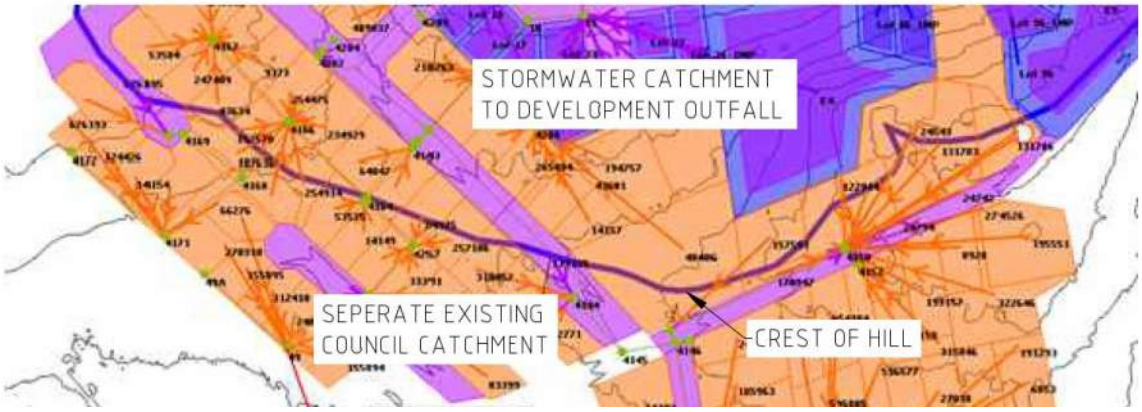


Figure 3-1: The crest of the hill splits the stormwater catchment runoff directions.

3.2 Hydrological Inputs

The key Hydrological model inputs are summarised below in Table 3-1.

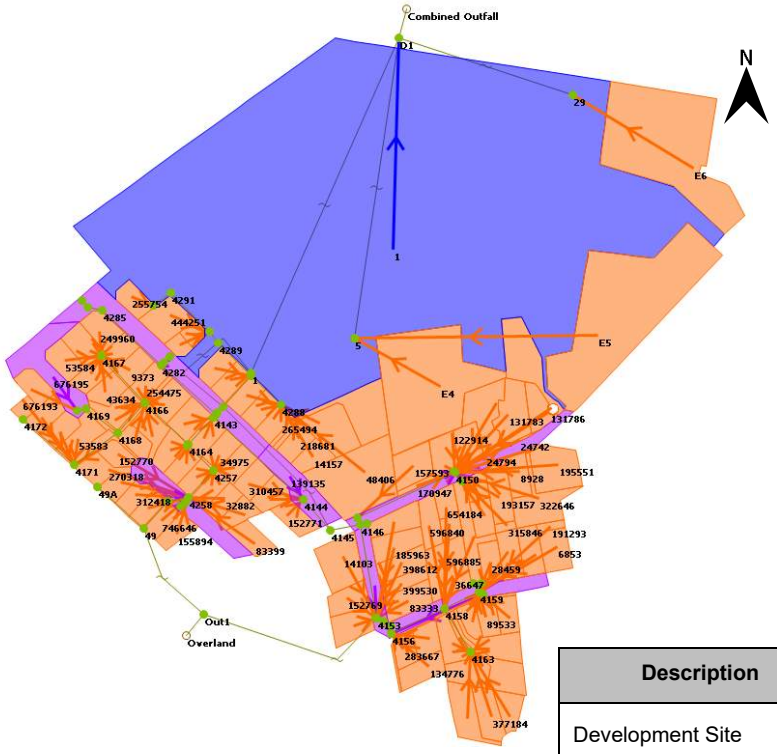
Table 3-1: Summary of model parameters

Sub catchment	Initial Loss (mm)	Continuing Loss (mm/hr)	Mannings (n)	Land Slope (%)
Proposed lot impervious	0	0	0.015	5
Proposed lot pervious	19	5	0.1	5
Existing lot impervious	0	0	0.015	1.5
Existing lot pervious	19	5	0.1	1.5

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3.3 Pre-Development Scenario

The pre-development scenario considers the development site to be 100% pervious. The areas of Council's upstream catchment which drain to the site have also been considered, with these areas assumed to be 60% impervious, to allow for the existing levels of development, and development infill of empty lots. Refer to Figure 3-2 of the pre-development InfoWorks model.



Description	Impervious	Pervious	Style
Development Site	100%	-	
Existing Council	60%	40%	
Existing Council Roads	85%	15%	

Figure 3-2: Pre-Development InfoWorks model with impervious and pervious percentages.

3.4 Permissible Site Discharge

The Permissible Site Discharge (PSD) is the present-day level of run-off that leaves the site presently in overland flow, from the network as shown in Figure 3-2 during the design event.

Based on the pre-development scenario, and 5% AEP design storm event, the PSD is 0.92 m^3/s, which occurred in the 5% AEP, 10-minute, storm 10. This represents the highest median flow (peak flow) discharged from the site in the pre-development model during the full range of 5% storm ensembles.

3.4.1 Additional Pre-Development Flow Rates

At the request of Council, IPD have applied a range of AEP events to the pre-development model and determined the median site discharge for each ensemble. The peak site discharge was taken as the largest ensemble median flow rate for each duration per AEP event in accordance with AR&R 4.2. The pre-development stormwater discharge flow rates are summarised in Table 3-2. These pre-development flow rates utilise the 2016 rainfall hydrographs, with no allowance for climate change.

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Table 3-2: Pre-development discharge flow rates.

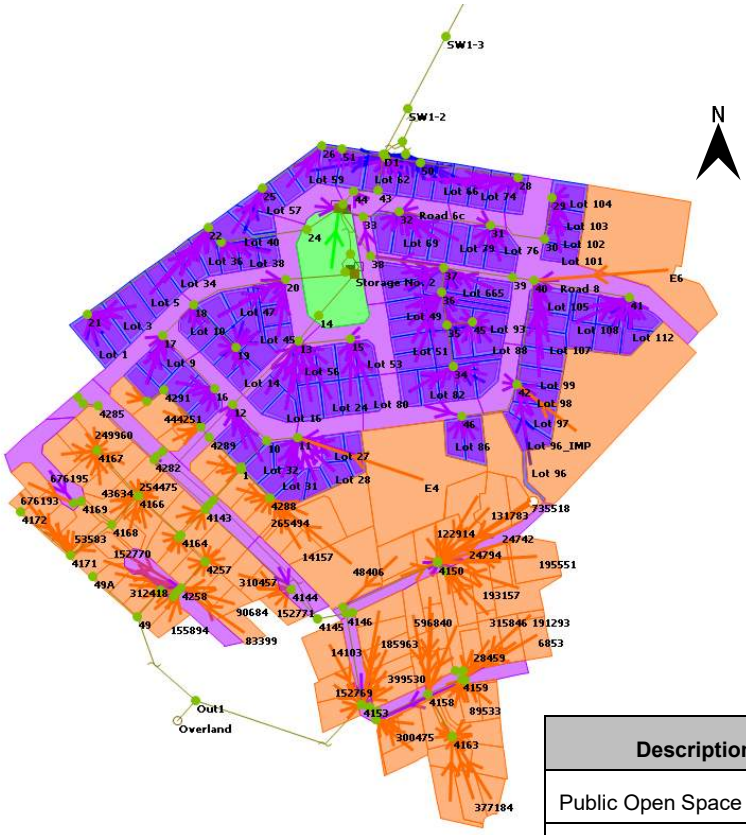
AEP Event	Peak Flow Rate (AR&R 2016 Rainfall) (m^3/s)	Peak Event Critical duration + storm
0.5%	1.50	0.5% 10min Storm 3
1%	1.25	1% 10min Storm 3
2%	1.10	2% 10min Storm 3
5%	0.92	5% 10min Storm 10
10%	0.81	10% 10min Storm 5
20%	0.68	20% 10min Storm 9
50%	0.59	50% 25min Storm 1
1EY	0.55	1EY 25min Storm 1
12EY	0.28	12EY 15min Storm 8

As previously detailed, IPD propose the 5% AEP event as design storm event, which corresponds to a permissible site discharge of 0.92m^3/s.

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4. Post-Development Scenario

IPD propose to limit the outflow of the site during the 5% AEP event with RCP8.5 climate change applied on a 2090 horizon (3.3°C temperature rise) to the pre-development level in the present-day 5% AEP event i.e. peak flows in the post-development 5% AEP model shall be shown to be less than or equal to the PSD of 0.92m^3/s as outlined in section 3.4. To enable the site to limit the discharge to the pre-existing levels, the new stormwater system must incorporate a detention basin that will limit the site's outflow and store excess stormwater run-off. In addition to storing the 5% AEP event, provision will be made to allow the 1% AEP event to exit the subdivision without risk to life or property. Figure 4-1 shows the post-development InfoWorks model that has been created to represent this.



Description	Impervious	Pervious	Style
Public Open Space	20%	80%	
Existing Council catchment	60%	40%	
Developed lot hardstand areas (60% of lot area)	100%	-	
Developed lot pervious areas (40% of lot area)	-	100%	
Roads	85%	15%	

Figure 4-1: Post-Development InfoWorks model with impervious and pervious percentages.

4.1 Detention Overview

To limit the development site discharge to the PSD, three detention storages have been included in the post development model. Two of these are above ground basins within the public open space area, incorporating Water Sensitive Urban Design (WSUD) channel flow paths, and the third is below ground storage, made up of oversized pipe on the Northern boundary of the development. Details of the three

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storages are discussed in the following sections, with the northern public open space basin referred to as Storage No. 1, the southern detention basin referred to as Storage No. 2, and the underground pipework storage on the northern boundary, referred to as Storage No. 3, shown below in Figure 4-2.

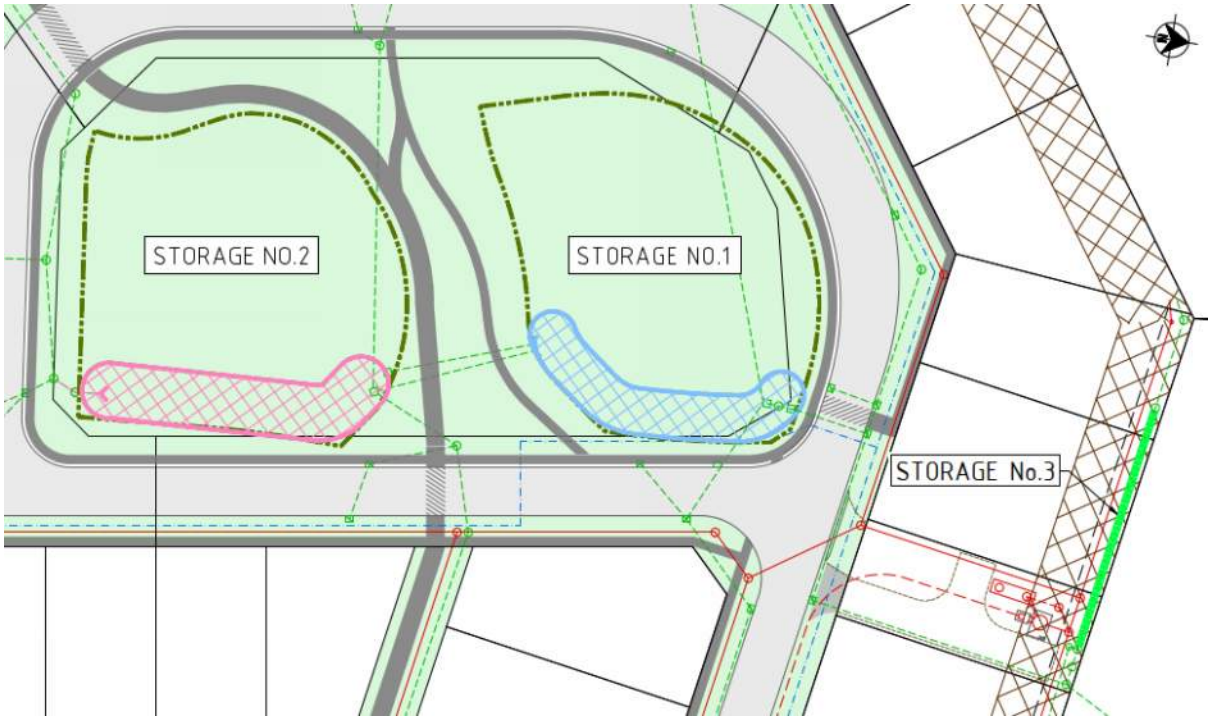


Figure 4-2: Detention storage locations.

4.1.1 Storage No. 1 and 2.

Most flows passing through the development will be intercepted by at least one of the two detention storages. These flows will first enter an above ground Water Sensitive Urban Design (WSUD) swale, before being routed back into pipework through an orifice restriction.

When a high flow event occurs, and water cannot exit the basin fast enough, the WSUD area is designed to spill into the combined detention basin/public open space, where storm volume is stored. At the time of DA submission the lower basin area has a floor area of 2,400m^2 and the upper basin is 2,420m^2 with side batters of nominally 4 horizontal to 1 vertical.

Both basins begin overflowing via high level grated pits, 300mm above the base level, which directs stormwater to the trunk main. The trunk main has been sized to ensure sufficient capacity for surcharge flows up to and including the 1% AEP storm event, refer section 4.5 for further discussion. This has been designed to ensure that the flood velocity-depth relationship remains in H1 category - Generally safe for vehicles, people and buildings, in accordance with Australian Disaster Resilience Handbook Collection – Flood Hazard, discussed further in section 4.3. The two detention storages are shown in Figure 4-3, with overland flow path shown in Figure 4-4.

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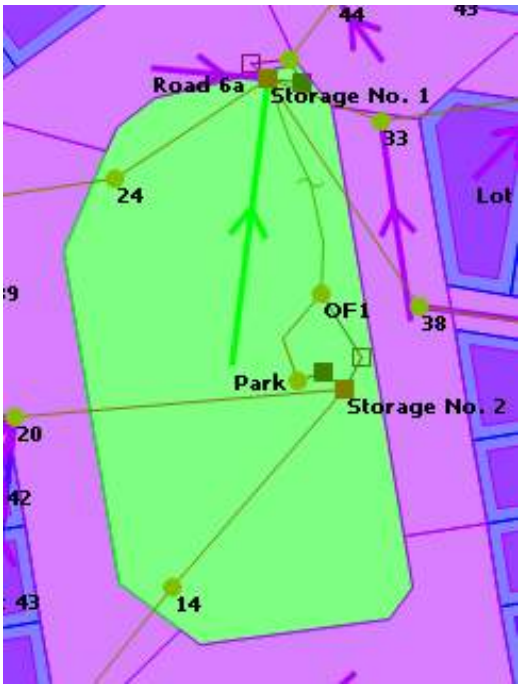


Figure 4-3: Detention Storage No.1 & No.2.

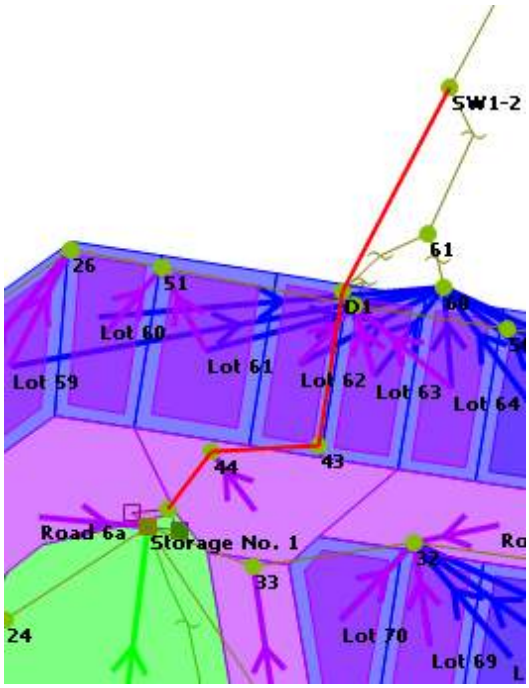


Figure 4-4: Storage No. 1 Overflow path via trunk main.

4.1.2 Detention Storage No.3

A third storage area has been implemented to detain the northern areas of the development which would have otherwise left the site unattenuated and caused the total site discharge to briefly peak above the PSD. At the time of DA submission, this storage is nominally 40m of oversized pipe (DN1050) installed along the northern boundary of the subdivision and controlled by a 200mm orifice restriction to create the detention storage. Shown within the easement of the northern boundary in Figure 4-5 is the storage area of No.3. The addition of this storage volume ensures the site complies with the PSD of 0.92m^3/s.

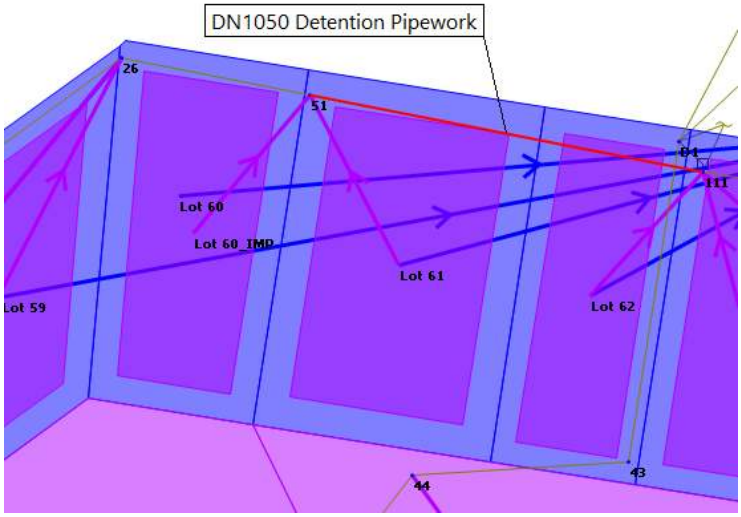


Figure 4-5: Detention storage No.3, DN1050 pipework in the Northern boundary easement.

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4.2 Post-Development Flow Rates

A range of AEP rainfall events were applied to the post-development model to investigate system performance. Using the same methodology described in the pre-development model, the peak site discharge was taken as the maximum value of the ensemble median flow rates for each duration per AEP event in accordance with AR&R 4.2. The post-development stormwater discharge flow rates are summarised in Table 4-1. These rates account for all site discharge, including via pipework and overland flow. Detention performance during the 5% AEP design event is discussed further in section 4.3 and changes in the surface flow regime at the downstream boundary of the subdivision is discussed in section 4.6.

Table 4-1: Post-development total discharge flow rates

AEP Event	Peak Flow Rate (RCP 8.5 2090 3.7°C temperature rise) (m^3/s)	Peak Event Critical duration + storm	Peak Flow Rate (SSP3-7.0 2090 3.3°C temperature rise) (m^3/s)	Peak Event Critical duration + storm
0.5%	1.83	0.5% 1-hour Storm 10	3.16	0.5% 1-hour 5
1%	1.20	1% 1-hour Storm 3	2.64	1% 1-hour Storm 10
5%	0.92	5% 1-hour Storm 1	1.95	5% 1-hour Storm 1
10%	0.88	10% 1-hour Storm 8	Not assessed	-
20%	0.85	20% 10min Storm 9	Not assessed	-
50%	0.83	50% 15min Storm 7	Not assessed	-
1EY	0.82	1EY 10min Storm 1	Not assessed	-
12EY	0.57	12EY 2-hour Storm 10	Not assessed	-

As previously outlined in this report, the design criteria agreed with Council was to ensure that flow during the 5% AEP RCP8.5, 2090 horizon storm event does not exceed the permissible site discharge of 0.92m^3/s. This peak site discharge flow hydrograph is shown in Figure 4-6.

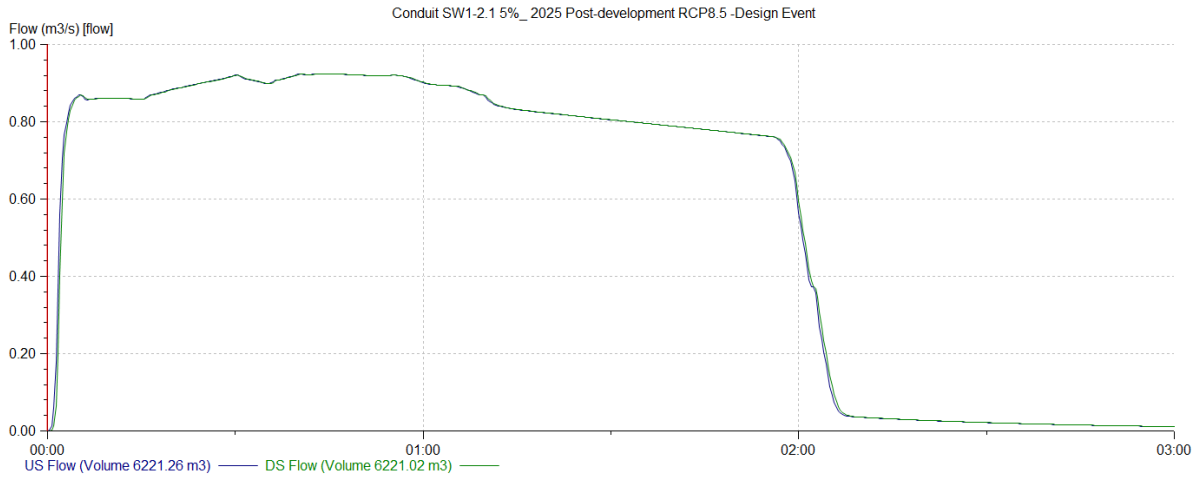


Figure 4-6: Total discharge hydrograph

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4.3 Detention Storage & Flood Hazard

The three stormwater detention storage's peak storage during the peak 5% AEP event is summarised in Table 4-2.

Table 4-2: Detention Basin Storage and Flood Depths.

Detention Storage Area	Flood Depth Including WSUD Volume	Peak Storage
Northern Detention Basin (Detention Basin No.1)	307 mm	770 m^3
Southern Detention Basin (Detention basin No.2)	340 mm	860 m^3
Oversized pipe underground (Detention Storage No.3)	0 mm (underground)	40 m^3

When considering the risk to people within the detention basins No.1 & No.2, flood levels are generally limited to H1 - low hazard for children and adults based on Australian Disaster Resilience Handbook – Flood Hazard, as shown in Figure 4-7 (Smith et al, 2014). In larger events, or when a basin is spilling, the basin depth will exceed this depth but will not exceed 0.5m for the public open space area. The increased flood depth during spilling results in an H2 – low hazard, which is unsafe for small vehicles, IPD considers this minor increase acceptable, as this is a non-trafficable area and is still within the category of safe for children and the elderly.

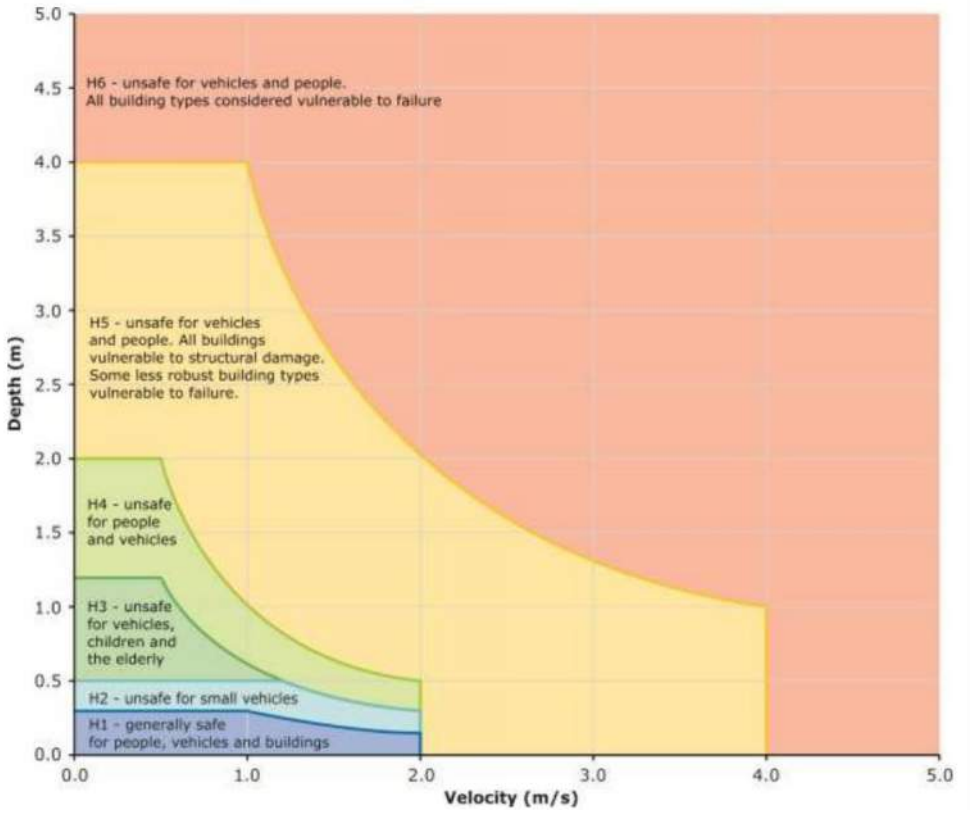


Figure 4-7: Flood Hazard Curves (Smith et al, 2014).

4.4 Basin Amenity and Maintenance

An assessment has been completed against more frequent events to determine the frequency of filling of the detention basins. The system was assessed against the 12EY, 1EY and 50% events with RCP

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8.5 climate change allowance. The model shows that surcharge flows are fully contained within the WSUD area of each basin for all 12EY events event, and during the 1EY event, the basin fills to a depth of 10mm only in the peak event.

To ensure the relatively flat basin floor is adequately drained, the developer proposes to use sports field drainage to ensure the area does not become saturated during the winter months. The details of this will be confirmed during the detailed design phase.

4.5 Basin Overflow

The detention basin is designed for the 5% AEP storm event. As such, surcharging is expected in less frequent events. It is proposed to convey these flows underground beyond the subdivision extent to ensure overflows do not endanger life or property. To contain these flows underground, a DN1050 trunk main has been provided between Storage No. 1 and the first manhole downstream of the subdivision. The section of pipe with increased pipe diameter is shown in Figure 4-8. Details of this arrangement will be confirmed in the detailed design phase.

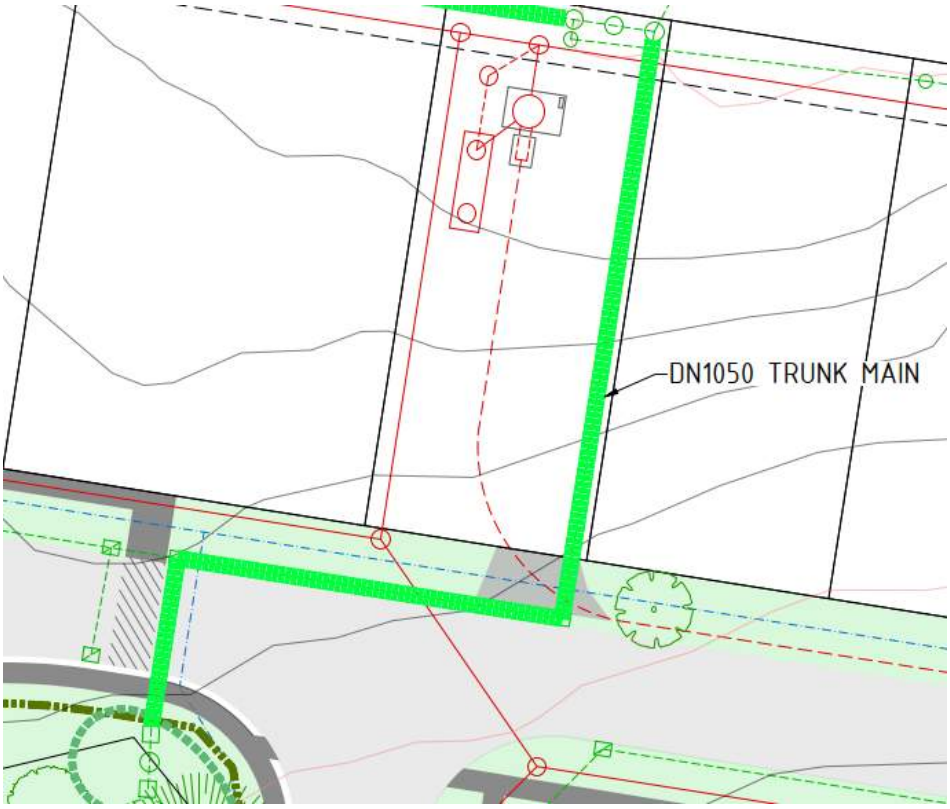


Figure 4-8: DN1050 trunk main.

The trunk main has been assessed for capacity based on both RCP and SSP scenarios. Based on the Blackmax Technical Guide, a Colebrook-White coefficient of 0.06 applies for Blackmax pipe in stormwater drainage systems. Using this coefficient, the trunk main is able to convey all stormwater flows underground for all RCP8.5 events up to the most extreme event modelled 0.5% AEP event. Under the SSP climate change conditions, the trunk main conveys all flows up to the 0.5% AEP SSP 3-7.0 storm event. However, during this event, the most downstream manhole at the subdivision boundary briefly spills up to 260L/s. This is an extreme event, beyond the scope of ordinary assessment, and surcharge flows in this area would be directed to the north, out of the TasWater lot and into farmland, without creating risk to life, or any substantial risk to property. Furthermore, it is expected that these hydraulics can be further improved during detailed design refinement.

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4.6 Boundary Development Flows

The quantity of flows from the site on the northern boundary has been assessed for the pre and post-development scenarios for the 5% and 1% AEP under both RCP and SSP scenarios. A summary of the flows is provided in Table 4-3.

Table 4-3: Downstream Boundary Flow summary

AEP Event	Pre-development		Post-development (RCP8.5)		Post-development (SSP 3-7.0)	
	Overland Flow	Below Ground	Overland Flow	Below Ground	Overland Flow	Below Ground
0.5%	1.50 m^3/s	0 m^3/s	0.04 m^3/s	1.87 m^3/s	0.26 m^3/s	3.10 m^3/s
1%	1.25 m^3/s	0 m^3/s	0.03 m^3/s	1.18 m^3/s	0.05 m^3/s	2.60 m^3/s
5%	0.92 m^3/s	0 m^3/s	0.02 m^3/s	0.92 m^3/s	0.04 m^3/s	1.92 m^3/s
10%	0.81 m^3/s	0 m^3/s	0.01 m^3/s	0.88 m^3/s	N/A*	N/A*
20%	0.68 m^3/s	0 m^3/s	0	0.85 m^3/s	N/A*	N/A*

*Note: 10% and 20% AEP SSP 3-7.0 storm events were not assessed

As demonstrated above, with the addition of the development's stormwater trunk main, the adjoining properties will experience significantly less overland flow in all events up to the 0.5% AEP storm events. Some of the more frequent events have been tabulated above where models had already been created, however overland flow rates will be lower in all events of higher frequency due to these flows being conveyed by the new trunk main.

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5. Water Quality

The proposed subdivision must comply with the Tasmanian State Stormwater Strategy (EPA, 2010) and the Tasmanian planning Scheme's requirements for WSUD (DPIPWE, 2012). The scheme outlines the reduction targets that are required to be met concerning Total Suspended Solids, Total Phosphorus, Total Nitrogen and Gross Pollutants. The targets are shown in Table 5-1.

Table 5-1: Water Quality Targets

Parameter	Target Pollutant Reduction
Total Suspended Solids	80%
Total Phosphorous	45%
Total Nitrogen	45%
Gross Pollutants	90%

IPD engaged Flussig Spatial to carry out the WSUD modelling using the software package MUSIC, and the report was completed in June 2020 (Appendix B). Since this study was originally carried out, adjustments and changes to the geometry of the subdivision have been made that could have a minor impact on the WSUD system. However, a high-level review has been carried out to ensure that the design, as presented in Flussig's report, will still be suitable for development.

5.1 WSUD Review

The catchment areas set out to be treated by the system includes the 13ha of proposed subdivision area and 14.8ha of upstream catchment area from the Evandale urban drainage system. The layout sees a moderate increase in contributing catchment area. There is an additional 3.4ha of Council contributing area than previous designs, so the total catchment area upstream of the site is 14.7ha, an increase of ~30%. This is assumed to be untreated in the MUSIC modelling but will already have some first-pass screening of gross pollutants and will have travelled in open swales, reducing the load on the system.

The treatment train proposed is outlined in Table 5-2. Given the increase in contributing catchment area care should be taken when selecting the size of the flow limited systems (such as the Ecoceptors). When the peak flow rate is exceeded, stormwater will bypass the unit leaving the site untreated.

Table 5-2: Flussig's Proposed Treatment Train

Stormwater Quality Improvement Device	Quantity with upper Catchment
Spel Ecoceptor (100L/s) or Similar	2 units
Spel Ecoceptor (400L/s) or Similar	1 unit
Bio-retention system (475m^2)	1 unit
Bio-retention system (350m^2)	1 unit

The layout of the system has the two 100L/s Ecoceptors on stormwater lines that are unaffected by the increased catchment area, so they will still be suitable for their given flow rate. The 400L/s Ecoceptor however will see the full increase in catchment. Given this, increasing the size to a 600L/s unit would

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be recommended. During detailed design, these flow rates will be finalised, and a rationalisation of the system can be carried out if the flows change further.

Detention basin No.1 & No.2 will also serve as a bio-retention areas, as these areas see the full additional catchment area flow into it. This system can be assisted to treat the additional catchment by providing more filter area as well as routing flow through additional vegetated and bio retention swale drains. This will increase the ability of the system to treat nitrogen in the stormwater run-off. Figure 5-1 shows a typical arrangement for a bio-retention swale drain which can be utilised for this development.

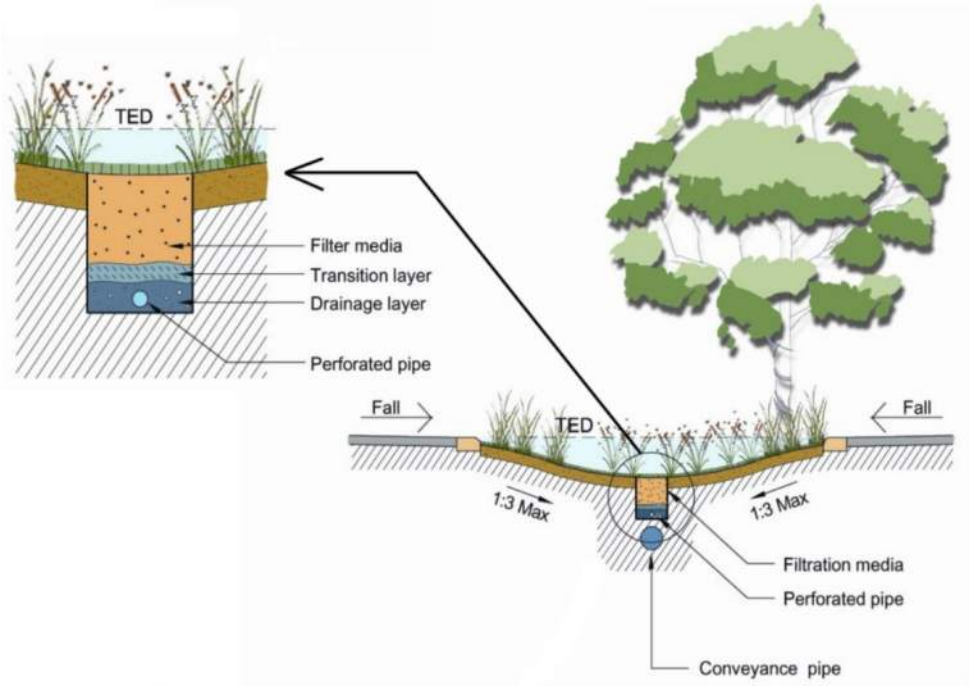


Figure 5-1: Bio-Retention Swale (DPIPWE, 2012).

Existing rainwater tanks have not been included in the existing Flussig WSUD report. It is likely some of the existing properties have rainwater tanks which will limit the amount of coincident flow discharging into the WSUD system, further increasing the performance of the system. In addition, the MUSIC model does not consider any new dwellings having rainwater tanks, which will be conservative.

Generally, the proposed WSUD elements will provide a functional system that meets the reduction targets required. However, this will be confirmed during the detailed design.

5.2 Catchment Contribution

As previously highlighted in this report, the discharge from the site is a combination of an existing council catchment and the proposed subdivision development. The contribution as a percentage of area is:

- Northern Midlands Council proportion (53%)
- The Baker Group proportion (47%)

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6. Recommendations

Based on the above information, the detention basin can safely detain the 5% AEP storm on site and safely pass the 1% AEP storm beyond the subdivision without endangering life or property. The WSUD features of the development are suitable for treating stormwater run-off. However, it is noted that details of the detention basin and the WSUD treatment systems will be further refined during the detailed design, and the modelling report updated to document final design system performance.

IPD believe the above design achieves all of Council's hydraulic design criteria as summarised in this letter, and we kindly request that Council endorse and approve this development.

We would be happy to discuss any aspect of the above. If you require any further information or clarification on any aspect of the above, please don't hesitate to contact me on Mob: 0467 246 156 or Email: dmayne@ipdconsulting.com.au

Kind regards,

IPD Consulting Pty Ltd



Duncan Mayne
Civil Engineer, BEng(Hons), MIEAust

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Appendix A

InfoWorks ICM Model Setup

Data Collection

Hydrological inputs were collected from the Australian Rainfall and Runoff Data Hub (Ball J, 2019). Elevation data to assess the catchment slope has been sourced from Elevation and Depth – Foundation Spatial Data (ICSM, 2024). Existing cadastral parcels have been sourced from the Tasmanian Government's LISTmap (LISTmap, 2025). The existing upstream council catchment has been sourced from Council's engineering supervisor and amended based on a site inspection to verify key pipe sizes.

Hydrology Inputs

The following input parameters were used in the direct rainfall model:

1. Initial Loss – 19 mm on the AR&R Data Hub
2. Continuing Loss – 5 mm/hr on the AR&R Data Hub
3. Temporal Patterns – AR&R Data Hub via InfoWorks ICM tool

Mannings

The Mannings coefficient is summarised in Table 3-1.

Existing Network

The existing reticulated stormwater network includes the following:

1. The stormwater connection between the Council catchment and the development site is an existing DN300 Polypropylene main through 55 Cambock lane, as per Council provided GIS data and confirmed during a site inspection. The Colebrook-White roughness value of 0.06mm was used in accordance with Blackmax's technical specifications.
2. This existing system does not have sufficient capacity to pass the 5% design event. As such a nominal overland flow path has been assumed to represent the existing road network (Figure A-1).

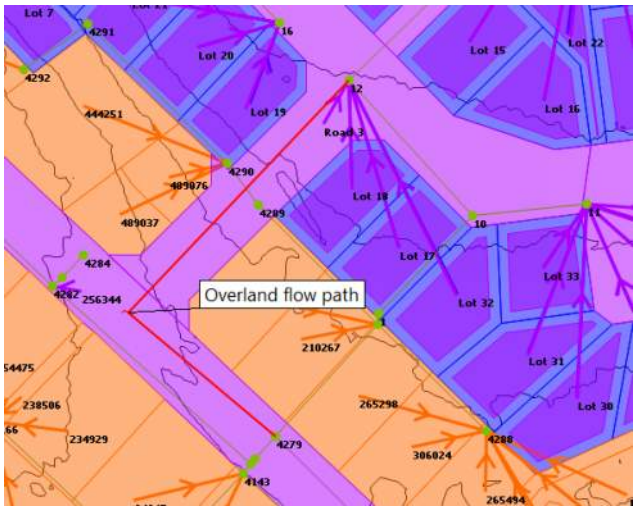


Figure A- 1: Overland flow path into development network

3. The existing Road reserve impervious area is set to 85%.

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4. The overland flow paths in the Council catchment have been modelled as an 8-metre wide flat-bed channel.

5. The existing stormwater network crosses a ridge where some areas beyond the surface catchment still enter the catchment via pipework. As such, during events resulting in stormwater surcharge the overland flow paths will be directed to the opposite side of the watershed (i.e. not contribute to flow within the Barclay subdivision). To represent this, two additional overland flow paths have been added to nodes 49 and 4153, shown as green circles in Figure A-2. These nodes are at notable surcharge points of the network and are beyond the surface catchment of the proposed development. Surcharge stormwater in these locations would travel to the south-west, exiting the catchment, and as such a nominal, identical overland flow path has been added to a second, arbitrary outfall to allow these surcharge flows to leave the network without being routed through the development's detention basin.

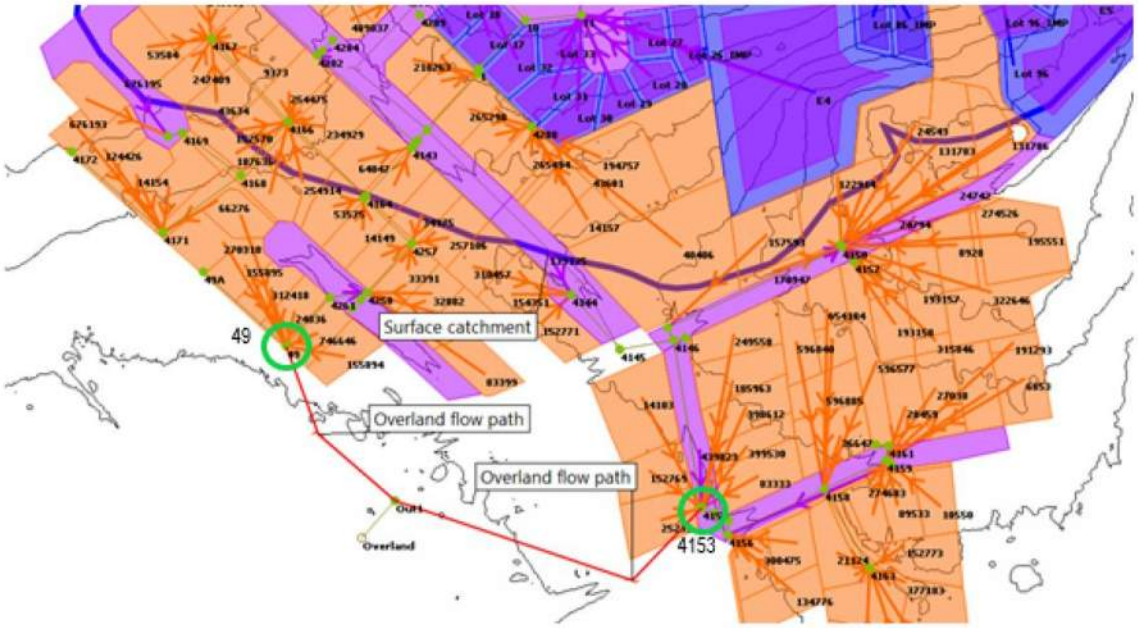


Figure A-2: Upstream network overland surcharge allowance.

Rainfall

The pre-development model was assessed against the 2016 BOM Rainfall IFD's with no allowance for climate change. The post-development model includes an allowance for 16.3% climate change, in accordance with the RCP8.5 scenario, as well as SSP 3-7.0 scenario for overflows as outlined in the body of this letter.

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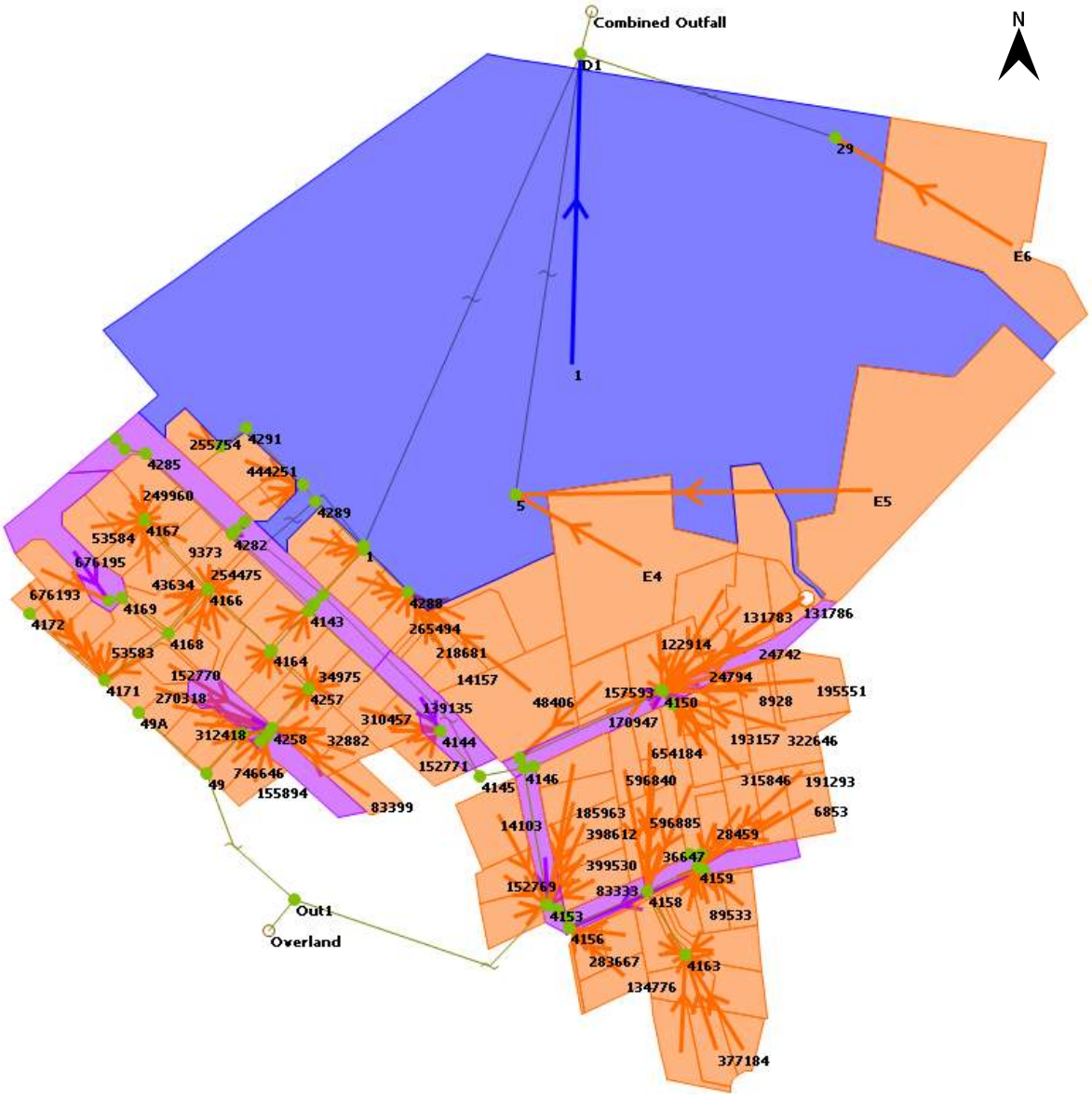


Figure A-3: Pre-Development Model Layout.

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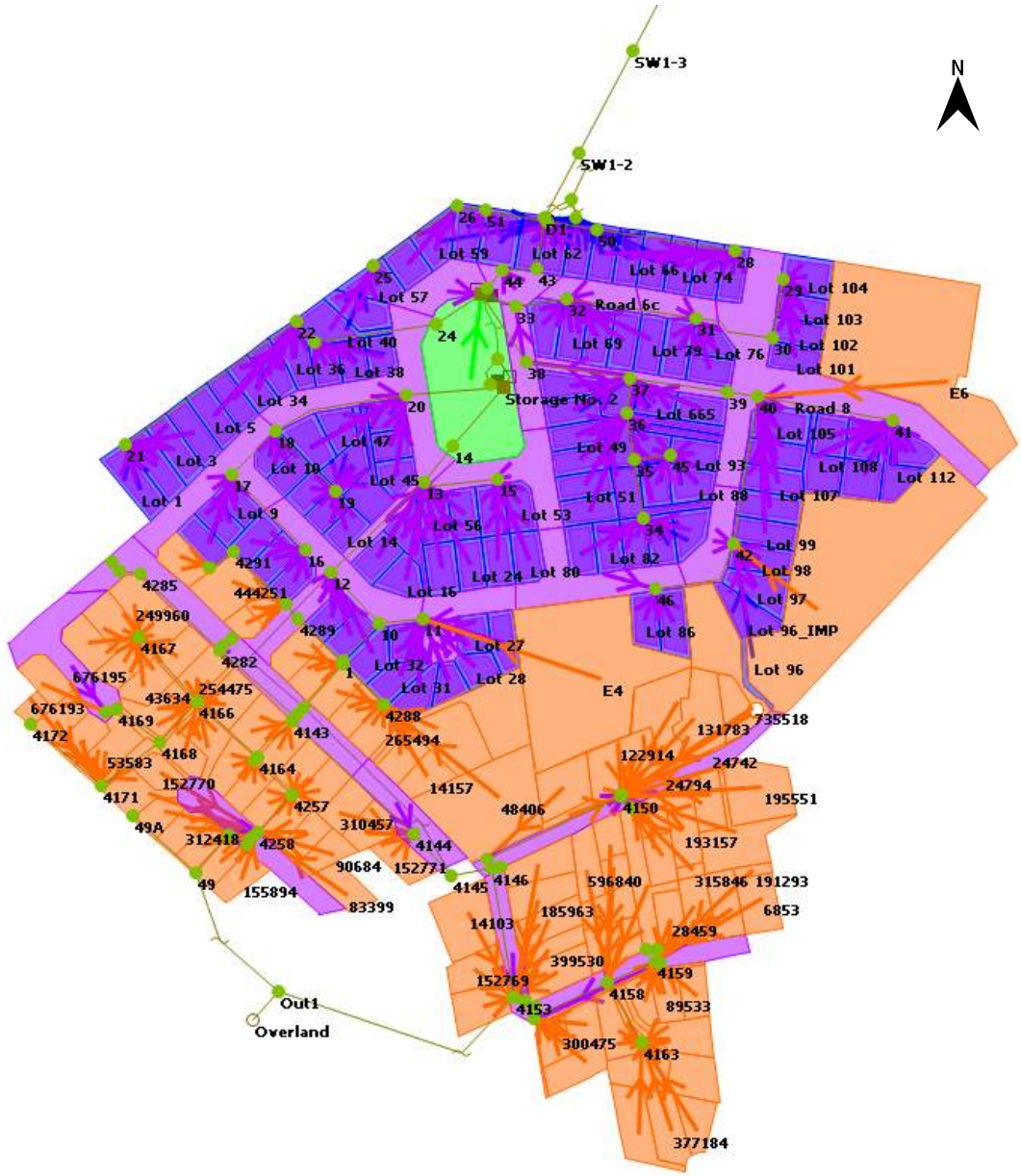


Figure A-4: Pre-Development Model Layout.

References

Ball et al, 2019 Australian Rainfall and Runoff 2019: A Guide to Flood Estimation, Commonwealth of Australia (Geoscience Australia), 2019

ICSM – Anzlic Committee on Surveying and Mapping, ELVIS - Elevation - Foundation Spatial Data. [online] Available at: <https://elevation.fsdf.org.au>, Accessed 2024

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Appendix B

Flussig Spatial's Report

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43 Cambock Lane East, Evandale

Water Sensitive Urban Design Report

flüssig SPATIAL

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Prepared by: ..... Date: 25th June 2020
Mark D. Smith



Reviewed by: ..... Date: 25th June 2020
John A. Holmes



Authorised by: ..... Date: 25th June 2020
Max W. Moller

Revision History					
Rev No.	**Description**	**Prepared by**	**Reviewed by**	**Authorised by**	**Date**
00	WSUD Report	Mark Smith	John Holmes	Max Moller	25/06/2020

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1. Introduction

Flüssig Spatial has been engaged to undertake a site-specific Water Sensitive Urban Design (WSUD) for the subdivision at number 43 Cambock Lane East, Evandale including MUSIC Modelling to stated stormwater quality standards. The purpose of this report is to provide fit for purpose stormwater quality management techniques using available subdivision layout to design a treatment system that meets or exceeds Council and legislative standards.

1.1 Scope

This engagement includes:

1. Review of existing proposed treatment layout
2. Tweak current designs to provide most effective treatment train
3. Provide accompanying calculations (MUSIC model) showing treatment train effectiveness
4. Provide typical design standards and high-level ongoing maintenance schedule

2. Site Characteristics

2.1 Site Location

43 Cambock Lane East is located within Evandale, Tasmania, in the municipality of the **Northern Midlands Council.** The site is approximately 12.64 ha lot with a proposed one hundred and ten lot subdivision development.

The development site is surrounded by residential land to the south and rural resource to the North. The current design will provide a connection link between Cambock Lane West and White Hills Road.



Figure 1. Approximate Development Area at 43 Cambock Lane East, Evandale

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2.2 Topography

43 Cambock Lane East is approximately 12.64 ha area draining from approximately 174m AHD to 158m AHD to an existing stormwater drainage to the north of the property. The land use is predominantly general residential zone area. As can be seen by the topography in Figure 2, the area gently slopes north towards open pastures extending from White Hills Road.



Figure 2. Topography at 43 Cambock Lane East (approximate boundary only)

3. Proposal

3.1 Proposed Development

The proposed development consists of 110 detached residential lots including a two-way through road connecting Cambock Lane West to White Hills Road. The proposed development intends to incorporate new residential lots ranging from 532m^2 to 2200m^2 with road and walkways surrounding a 0.6 ha open space area. Design of the development was not undertaken as part of the engagement by Flüssig Spatial. Figure 3 shows the road and services plan proposed by a third-party designer.

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Figure 3. Planning Subdivision Design

4. Data

4.1 Asset Data

The existing stormwater network in the model is primarily based on GIS data and survey data supplied by design surveyor. New infrastructure in the model is based on the most recent plans provided by the client.

4.2 Survey Data

All survey data was supplied by the client as a processed AutoCAD and PDF.

4.3 Stormwater Quantity

This report does not extend to quantity calculations. These were completed by a third-party consultant. Refer to Concept Servicing Report.

5. Water Quality

Water quality modelling for the site has been undertaken with the urban stormwater improvement conceptualisation software MUSIC. The modelling conducted in MUSIC has been done in accordance with MUSIC Modelling Guidelines and the Tasmanian State Stormwater Strategy. This document provides a guide to water quality modelling methodology and outlines the assumptions that should be made when selecting input parameters.

Recommendation for the improvement of the water quality on site would include the diversion of stormwater flows from the subdivision to primary treatment system (treatment train). This would reduce the pollutants in the receiving waters further and be a safe design option if future usage of this sub catchment provides higher pollutant storm water runoff.

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5.1 Stormwater Quality Treatment (construction phase)

During construction, many pollutants are generated from various sources. These pollutants can easily be captured in stormwater runoff and introduced into the downstream receiving environment, polluting the waterways. Listed below are some of the main construction phase pollutants:

- Litter from construction – material packaging, paper, plastic, food packaging, off cuts etc.
- Sediment erosion and transports - excavated material and fresh surfaces.
- Hydrocarbons – equipment and machinery
- Toxic material – cement, solvents, paints, cleaning agents etc.
- pH altering substances – cement, cleaning agents etc

Construction phase pollutants should be planned and mitigated for by a designed site-specific SWMP as part of the drawing set. This should detail controls including but not limited to:

- Diversion of upslope water (where applicable)
- Stabilised exit/ entry points
- Minimise site disturbance where possible
- Implement sediment control along downslope boundaries
- Appropriate location and protection for stockpiles
- Capture on-site runoff that may contain pollutants
- Maintain control measures
- Stabilise site after disturbance (revegetate etc)

5.2 Stormwater Quality Modelling

Stormwater pollutant modelling for the 43 Cambock Lane East, Evandale subdivision was undertaken using Model for Urban Stormwater Improvement Conceptualisation (MUSIC) software, version 6.3.0, under the guidelines of the State Stormwater Strategy and Interim Planning Scheme.

This model splits the catchment into the following typical areas:

- Residential Catchments (Houses)
- Road Catchments (including bank runoff)
- Upper Residential Catchment (existing)

The following fraction impervious and land areas having been adopted in the modelling as per the concept design measurements. See Table 1 below for fraction imperviousness (fi).

Table 1. Adopted Fraction Impervious

Catchment	Area (ha)	Residential		Road		Open Space	
		Area (ha)	fi	Area (ha)	fi	Area (ha)	fi
Residential & Road catchment	12.64	8.63	0.6	3.41	0.80	0.6	0.2
Upstream catchment	11.31	9.48	0.6	1.83	0.80	0.00	0.2

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5.2.1 Council Planning Quality Removal Standards

The Northern Midlands Interim Planning Scheme 2013 has adopted the pollutant removal targets and best practice from the State Stormwater Strategy 2010. See Table 2 for target removal rates.

Table 2. State Stormwater Strategy Pollutant Removal Targets

Parameter (kg/year)	Result Pollutant Retention on Developed Site
Total Suspended Solids (TSS)	80%
Total Phosphorous (TP)	45%
Total Nitrogen (TN)	45%
Gross Pollutants	90%

5.3 Treatment Train

To achieve stormwater pollutant removal targets outlined above and considering site constraints, this model utilised Spel Ecoceptor (or similar) underground proprietary GPT (Figure 4) and Bio-retention systems. The treatment train consists of roads and houses draining through stormwater infrastructure to split catchment GPT and Bio-retention systems. The remaining roads and houses unable to drain to these systems is treated by a singular Spel Ecoceptor (or similar) within the right of way access.

Bio-retention systems are built alongside retention ponds/open space, designed to flood from the bioretention system during a major flood event and recede to the bioretention drainage system after the retention period. Retention calculations were completed by third party consultants.

Stormwater Quality Improvement Device (SQID) sizing has been separated into two sections. First, the sizing to treat the run-off from this development which is all that is required under the planning scheme for the subdivision. Second, the opportunity presents itself to drain a further 11.31 ha of upstream existing residential catchment through the treatment devices.

Although it is not a requirement of the developer to treat council catchment areas outside the development the second option provides an opportunity for Northern Midlands Council to contribute to the cleaning and betterment of the waterways.

Properties of each treatment product can be seen in Table 3 to Table 7 (Treatment Train Properties Development Only). Should an alternative similar product be selected it needs to have equal or greater removal properties.

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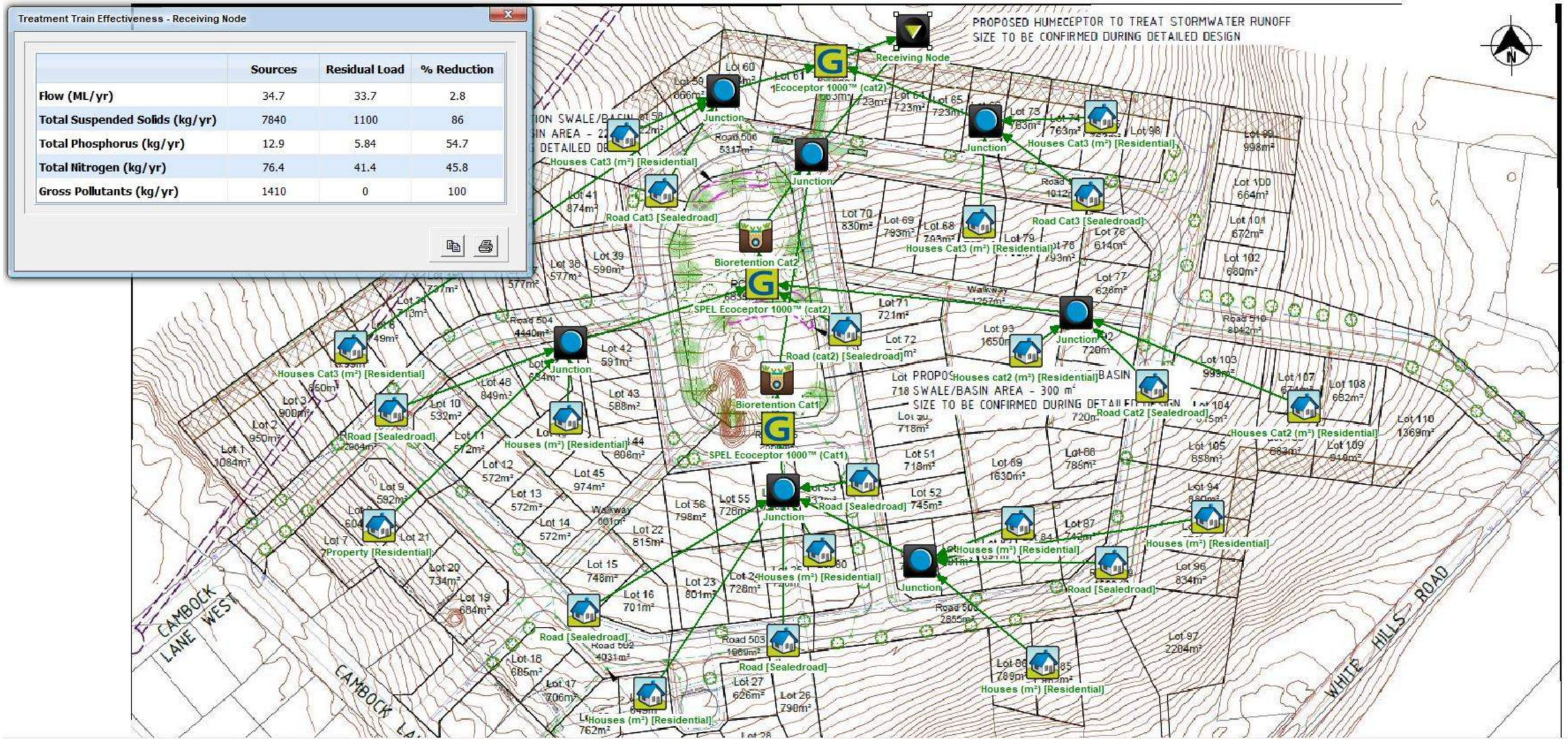


Figure 4. MUSIC Treatment Train Effectiveness Result Development Only

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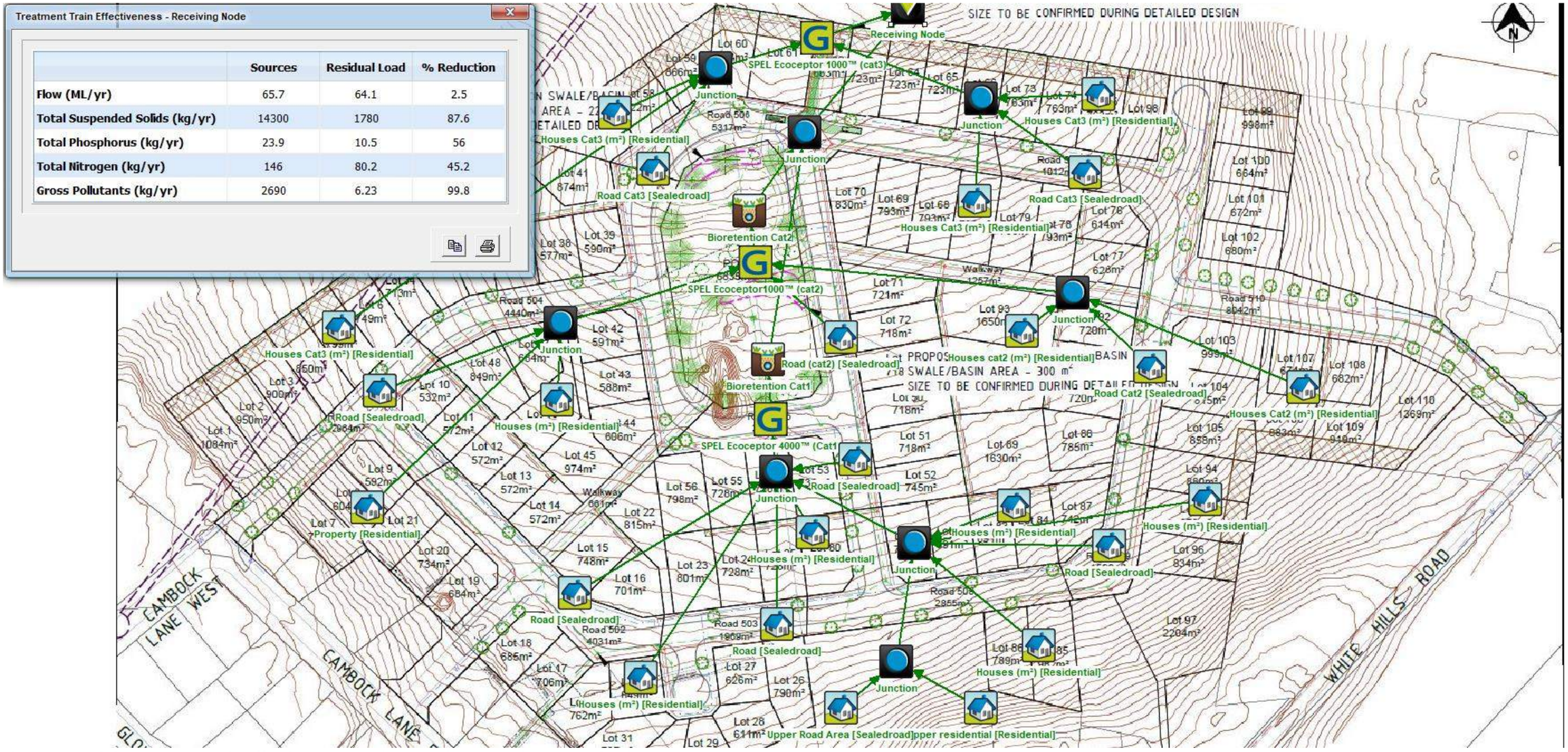


Figure 5. MUSIC Treatment Train Effectiveness Result – Development plus Upper Catchment

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Table 3 to Table 7 - Treatment Train Properties Development only

Table 3.

Properties	SPEL Ecoceptor 1000 Cat1
High Flow by-pass (m_3/s)	0.024
Low Flow (m_3/s)	0.00
Suspended Solids (TSS) Removal (%)	70
Phosphorous (TP) Removal (%)	60
Nitrogen (TN) Removal (%)	30
Gross Pollutants Removal (%)	100

Table 4.

Properties (Catchment 1 Bio-retention)	Bio-Retention Swale Cat1
High Flow by-pass (m^3/s)	100.00
Low Flow (m^3/s)	0.00
Detention Depth (m) **Surface Area (m^2)**	0.30 300.00
Filter Area (m^2) **Unlined Filter Perimeter (m)**	100.00 104.00
Saturated Hydraulic Conductivity (mm/hour) **Filter Depth (m)**	180.00 0.90
TSS Removal (%) **TP Removal (%)** **TN Removal (%)**	70.00 55.00 40.00

Table 5.

Properties	SPEL Ecoceptor 1000 Cat2
High Flow by-pass (m^3/s)	0.024
Low Flow (m^3/s)	0.00
Suspended Solids (TSS) Removal (%)	70
Phosphorous (TP) Removal (%)	60
Nitrogen (Tn) Removal (%)	30
Gross Pollutants Removal (%)	100

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Table 6.

Properties (Catchment 2 Bio-retention)	Bio-Retention Swale Cat2
High Flow by-pass (m^3/s)	100.00
Low Flow (m^3/s)	0.00
Detention Depth (m) **Storage Area (m^2)**	0.30 225.00
Filter Area (m^2) **Unlined Filter Perimeter (m)**	75.00 79.00
Saturated Hydraulic Conductivity (mm/hour) **Filter Depth (m)**	180.00 0.90
TSS Removal (%) **TP Removal (%)** **TN Removal (%)**	70.00 55.00 40.00

Table 7.

Properties	SPEL Ecoceptor 1000 Cat3
High Flow by-pass (m^3/s)	0.024
Low Flow (m^3/s)	0.00
Suspended Solids (TSS) Removal (%)	70
Phosphorous (TP) Removal (%)	60
Nitrogen (TN) Removal (%)	30
Gross Pollutants Removal (%)	100

Table 8 to Table 12 Treatment Train Properties with optional upstream catchments

Table 8.

Properties	SPEL Ecoceptor 4000 Cat1
High Flow by-pass (m^3/s)	0.400
Low Flow (m^3/s)	0.00
Suspended Solids (TSS) Removal (%)	70
Phosphorous (TP) Removal (%)	60
Nitrogen (TN) Removal (%)	30
Gross Pollutants Removal (%)	100

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Table 9.

Properties (Catchment 1 Bio-retention)	Bio-Retention Swale Cat1
High Flow by-pass (m^3/s)	100.00
Low Flow (m^3/s)	0.00
Detention Depth (m) **Storage Area (m^2)**	0.30 475.00
Filter Area (m^2) **Unlined Filter Perimeter (m)**	157.00 115.00
Saturated Hydraulic Conductivity (mm/hour) **Filter Depth (m)**	180.00 0.90
TSS Removal (%) **TP Removal (%)** **TN Removal (%)**	70.00 55.00 40.00

Table 10.

Properties	SPEL Ecoceptor 1000 Cat2
High Flow by-pass (m^3/s)	0.100
Low Flow (m^3/s)	0.00
Suspended Solids (TSS) Removal (%)	70
Phosphorous (TP) Removal (%)	60
Nitrogen (TN) Removal (%)	30
Gross Pollutants Removal (%)	100

Table 11.

Properties (Catchment 2 Bio-retention)	Bio-Retention Swale Cat2
High Flow by-pass (m_3/s)	100.00
Low Flow (m_3/s)	0.00
Detention Depth (m) **Storage Area (m^2)**	0.30 350.00
Filter Area (m^2) **Unlined Filter Perimeter (m)**	114.00 93.00
Saturated Hydraulic Conductivity (mm/hour) **Filter Depth (m)**	180.00 0.90
TSS Removal (%) **TP Removal (%)** **TN Removal (%)**	70.00 55.00 40.00

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Table 12.

Properties	SPEL Ecoceptor 1000 Cat3
High Flow by-pass (m_3/s)	0.100
Low Flow (m_3/s)	0.00
Suspended Solids (TSS) Removal (%)	70
Phosphorous (TP) Removal (%)	60
Nitrogen (Tn) Removal (%)	30
Gross Pollutants (TP) Removal (%)	100

5.4 Quality Results

The MUSIC pollutant load reductions are detailed in Table 13 below. As can be seen when comparing the MUSIC results to the required state stormwater strategy target load reductions, the specified treatment train outlined above and as seen in Figure 4 and Figure 5 show that all targets either meet or exceed state reduction targets.

Table 13. Pollutant Removal Achieved vs Targets

Parameter (kg/year)	Target Load Reduction (%)	MUSIC Modelled Load Reduction (%) without upper catchment	MUSIC Modelled Load Reduction (%) with upper catchment (optional)	State Stormwater Targets Achieved (Y/N)
Total Suspended Solids (TSS)	80.0	86	87.6	Y
Total Phosphorous (TP)	45.0	54.7	56	Y
Total Nitrogen (TN)	45.0	45.8	45.2	Y
Total Pollutants	90.0	100	99.8	Y

Based on the water quality assessment using the MUSIC software, it is found that the pollutant reduction improvement can be achieved by adopting the SQIDs specified in Table 14 or Table 15.

Table 14. Required SQIDS for development only

Stormwater Quality Improvement Device	Quantity without upper Catchment
Spel Ecoceptor (24l/s) or Similar	3 units
Bio-retention system ($300m^2$)	1 unit
Bio-retention system ($225m^2$)	1 unit

**See appendices for schematic design representation.*

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Table 15. Optional SQIDS sizing to include upper catchment

Stormwater Quality Improvement Device	Quantity with upper Catchment
Spel Ecoceptor (100l/s) or Similar	2 units
Spel Ecoceptor (400l/s) or Similar	1 unit
Bio-retention system (475m^2)	1 unit
Bio-retention system (350m^2)	1 unit

**See appendices for schematic design representation*

5.5 SQID Maintenance

To ensure ongoing operation of all treatment systems, the Council would be required to perform regular maintenance on all treatment devices to ensure they remain in good working order. This would include, but not be limited to, the information described in Table 16.

Table 16. Concept Maintenance Plan

Task	Action	Frequency
General Cleaning	Clear all pollutants from storage and device filters, ensure operational	Approximately every 6 months
Specialised cleaning and inspection (GPT)	Inspect all storage, inflow and outflow – clean and flush if required. Visually inspect main device for defects	Yearly
Filter material and Flora inspection (Bio-retention)	Inspect flora and filter material, replace/replenish if required. Visually inspect flow devices for defects	Yearly
Maintenance	Perform detailed inspection and maintenance of Bioretention swale and GPTs by a qualified person.	Every 5 years.

The above maintenance plan is generic and based on removal rates and best practice advice. Specific maintenance plans should be created for each specific device upon purchasing or confirmation of design.

5.6 Quality Summary

Flüssig Spatial recommends the following be undertaken to ensure the ongoing stormwater quality from the developed site:

1. Construction quality control must be implemented to control and prevent stormwater pollution during construction.

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2. Installation of treatment devices in the order specified in this document, Figure 4 or Figure 5, depending on upstream treatment option.
3. Maintenance plans need to be created and adhered to ensure the ongoing operation of the systems.
4. Flüssig Spatial notes that some of the specified treatment products are proprietary products and although suitable in this instance, does not limit the developer to this product. However, any product selected by the developer should meet removal properties of these products for the MUSIC model to be valid.
5. Flussig Spatial notes that the installation of SQIDs will substantially differentiate with the addition of upstream catchments. As it is not a requirement of the planning scheme for the developer to treat existing catchments the increase cost (from required treatment) of the SQID and installation should be negotiated with Council.

6. Conclusion

The post-development quality scenarios for the Stormwater WSUD for 43 Cambock Lane East, Evandale have been investigated. Post-development quality has been assessed against both the Northern Midlands Interim Planning Scheme 2013, Planning Conditions, and the State Stormwater Strategy to ensure the post-development flows meet specified standards.

The following conclusions were derived in this report:

1. SQIDS designed and sized using MUSIC can achieve required pollutant removal through the installation of treatment device.
2. The addition of upstream existing catchments increases the SQID devices and associated infrastructure significantly.
3. For the betterment of Tasmanian waterways, a negotiation with Council to contribute to the construction of the SQIDs for inclusion of treatment of upstream catchments is advised.

Under the Stormwater Management Plan requirements, the development site will meet current specified standards for quality control.

7. Limitations

Flüssig Spatial was engaged by the developer of 43 Cambock Lane East, Evandale for the purpose of a site-specific stormwater WSUD. This study is deemed suitable for purpose at the time of undertaking the study. If conditions of the subdivision change, the plan will need to be reviewed against all changes.

This report is to be used in full and may not be used in part to support any other objective other than what has been outlined within, unless specific written approval to do otherwise is granted by Flüssig Spatial.

Flüssig Spatial accepts no responsibility for the accuracy of third-party documents supplied for the purpose of this stormwater WSUD.

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