

Penetrant test report



Report number LW26-0253-08 PT

Customer name AAS STEEL PTY LTD

Address 9 Trade Place Pakenham VIC Australia 3810

Requested by Shan Senn

Purchase Order 01000824

Accredited laboratory LMATS Melbourne Laboratory

Test date 10/03/2026 to 11/03/2026

Job address 13 Paramount Road West Footscray

Job description Visible dye penetrant testing on 350NB header weldments

Identification Job: VMM00120 NEXT DC M3 STAGE 2; Drawing: SDRG-B-0201-8241

Material grade Stainless Steel- Grade not specified

Test specification Client's requirement - Report findings

Test method AS ISO 3452.1:2021-PT - colour contrast

Test designation ISO 3452-2, IICeL2-Colour contrast (visible), solvent removal & developer, L2 sensitivity

Test procedure TP-PT-15 (I2, R1)

Production Stage After fabrication, in-situ

Test area Weld zone & associated HAZ (Refer Table 1 for identification)

Test temperature 18°C to 21 °C approximate range

Equipment L004715 Light meter Hold Peak 881D

Lighting conditions White light illuminance >1200 lx

Surface condition As welded, blended intermittently

Surface preparation Solvent flushed and wiped. Natural evaporation.

Chemicals details	Brand name	Batch No.	Dwell time (Mins.)
Precleaner	MR Chemie MR85	85/2005	Not applicable
Penetrant	MR Chemie MR311-R	221108	20
Developer	MR Chemie MR70I	70I/2003	15
Remover	Not Applicable	Not Applicable	Not applicable

Approved tester Lachlan Hooppell (SNT-TC-1A and AINDT L2 - RT MT PT)

Other testers Mark Borg (AINDT L2 - MT ET / SNT-TC-1A L2 - RT MT & L1 UTT)

Test results Refer to Table 1 for test area identification and results



Accreditation No. 15840

Accredited for compliance with
ISO / IEC 17025 - Testing

Signatory
Lachlan Hooppell
(SNT-TC-1A and AINDT L2 - RT MT PT)

Report issued on 11/03/2026

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Table 1: Test items identification (provided by the client) and results (All dimensions in mm unless stated otherwise)

Identification	Spool No.	Weld No.	Description	Test area	Discontinuities
South end	Spool 1	1	Top header	6-12 o'clock Facing north	3 off locations of SUC(E) each 40mm
South end	Spool 1	2	Top header	Entire Facing east	LS80 @ 3ocl, CC5 @ 6ocl, LS100 @ 5-6ocl, LS10 @ 9ocl, LS20 @ 11ocl
South end	Spool 1	3	Top header	Entire Facing west	CC10 @ 8ocl, LS40 @ 8ocl, LS30 @ 6ocl
South end	Spool 1	4	Top header	Entire Facing east	LS30 @ 3ocl, LS30 @ 3ocl, excessive weld cap 100 @ 3ocl, LS10 @ 9ocl
South end	Spool 1	5	Top header	Entire Facing west	LS30 @ 6ocl, CC20 @ 6ocl, LS30 @ 12ocl
South end	Spool 1	6	Top header	6-12 Facing north	CC5 @ 3ocl, SUC(E)50 @ 2ocl, SUC(E)40 @ 1ocl
South end	Spool 1	7	Top header	Entire Facing west	Intermittent LS @ 12-1 ocl, LS35 @ 11ocl, excessive weld cap @ 2-3, LS100 @ 3ocl, LS300 @ 5-9ocl, LS30 @ 9ocl, excessive weld cap @ 9ocl
South end	Spool 1	8	Top header	Entire Facing east	LS30 @ 6ocl, CC5 @ 4ocl
South end	Spool 1	9	Top header	12-6 Facing south	LS50 @ 6ocl
South end	Spool 2	1	Top header	6-12 Facing north	KL10 @ 12ocl, LS10 @ 10ocl, LS25 @ 9ocl, LS25 @ 6ocl
South end	Spool 2	2	Top header	Entire Facing east	LS10 @ 12ocl, LS80 @ 3ocl, LS15 @ 4ocl, CC10 @ 5ocl, LS10 @ 5ocl, LS60 @ 6ocl, CC5 @ 7ocl, CC20 @ 8ocl, LS10 @ 9ocl, CC5 @ 10ocl, LS20 @ 10ocl, LS20 @ 11ocl
South end	Spool 2	3	Top header	Entire Facing west	LS15 @ 2ocl, LS30 @ 6ocl, LS30 @ 6ocl, LS20 @ 7ocl, LS20 @ 3ocl, LS20 @ 8ocl
South end	Spool 2	4	Top header	Entire Facing east	LS20 @ 12ocl, LS40 @ 2ocl, LS60 @ 3ocl, LS25 @ 4ocl, CC5 @ 4ocl, LS35 @ 6ocl, LS40 @ 7ocl, LS20 @ 9ocl, LS15 @ 9ocl, LS15 @ 11ocl
South end	Spool 2	5	Top header	Entire Facing west	LS15 @ 9ocl, LS40 @ 6ocl, LS15 @ 3ocl
South end	Spool 2	6	Top header	6-12 Facing north	LS10 @ 11ocl, GP2 @ 11ocl, LS10 @ 9ocl

Identification	Spool No.	Weld No.	Description	Test area	Discontinuities
South end	Spool 2	7	Top header	Entire Facing west	LS20 @ 2ocl, LS250 @ 3-6ocl, LS20 @ 8ocl, LS30 @ 9ocl, CC5 @ 11ocl
South end	Spool 2	8	Top header	Entire Facing east	LS30 @ 6ocl, LS15 @ 8ocl
South end	Spool 2	9	Top header	12-6 Facing south	LS200 @ 4-6ocl, LS30 @ 3ocl
South end	Spool 3	1	Top header	6-12 Facing north	GP2 @ 9ocl, CC5 @ 9ocl, LS30 @ 6ocl
South end	Spool 3	2	Top header	Entire Facing east	LS25 @ 12ocl, CC5 @ 1ocl, LS20 @ 3ocl, CC8 @ 4ocl, LS15 @ 4ocl, LS30 @ 6ocl, GP2 @ 6ocl
South end	Spool 3	3	Top header	Entire Facing west	CC10 @ 1ocl, LS150 @ 6ocl, CC5 @ 9ocl, LS20 @ 9ocl
South end	Spool 3	4	Top header	Entire Facing east	LS40 @ 12ocl, LS40 @ 2ocl, LS15 @ 9ocl, LS10 @ 6ocl, LS20 @ 6ocl, Hole2 in PM @ 7ocl
South end	Spool 3	5	Top header	Entire Facing west	LS40 @ 3ocl, LS30 @ 9ocl
South end	Spool 3	6	Top header	6-12 Facing north	LS25 @ 4ocl, LS70 @ 6ocl, LS30 @ 6ocl, test restriction saddle masking HAZ
South end	Spool 3	7	Top header	Entire Facing east	LS25 @ 12ocl, LS35 @ 10ocl, LS40 @ 9ocl, CC5 @ 9ocl, LS40 @ 9ocl, LS150 @ 5-6 ocl
South end	Spool 3	8	Top header	Entire Facing west	LS30 @ 12ocl, LS15 @ 1ocl, CC5 @ 3ocl, CC5 @ 1ocl, LS100 @ 6ocl
South end	Spool 3	9	Top header	Entire Facing east	LS10 @ 12ocl, LS10 @ 2ocl, LS10 @ 3ocl, LS15 @ 10ocl, LS20 @ 9ocl, LS30 @ 6ocl, GP2 @ 6ocl
South end	Spool 3	10	Top header	Entire Facing west	LS100 @ 9ocl, CC5 @ 5ocl, LS60 @ 7ocl
South end	Spool 3	11	Top header	12-6 Facing south	CC10 @ 2ocl, LS100 @ 6-7ocl

Test restrictions

Restricted access to 5-7 o'clock position of weld between header and grating, could not adequately apply dye and developer in these positions in-situ. Bolts at flanges also limiting access

Comments

Refer to attached images



Test, inspection process specific notes

- This test method cannot detect sub-surface discontinuities or surface opening discontinuities covered with coating.

Normative general notes

1. Test and inspection items may be discarded after 6 weeks, unless alternative arrangements are made with LMATS.
2. Samples, identification of samples and all job specific details were supplied by the client. The test results relate only to the items tested or sampled.
3. Any stated nominal pipe sizes and nominal thickness of the material were provided by the client.
4. Where applicable, the Measurement Uncertainty (MU) applies to the test results as per LMATS procedure. MU can be obtained by contacting one of LMATS ISO 17025 accredited laboratories.
5. Acceptance criteria is applied from the test specification. If the test specification does not include acceptance criteria, then the test or inspection results should be referred to a competent authority for further action.
6. Refer to the attached revision notes if this report has been revised. This report shall not be reproduced except in full without approval of the issuing laboratory to ensure that parts of a report are not taken out of context. The client or their representatives shall not edit this report.
7. LMATS or its professional indemnity insurance provider do not indemnify the contents within this report or the conformity of a tested product unless the invoice for the reported work is paid in full within the agreed credit terms. Reports will be revoked if the invoice for the completed work is not paid in full.

Abbreviations used in this report

A - No discontinuities detected

CP - Crater Pipe

F - Failed

IC - Copper Inclusion

IO - Oxide Inclusion (wagon tracks)

KL - Longitudinal crack

LP - Incomplete root Penetration

NRRD - No Recordable Reflections Detected

p.d. - Processing / film Defects

PU - Uniform Porosity

SGI - Incompletely filled Groove

SMH - Hammer Mark

SSP - Spatter

SXP - Excessive Penetration

BT - Burn (melt) Through

DNC - Does Not Comply

GP - Gas Pore

IL - Linear Inclusion (slag line)

IT - Tungsten Inclusion

KT - Transverse crack

LR - lack of Root fusion (missed edge)

NUSID - No unacceptable Surface Indications Detected

PG - Localized Porosity

RP - Report findings

SGS - Shrinkage Groove

SMT - Tool Mark (chipping mark)

SUC(e) - Undercut External

WH - Worm Hole

C - Comply

EC - Elongated Cavity (hollow bead)

HiLo - Linear misalignment

IN - Inclusion

KC - Crater crack

LI - lack of Inter-run fusion

LS - lack of Side fusion

P - Passed

PL - Linear Porosity

SED - Excessive Dressing (underflushing)

SMG - Grinding Mark

SRC - Root Concavity (Suck back)

SUC(i) - Undercut Internal

REVOKED



Image 1 of 9 - Top header South end spool #1 W1-6

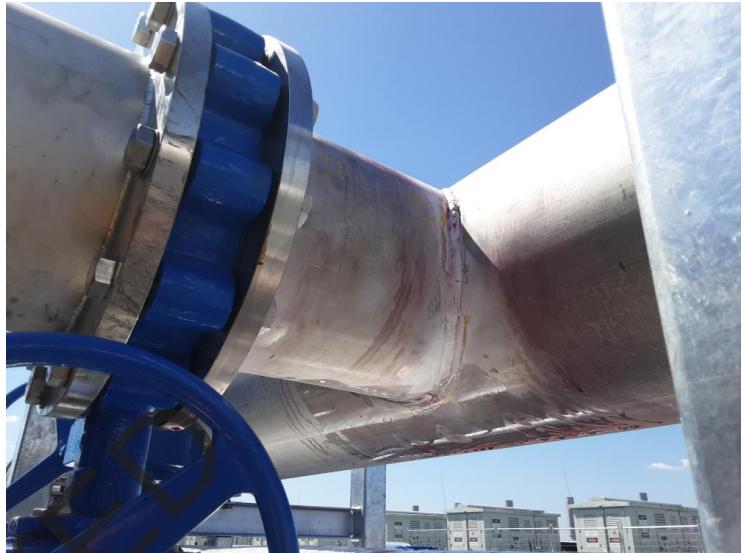


Image 2 of 9 - Top header South end spool #1 W7 & 8



Image 3 of 9 - Top header South end spool #1 W9



Image 4 of 9 - Top header South end spool #2 W1-5



Image 5 of 9 - Top header South end spool #2 W6



Image 6 of 9 - Top header South end spool #2 W7-9



Image 7 of 9 - Top header South end spool #3 W1-5

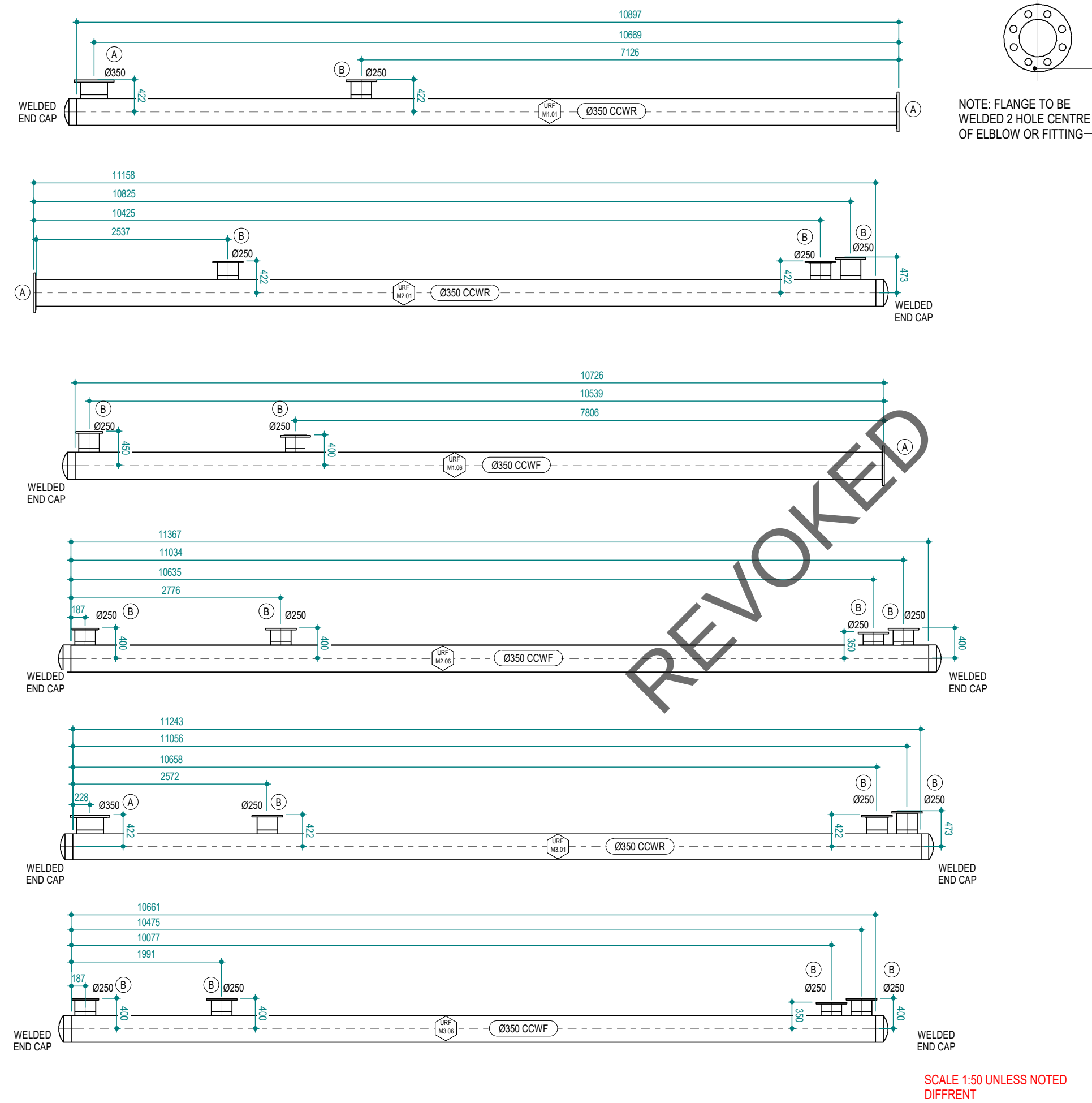


Image 8 of 9 - Top header South end spool #3 W6



Image 9 of 9 - Top header South end spool #3 W7-11

REVOKED



MATERIAL LIST				
CODE:	QTY:	SIZE:	DESCRIPTION OR CUTTING LENGTH:	END TREAT:
A	5	Ø350	TABLE 'E' FLANGE	
B	17	Ø250	TABLE 'E' FLANGE	
PIPE SPEC: STAINLESS STEEL GRADE 304 SCHEDULE 10				
SYMBOL ABBREVIATIONS				
WELDER			DATE	
MATERIAL AS LISTED				
DIMENSIONS CHECKED				
CHECK FOR SQUARE				
CHECK CONFIGURATION				
IDENTIFICATION CHECK				
MATERIALS ORDERED BY			☐	SITE
			☐	WORKSHOP
DATE REQUIRED				
 talented people... sustainable solutions Melbourne (Head Office) 11 Corporate Avenue Rowville, VIC 3178 T: +61 3 9751 4222 Sydney Level 5 113 Wicks Road Macquarie Park, NSW 2113 T: +61 2 8047 4610 Adelaide 85 Ormond Street Hindmarsh, SA 5007 T: +61 8 7969 6677 Perth 23 Wheeler Street Belmont, WA 6104 T: +61 8 6247 5970 Geelong 36-39 Industrial Place Breakwater, VIC 3219 T: +61 3 5229 2200 Brisbane 16 Container Street Tingalpa, QLD 4173 T: +61 7 3175 4999 D&E Air Conditioning Pty Ltd www.de-air.com.au E: drafting@de-air.com.au ABN: 24 158 631 979 ACN: 158 631 979 ARC: #AU29715				
JOB: VMM00120 NEXT DC M3 STAGE 2				
DATE: 08.09.25		REF.DRG.NO: SDRG-B-0201-8241		
DRAWN: T.MOSER		SKETCH NO: URF-B1-M-CCW-001		FC-1