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Project No: 44311

To: Hanan Husaini

From: Lydia Angus

Date: 22/07/21

Subject: Oxygen VIE Tank Compound

Summary: This memo details the propose Oxygen VIE Compound to serve the PSB and existing CHW campus.

Oxygen VIE Tank Overview

The existing Children's Hospital at Westmead (CHW) is served from a 15,000L primary Oxygen VIE tank and a 1,200L secondary VIE tank. These are located in the Main Medical Gas Compound off Redbank Road as shown below



Figure 1 Existing Oxygen Delivery Procedure

Air Liquide have advised that a 48,000L VIE vessel should be allowed for to serve Stage 2 PSB and the existing Children's Hospital site, based on preliminary consumption calculations and current consumption from the existing hospital at 470m³/day. This sizing allows for fortnightly deliveries and ~20% constant fill level. Air Liquide propose that both the existing and future site is served from one primary vessel. Utilising the existing 15,000L is technically an option however their preference is to avoid unnecessary engineering complexity. Mis-matched vessel sizes can cause imbalanced supply from the vessels.

Due to the relatively small size of the existing backup VIE, this vessel will need upgraded to a 5,000L VIE to provide 24-hour supply to the whole CHW campus.

The new tanks to serve the development will be split between the existing lower-level platform and the upper level within the existing CHW loading dock. The primary 48,000 L Oxygen VIE tank will be located on the lower level and the emergency VIE vessel will be located in the loading dock with the vaporisers and regulators. The fill point will be located on lower level with an extended fill line to the secondary vessel.

This option is the preference of LHD, as upgrading the existing main oxygen compound avoids a remote VIE location. Refer to appended layouts for detailed Oxygen VIE tank layout dimensions. The fixing and structural details are being finalised by Arup and Air Liquide.

Design with community in mind

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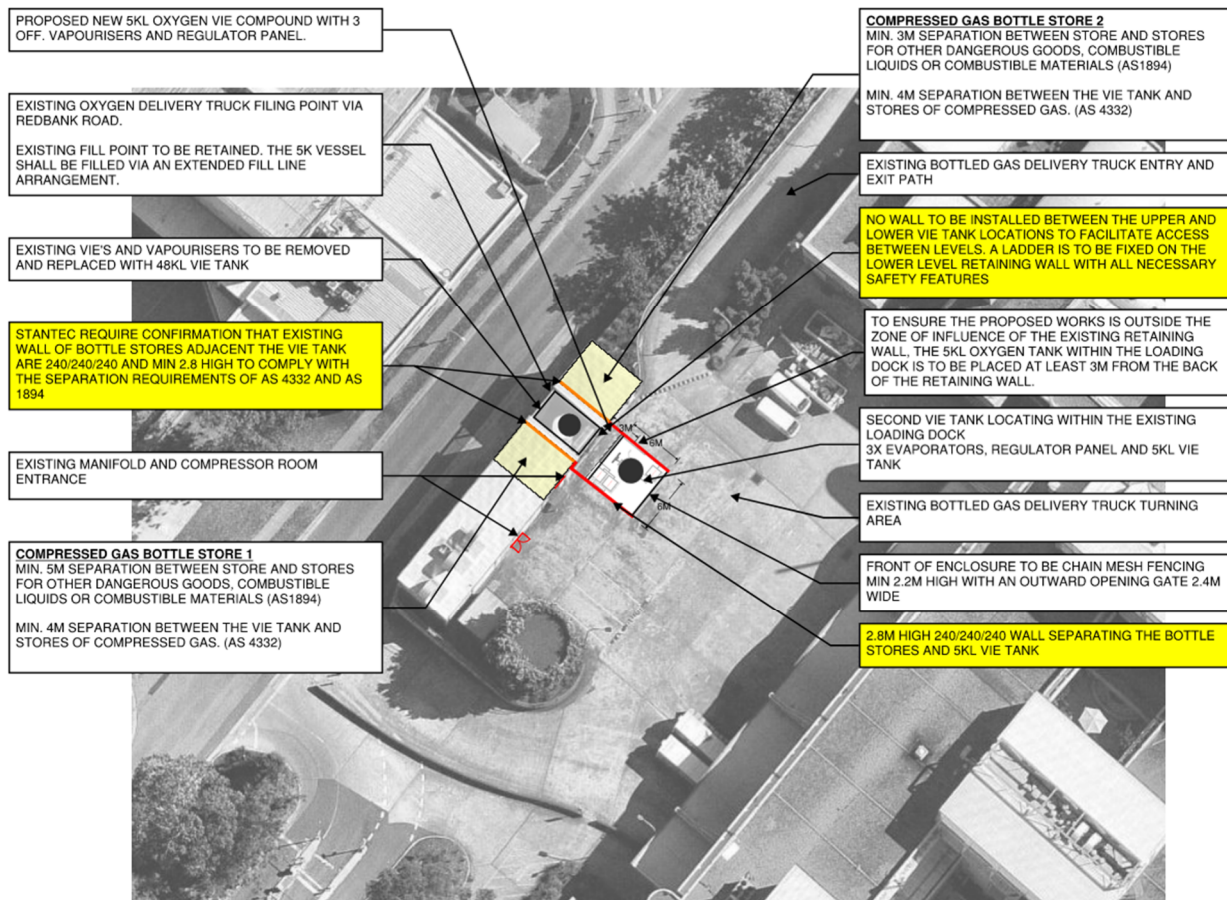


Figure 1 Proposed Bulk Oxygen Facility

Delivery Procedure

The existing oxygen fill point is located beside the 15kL primary VIE vessel and is accessed via Redbank road. As shown in figure 1, the current delivery procedure involves the 19m tanker parking on the curb and filling the oxygen storage from the rear of the tanker. This fill locating is to be retained with an extended fill line to the tank within the loading dock.

Continuity of Supply During Installation

With these significant medical oxygen upgrades, focus is required to prevent any oxygen supply downtime to the existing CHW. The options to ensure continuous oxygen supply are dependent on the structural works required and the tank location.

The Douglas Partners Geotechnical Report 13/05/21 and Arup advice have confirmed that the upper and lower concrete pads are sufficient for the installation of the new 48,000 L and 5,000 L tanks.

Based on this, there is no concern of continuity of supply. The 5k vessel will be installed on the upper platform and commissioned to supply the hospital, before taking out the existing vessels.

PROPOSED NEW 5KL OXYGEN VIE COMPOUND WITH 3 OFF. VAPOURISERS AND REGULATOR PANEL.

EXISTING OXYGEN DELIVERY TRUCK FILING POINT VIA REDBANK ROAD.

EXISTING FILL POINT TO BE RETAINED. THE 5K VESSEL SHALL BE FILLED VIA AN EXTENDED FILL LINE ARRANGEMENT.

EXISTING VIE'S AND VAPOURISERS TO BE REMOVED AND REPLACED WITH 48KL VIE TANK

STANTEC REQUIRE CONFIRMATION THAT EXISTING WALL OF BOTTLE STORES ADJACENT THE VIE TANK ARE 240/240/240 AND MIN 2.8 HIGH TO COMPLY WITH THE SEPARATION REQUIREMENTS OF AS 4332 AND AS 1894

EXISTING MANIFOLD AND COMPRESSOR ROOM ENTRANCE

COMPRESSED GAS BOTTLE STORE 1
MIN. 5M SEPARATION BETWEEN STORE AND STORES FOR OTHER DANGEROUS GOODS, COMBUSTIBLE LIQUIDS OR COMBUSTIBLE MATERIALS (AS1894)

MIN. 4M SEPARATION BETWEEN THE VIE TANK AND STORES OF COMPRESSED GAS. (AS 4332)

COMPRESSED GAS BOTTLE STORE 2
MIN. 3M SEPARATION BETWEEN STORE AND STORES FOR OTHER DANGEROUS GOODS, COMBUSTIBLE LIQUIDS OR COMBUSTIBLE MATERIALS (AS1894)

MIN. 4M SEPARATION BETWEEN THE VIE TANK AND STORES OF COMPRESSED GAS. (AS 4332)

EXISTING BOTTLED GAS DELIVERY TRUCK ENTRY AND EXIT PATH

NO WALL TO BE INSTALLED BETWEEN THE UPPER AND LOWER VIE TANK LOCATIONS TO FACILITATE ACCESS BETWEEN LEVELS. A LADDER IS TO BE FIXED ON THE LOWER LEVEL RETAINING WALL WITH ALL NECESSARY SAFETY FEATURES

TO ENSURE THE PROPOSED WORKS IS OUTSIDE THE ZONE OF INFLUENCE OF THE EXISTING RETAINING WALL, THE 5KL OXYGEN TANK WITHIN THE LOADING DOCK IS TO BE PLACED AT LEAST 3M FROM THE BACK OF THE RETAINING WALL.

SECOND VIE TANK LOCATING WITHIN THE EXISTING LOADING DOCK
3X EVAPORATORS, REGULATOR PANEL AND 5KL VIE TANK

EXISTING BOTTLED GAS DELIVERY TRUCK TURNING AREA

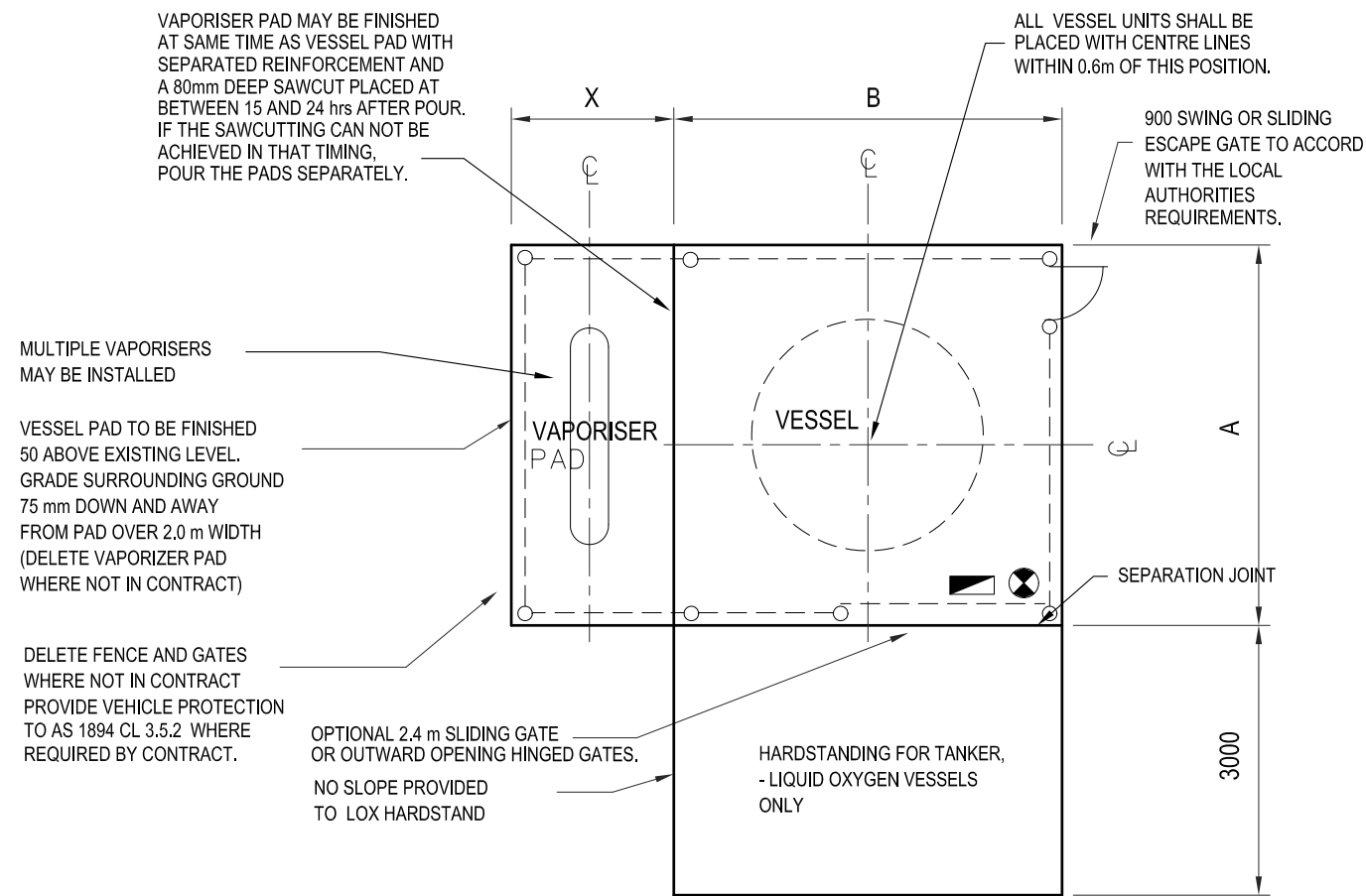
FRONT OF ENCLOSURE TO BE CHAIN MESH FENCING MIN 2.2M HIGH WITH AN OUTWARD OPENING GATE 2.4M WIDE

2.8M HIGH 240/240/240 WALL SEPARATING THE BOTTLE STORES AND 5KL VIE TANK

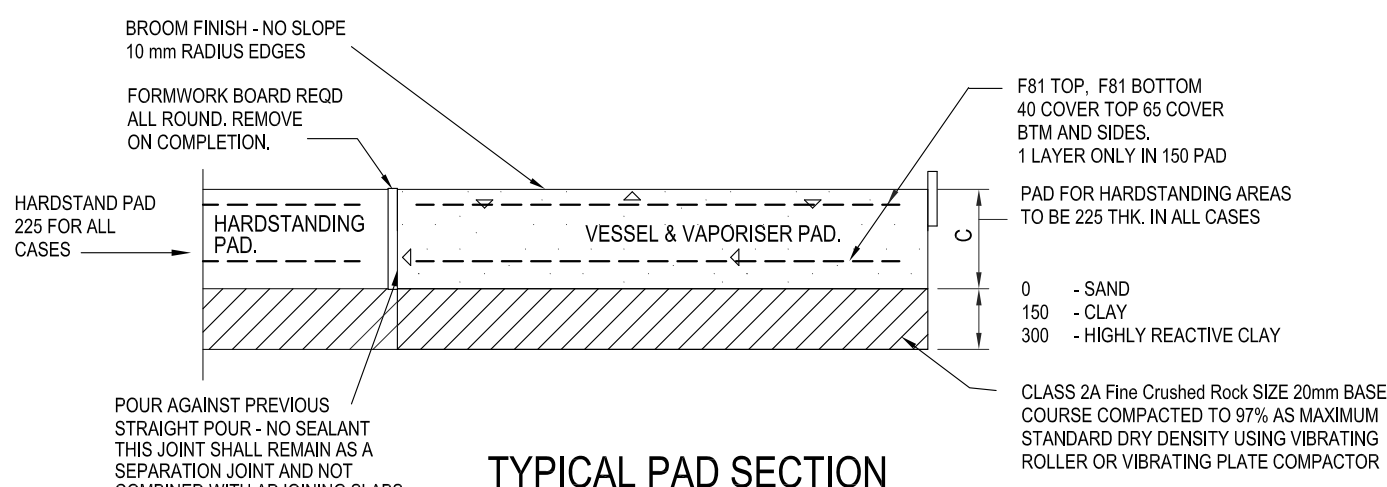
CHW LOADING DOCK

NOTE THAT ALL LAYOUT DIMENSIONS ARE TO BE CONFIRMED BY OTHERS

VAPORISER PAD	
VAPORISER(S) FLOW RATE m³/h	DIMENSION X Min
30 - 60	2000
120 - 300	2500
450	4000



PAD LAYOUT PLAN



TYPICAL PAD SECTION

VESSEL SIZE	MINIMUM PAD DIMENSIONS			NOM MAX FULL WT kg	No. LEGS (*)	BOLTS PER LEG - AUST Region A, B, W		Embedment mm, min (60 mm)
	A	B	C			Region A, B, W	Region C, D'	
VIV 600-1200	4000	4000	200	3800	3	1-M16/4.6s	1-M16/4.6s	180
VIV 3000	4800	4800	200	6600	3	1-M16/4.6s	1-M16/4.6s	180
VIV 7000	4800	4800	200	14500	3	1-M16/4.6s	1-M16/4.6s	180
5KL VIE TANK PAD THICKNESS	5000	5000	250	31000	3	1-M16/4.6s	2-M16/4.6s	220
VIV 30000	6000	6000	300	63000	4	1-M16/4.6s	2-M16/4.6s	270
VIV 45000	6000	6000	400	87000	3 OR 4	2-M16/4.6s	2-M20/4.6s	300
48KL VIE TANK PAD THICKNESS	6000	6000	500	112000	4	2-M20/4.6s	3-M24/4.6s	300

G	FOR INFORMATION	LA	KPR	14/07/21
F	FOR INFORMATION	LA	KPR	18/01/21
E	FOR INFORMATION	LA	KPR	06/01/21
D	FOR INFORMATION	LA	KPR	09/10/20
C	FOR INFORMATION	LA	KPR	18/08/20
B	FOR INFORMATION	ALH	KPR	05/08/20
A	FOR INFORMATION	ALH	KPR	29/06/20
REV	DESCRIPTION	DRAWN	APPD	DATE

CONSULTANT	ARCHITECT/CIENT
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PROJECT

CHW STAGE 2 - PSB

TITLE

MEDICAL GAS COMPOUND - OPTION 2.1

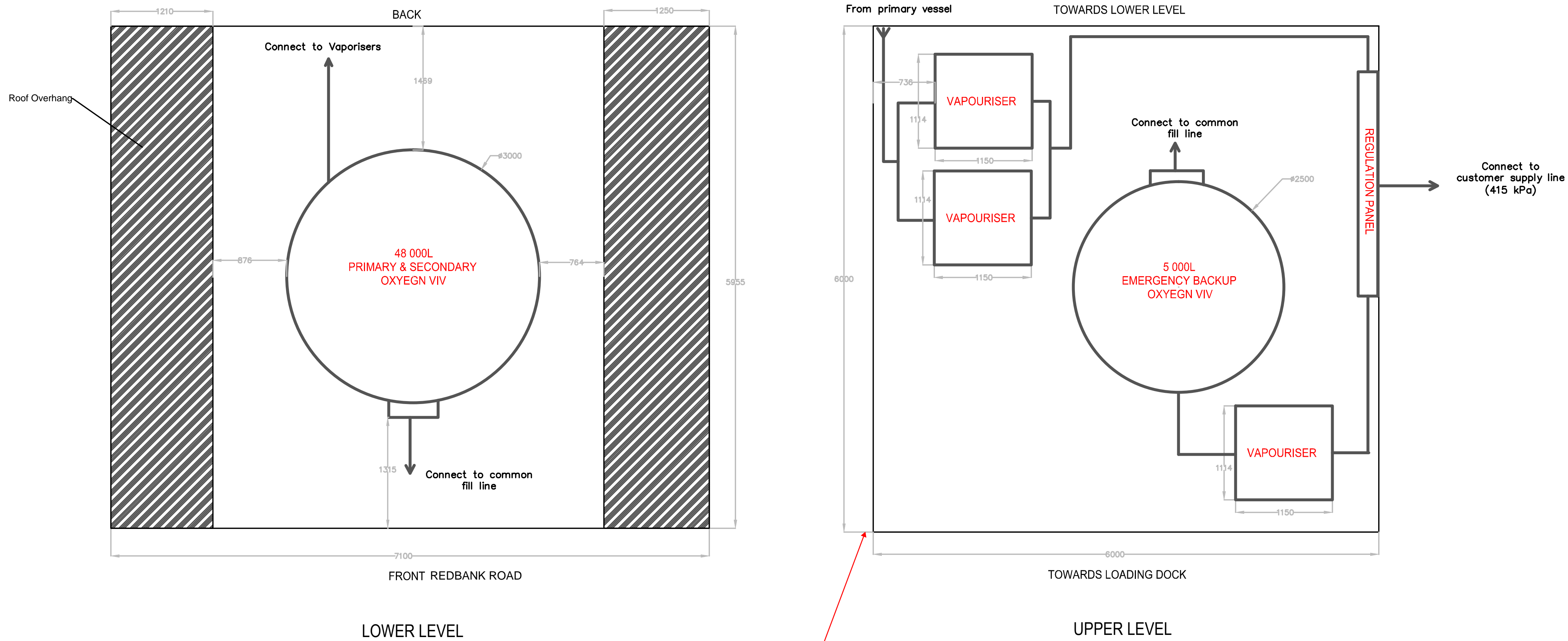


PRELIMINARY
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MECHANICAL

NTS	44311	MG-SK-001	G
SCALE @ A1	PROJECT No	DRAWING No	REV

THIS DRAWING HAS BEEN DOCUMENTED IN COLOUR
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NOTE THAT ALL LAYOUT
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PRIMARY TANK LOCATED AT LOWER LEVEL

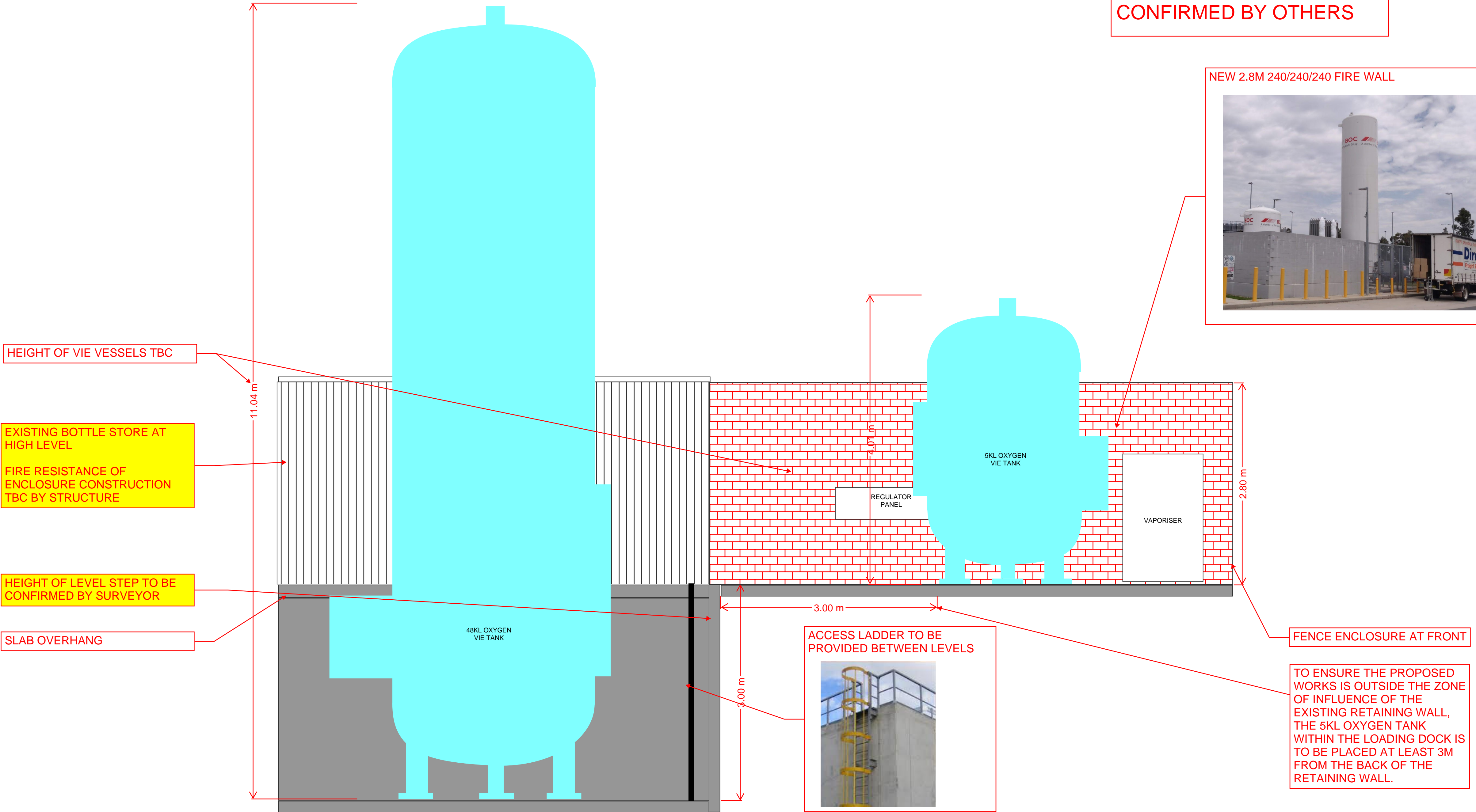
NOTE: UPPER LEVEL IS TO BE
PROVIDED WITH MAINS HOSE TAP
WATER SUPPLY, A 3 PHASE POWER
OUTLET AND A COMMUNICATION
OUTLET

E	FOR INFORMATION	LA	KPR	14/07/21
D	FOR INFORMATION	LA	KPR	18/01/21
C	FOR INFORMATION	LA	KPR	06/01/21
B	FOR INFORMATION	LA	KPR	09/10/20
A	FOR INFORMATION	LA	KPR	18/08/20
REV	DESCRIPTION	DRAWN	APPD	DATE

CONSULTANT	ARCHITECT/CIENT
PROJECT	
CHW STAGE 2 - PSB	
TITLE	
OXYGEN VIE TANK PLANT LAYOUTS	
PRELIMINARY NOT FOR CONSTRUCTION MECHANICAL	
NTS	44311 MG-SK-001 E
SCALE @ A1	PROJECT No DRAWING No REV

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TANK SECTION. NTS

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B	FOR INFORMATION	LA	KPR	16/07/21
A	FOR INFORMATION	LA	KPR	18/01/21
REV	DESCRIPTION	DRAWN	APPD	DATE

CONSULTANT	ARCHITECT/CLIENT
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PROJECT

CHW STAGE 2 - PSB

TITLE

OXYGEN VIE TANK PLANT LAYOUTS

PRELIMINARY
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NTS	44311	MG-SK-001	B
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