Government of **Western Australia**
Development Assessment Panels

LG Ref: 19/20-04
DAP Ref: DAP/19/01672
Enquiries: (08) 6551 9919

Mr Tim Dolling
Cooperative Bulk Handling Limited
GPO Box L886
Perth WA 6842

Dear Mr Dolling

MID-WEST/WHEATBELT JDAP - SHIRE OF KONDININ - DAP APPLICATION - 19/20-04 - DETERMINATION

Property Location:	Lot 31 & 178 Marshall Street, Hyden and Part Lot 202 Aylmore Road, Hyden
Application Details:	Improve truck marshalling & weighing, access to, additional grain receival & storage facilities

Thank you for your Form 1 Development Assessment Panel (DAP) application and plans submitted to the Shire of Kondinin on 3 October 2019 for the above-mentioned development.

This application was considered by the Mid-West/Wheatbelt JDAP at its meeting held on 12 December 2019, where in accordance with the provisions of the Shire of Kondinin Local Planning Scheme No. 1, it was resolved to **approve** the application as per the attached notice of determination.

Should the applicant not be satisfied by this decision, an application may be made to amend or cancel this planning approval in accordance with regulation 17 and 17A of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

Please also be advised that there is a right of review by the State Administrative Tribunal in accordance with Part 14 of the *Planning and Development Act 2005*. Such an application must be made within 28 days of the determination, in accordance with the *State Administrative Tribunal Act 2004*.

Should you have any queries with respect to the conditions of approval, please contact Ms Tory Young on behalf of the Shire of Kondinin on 9889 1006.

Yours sincerely,

DAP Secretariat

19 December 2019

Encl. DAP Determination Notice
Approved Plans

Cc: Ms Tory Young
Shire of Kondinin

Government of **Western Australia**
Development Assessment Panels

Planning and Development Act 2005

Shire of Kondinin Local Planning Scheme No. 1

Mid-West/Wheatbelt Joint Development Assessment Panel

Determination on Development Assessment Panel Application for Planning Approval

Property Location: Lot 31 & 178 Marshall Street, Hyden and Part Lot 202 Aylmore Road, Hyden
Application Details: Improve truck marshalling & weighing, access to, additional grain receival & storage facilities

In accordance with regulation 8 of the *Planning and Development (Development Assessment Panels) Regulations 2011*, the above application for planning approval was **granted** on 12 December 2019, subject to the following:

Approve DAP Application reference DAP/19/01672 and accompanying plans as outlined below;

Plans

- Title: Hyden Pre-Feasibility Study M/S/W upgrades Conceptual Layout No.1; Drawing No. 571-ENG-CI-DCO-0009 (stamp dated 18th November 2019)
- Title: Hyden Pre-Feasibility Study Additional 136,000 Storage & Site Upgrades Conceptual Layout No.6; Drawing No. 571-ENG-CI-DCO-0007 (stamp dated 18th November 2019)

Drawings

- Title: Typical Drawing Belt Conveyor 900W Belt CLS 300M OBH 9.7, V-Pit Elevator C/W Head Drive General Arrangement; Drawing No. 5000-ENG-ME-STD-0006 (stamp dated 3rd October 2019)
- Title: Typical Drawing Belt Conveyor 900W Belt CLS 300M OBH 400 Auger E-Pit C/W Head Drive General Arrangement; Drawing No. 5000-ENG-ME-STD-0002 (stamp dated 3rd October 2019)
- Title: Weighbridge Australian Steel Hut Layout General Arrangement; Drawing No. S-020-A0050 (stamp dated 3rd October 2019)
- Title: Weighbridge Australian Steel 36m Assembled Weighbridge General Arrangement; Drawing No. S-020-A0000 (stamp dated 3rd October 2019)
- Title: 1.8 Open Bulkhead Bulkhead Accessway Opening General Arrangement; Drawing No. S119-ENG-ST-DGA-0001 (stamp dated 3rd October 2019)

Supporting Documents

- Traffic Impact Statement for CBH Hyden Grain Recevial Facility Expansion & Site Upgrade, Road West Engineering Group Pty Ltd (Issued on 15/11/2019 (R.2), Stamp dated 18th November 2019)
- Bushfire Management Plan, Greenstart Consulting (Issued on 15/11/2019 (R.3), Stamp dated 18th November 2019
- Stormwater Management Plan, McDowall Affleck Pty Ltd (Issued on 14/11/2019 (R.C), Stamp dated 18th November 2019.

in accordance with Clause 68 of Schedule 2, of the *Planning and Development (Local Planning Schemes) Regulations 2015* and the provisions of the Shire of Kondinin Local Planning Scheme No.1, for the expansion and upgrade of existing grain handling and storage facilities at Hyden Grain Receival Site on Lots 31 and 178 Marshall Street, Hyden subject to the conditions stated below:

Conditions

1. The proposed development shall be undertaken in accordance with the final revised information and plans submitted in support of the application subject to any modifications required as a consequence of any condition/s of this approval;

2. This decision constitutes planning approval only and is valid for a period of two (2) years from the date of approval. If the subject development is not substantially commenced within the two (2) year period, the approval shall lapse and be of no further effect;

3. Prior to any works being undertaken, and in consultation with and to the satisfaction of the Shire of Kondinin, the existing underground water pipe connecting the two (2) Shire public dams located on Lot 1 on DP 14141 and Lot 130 on DP 186278 respectively, shall be relocated to the perimeter of Lot 31;

4. Prior to any works being undertaken, and in consultation with the landowner of Lot 30, the existing fence line on the common boundary between former Lots 202 and 201 shall be removed and a new fence line installed around the perimeter of Lots 31 and 30;

5. The lots the subject of this approval shall be filled, stabilised, drained and/or graded as required to the satisfaction of the Shire of Kondinin to ensure that:

    a) lots can accommodate their intended development and use;
    b) the finished ground levels at the boundaries of the lot(s) the subject of this approval match or otherwise coordinate with the existing and/or proposed finished ground levels of the land abutting;
    c) all stormwater generated from the proposed development that is captured in the drainage basin directly south of the (4) new bulkheads is re-directed to the new underground water pipeline as shown on the amended plans stamp dated 18th November 2019, to enable the captured stormwater to be re-distributed to the private dam located on the north-west corner of Lot 30 and the Shire of Kondinin public dams located at Lot 1 on DP 14141 and Lot 130 on DP 186278 to the west and east of the site respectively;

6. Engineering design drawings and associated capture and storage calculations for the proposed drainage basin are to be prepared with due consideration to the water tables and re-use potential of the captured water for stock and reticulation purposes, including options (if any) for managed overflow into adjacent landholdings, are to be submitted to the Shire of Kondinin for consideration and approval prior to any works being undertaken on the site;

7. The applicant/landowner shall continually monitor any dust generated by the works and use, approved by this application and implement suitable measures in accordance with any relevant Environmental Protection Authority and Department of Water and Environmental Regulation regulations, policies, guidance statements or guidelines to ensure any dust impacts are appropriately managed and controlled;

8. The applicant / landowner shall arrange the planting of a continuous double row of native shrubs endemic to the locality along the new southern boundary of Lot 31 to act as a buffer to the adjacent agriculture and residential land use on Lot 30;

9. A 1:20 taper of the edge of the bitumen onto the Brookton Highway seal is to be installed at the westbound approach to the CBH entry only driveway and the overhanging vegetation to be lopped back to a minimum of 4m from the seal edge at the applicant's cost prior to operation of the proposed new development on-site; and

10. The existing advance warning truck ahead signs on Brookton Highway for both the dedicated entry and exit driveways to be replaced with MR-WM-3/1 signs at the applicant's cost and approved by Main Roads WA prior to the operation of the proposed new development on site.

Advice Notes

1. This is a development approval only and not a building permit or an approval to commence or carry out development under any other law. It is the responsibility of the applicant/landowner to obtain any other necessary approvals, consents, permits and licenses required under any other law, and to commence and carry out development in accordance with all relevant laws;

2. The applicant/landowner is reminded of their obligation to ensure a clearing permit approval is obtained from the Department of Water and Environmental Regulation as may be required pursuant to the specific requirements of the *Environmental Protection Act 1986* and *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* prior to the commencement of any proposed clearing works on Lot 31;

3. The applicant/landowner is reminded of their obligation to ensure compliance with the Shire of Kondinin Annual Firebreak Notice as this applies specifically to all rural land in the Shire to help guard against potential bushfire risk and cognisant of any other relevant recommendations of the amended Bushfire Management Plan stamp dated 18/11/2019 submitted as part of this development application;

4. The applicant / landowner is advised that the Shire of Kondinin supports the use of the local public road reserve that extends along the western boundary of the CBH Lot 31 if required to enable direct vehicle access between adjacent private Lot 2192 and the subject CBH Lot 31, subject to a written agreement formalising the arrangement between the respective owners of Lot 31 and Lot 2912;

5. The applicant / landowner is reminded of the advice received from Main Roads WA during the public advertising period that the existing Entry/Exit access road to the site off Brookton Highway 250m west of Meeking Crescent is a public rail crossing and therefore cannot be closed;

6. In accordance with the *Building Act 2011* and *Building Regulations 2012*, a building permit application must be submitted to and approved by the Shire of Kondinin prior to the commencement of any construction or earthworks on the land as may be required;

7. Any proposed new structures on the lots the subject of this approval that require a building permit approval are required to comply in all respects with the National Construction Code of Australia. Plans and specifications which reflect these requirements must be submitted to the Shire of Kondinin in support of any required building permit application;

8. The noise generated by any activities on-site including machinery motors or vehicles shall not exceed the levels as set out under the *Environmental (Noise) Regulations 1997*;

9. The applicant/landowner is reminded of their obligation to ensure compliance with relevant legislation relating to clearance requirements and electrical infrastructure;

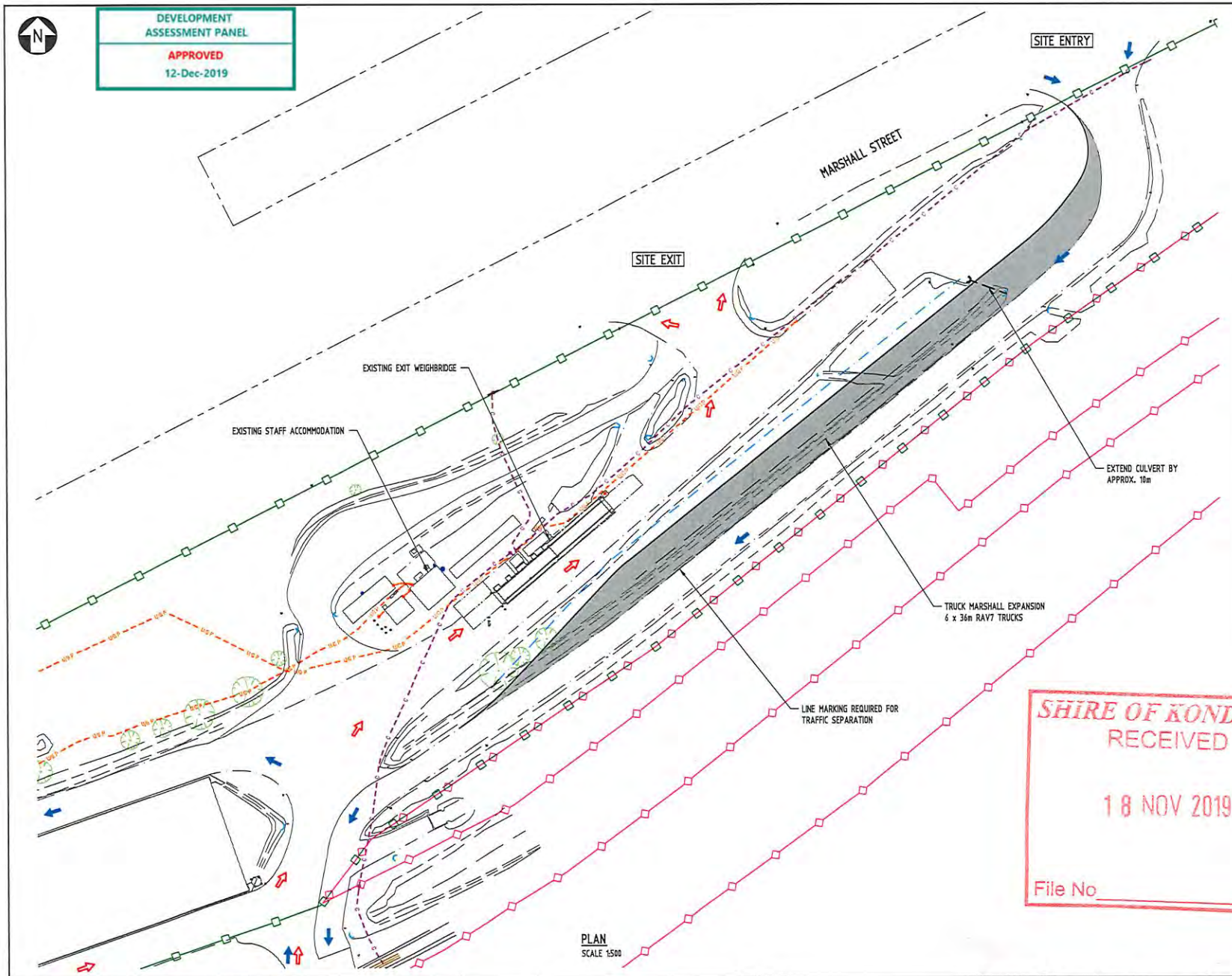
10. No construction works shall commence on the land prior to 7.00am without the Shire's written approval. No construction works are permitted to be undertaken on Sundays or Public Holidays;

11. Failure to comply with any of the conditions of this development approval constitutes an offence under the provisions of the *Planning and Development Act 2005* and the *Shire of Kondinin Local Planning Scheme No.1* and may result in legal action being initiated by the local government; and

12. If the applicant/landowner is aggrieved by this determination there is a right of review by the State Administrative Tribunal in accordance with the *Planning and Development Act 2005 P*art 14. An application must be submitted within 28 days of the determination.

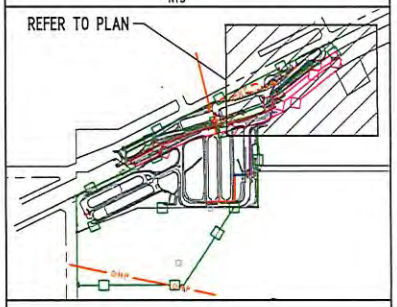
Where an approval has so lapsed, no development shall be carried out without further approval having first been sought and obtained, unless the applicant has applied and obtained Development Assessment Panel approval to extend the approval term under regulation 17(1)(a) of the *Planning and Development (Development Assessment Panels) Regulations 2011*.

DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019



PLAN
SCALE 1:500

KEY PLAN
NTS



LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- DRAINAGE BASIN (INDICATIVE)
- DRAINAGE (INDICATIVE)
- CBH BOUNDARY
- CADASTRAL BOUNDARY
- RAIL LEASE BOUNDARY
- RAIL LINE
- UNDERGROUND POWER
- COMMS CABLE
- OVER HEAD POWER LINES
- 500m RESIDENTIAL EXCLUSION ZONE
- MAJOR CONTOURS
- MINOR CONTOURS
- MAJOR CONTOUR LABELS

HATCHING LEGEND

AREA OF NEW WORKS 1,950m²

SHIRE OF KONDININ
RECEIVED
18 NOV 2019
File No

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 28.10.19

1:500 @ A1
1:1000 @ A3
0 5 10 15 20 25 30 35 40 45 50

CBHGROUP
ABN 29 256 664 947

CBH GROUP
30 DELHI STREET
WEST PERTH
W.A. 6005
PH (08) 9237 9400
FAX (08) 9322 3942

REF DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
-	-	A	28.10.19	ISSUED AS CHECK PRINT AND FOR REVIEW	JB		

SCALE: AS SHOWN
SHEET: A1
PROJECT: M-2653
CONTRACT No:

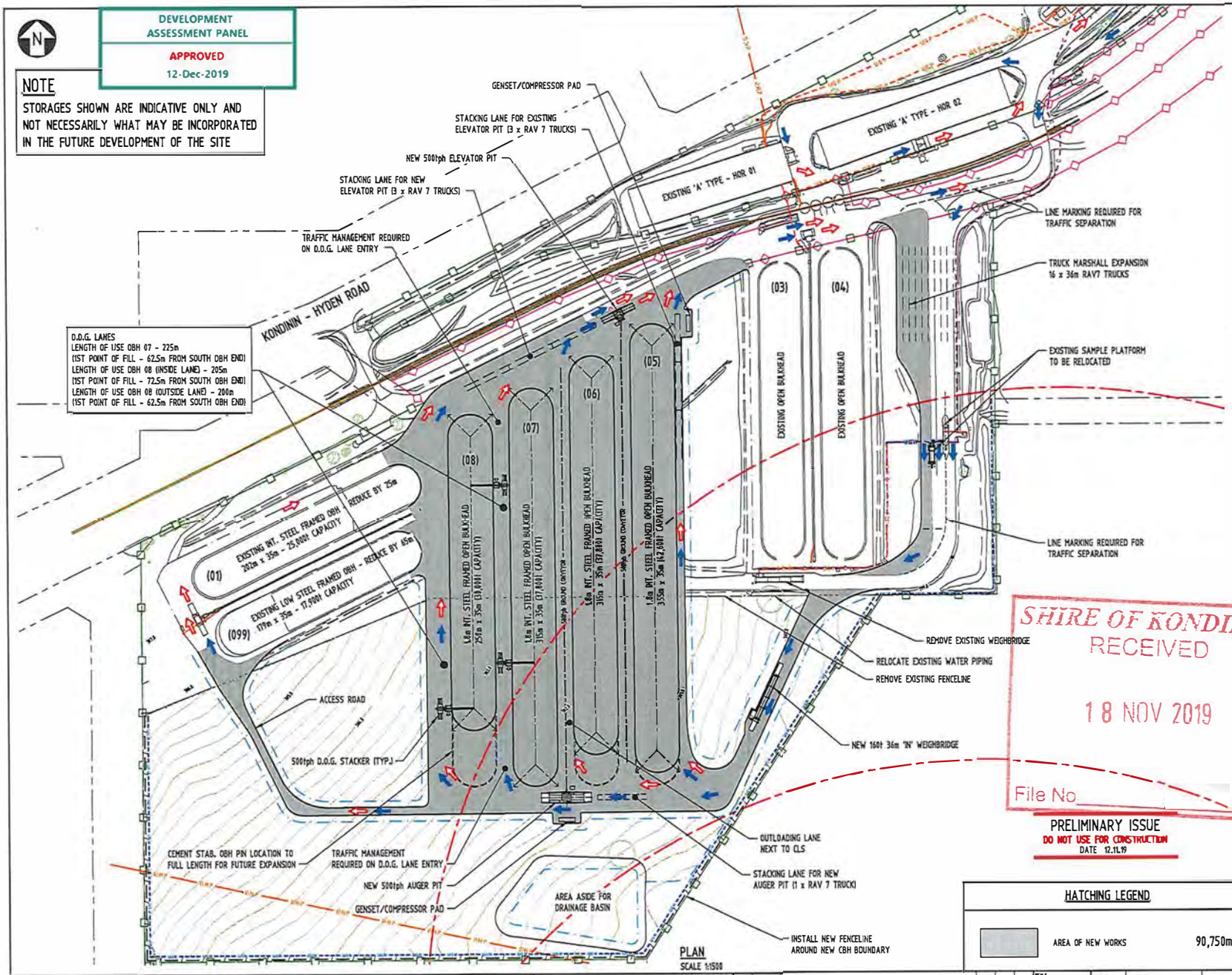
DRAWN: J. Sullingham 28.10.19
CHECKED:
DESIGNED:
DESIGN APP'D:
PROJECT APP'D:

TITLE: HYDEN
PRE FEASIBILITY STUDY
M/S/W UPGRADES
CONCEPTUAL LAYOUT No. 1

DWG No: 571-ENG-CI-DCO-0009
SHEET: 1 OF 1
REV: A

DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019

NOTE
STORAGES SHOWN ARE INDICATIVE ONLY AND NOT NECESSARILY WHAT MAY BE INCORPORATED IN THE FUTURE DEVELOPMENT OF THE SITE



PLAN
SCALE 1:1500

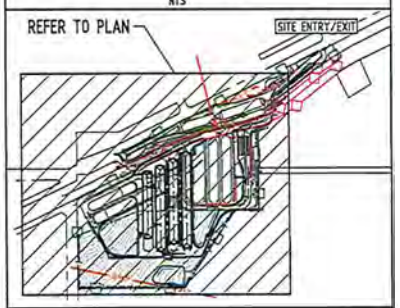
SHIRE OF KONDININ
RECEIVED
18 NOV 2019
File No

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 12.11.19

HATCHING LEGEND

AREA OF NEW WORKS 90,750m²

KEY PLAN
NTS



STORAGE CAPACITIES

EXISTING STORAGE		
'A' TYPE STORAGE	HOR 01	22,200 t
'A' TYPE STORAGE	HOR 02	26,800 t
STEEL SILOS RRLF	(4 SILOS)	2,000 t
STEEL LOW FRAMED OPEN BULKHEAD	(01)	29,000 t
STEEL LOW FRAMED OPEN BULKHEAD	(03)	25,000 t
STEEL INT. FRAMED OPEN BULKHEAD	(04)	25,000 t
STEEL LOW FRAMED OPEN BULKHEAD	(099)	25,000 t
TOTAL EXISTING STORAGE		155,000 t

PROPOSED STORAGE		
REDUCE EXISTING STORAGE	(01)	-4,000 t
REDUCE EXISTING STORAGE	(099)	-7,600 t
1.8m INT STEEL FRAMED OPEN STORAGE	(05)	42,600 t
1.8m INT STEEL FRAMED OPEN STORAGE	(06)	37,800 t
1.8m INT STEEL FRAMED OPEN STORAGE	(07)	37,800 t
1.8m INT STEEL FRAMED OPEN STORAGE	(08)	30,000 t
TOTAL PROPOSED STORAGE		136,600 t

TOTAL SITE STORAGE 291,600 t

LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- DRAINAGE BASIN (INDICATIVE)
- DRAINAGE (INDICATIVE)
- CBH BOUNDARY
- CADASTRAL BOUNDARY
- RAIL LEASE BOUNDARY
- RAIL LINE
- UNDERGROUND POWER
- COMMS CABLE
- OVER HEAD POWER LINES
- 500m RESIDENTIAL EXCLUSION ZONE
- EXISTING U/G WATER PIPING (INDICATIVE)
- RELOCATED U/G WATER PIPING (INDICATIVE)
- NEW FENCELINE
- MAJOR CONTOURS
- MINOR CONTOURS
- MAJOR CONTOUR LABELS

CBH GROUP
ABN 29 256 684 947
CBH GROUP
38 DELHI STREET
WEST PERTH
W.A. 6005
PH (08) 9237 9400
FAX (08) 9322 3942

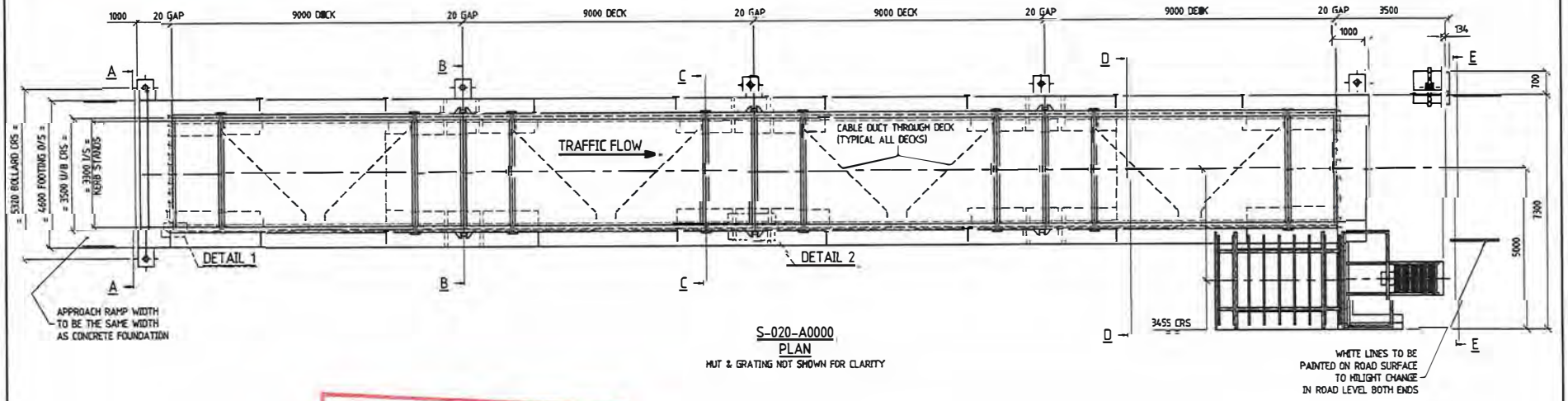
REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
E	14.11.19	NEW FENCELINE ADDED	JS		
D	12.11.19	BOUNDARIES UPDATED & WATER PIPING ADDED	JS		
C	25.10.19	CHANGES AS PER MEETING MARK UP	JS		
B	21.10.19	REVISED AS PER MARKUPS	JS		
A	16.09.19	ISSUED AS CHECK PRINT AND FOR REVIEW	JS		

SCALE AS SHOWN
SHEET A1
PROJECT M-2653
CONTRACT No
DRAWN J. Gallingham 16.09.19
CHECKED
DESIGNED
DESIGN APPR.
PROJECT APPR.

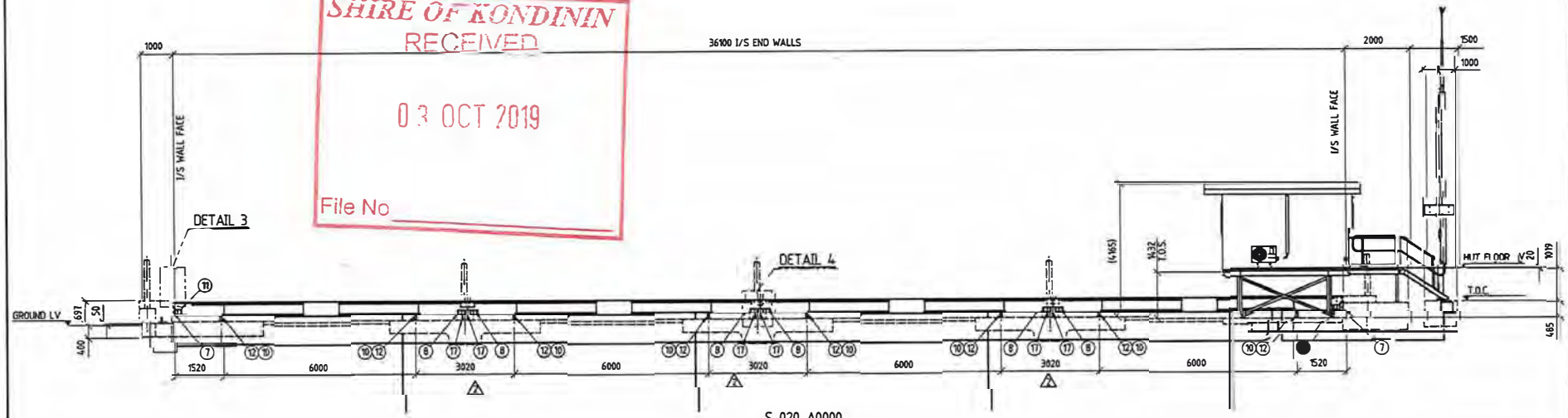
HYDEN
PRE FEASIBILITY STUDY
ADDITIONAL 136,600 t STORAGE & SITE UPGRADES
CONCEPTUAL LAYOUT No. 6

DWG No 571-ENG-CI-DCO-0007
SHEET 1 OF 1
REV. E

DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019



S-020-A0000
PLAN
HUT & GRATING NOT SHOWN FOR CLARITY



S-020-A0000
ELEVATION
36m ASSEMBLED WEIGHBRIDGE
1 : 60

REFER TO SHEET 1 FOR PARTS LIST

CBH GROUP HEAD OFFICE
30 DELHI STREET, WEST PERTH W.A 6005
PH 1091 9237 9000 FAX 1091 9322 3942

DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE	REV	DATE

REVISIONS	BY	CHK	APP
3 18/01/2019 LOAD CELL METTLER TOLEDO/RDS ADDED	APE	DD	DD
2 15/04/2017 SHIM PACK ITEM 17 ADDED	VP	JW	PL
1 11/04/2017 ADD-GIRDER, LIGHT PULL MOD-NOTES & LOAD CELL	TTW	DD	DD
0 2/12/2014 ISSUED FOR CONSTRUCTION	TU	JR	
REVISIONS	BY	CHK	APP

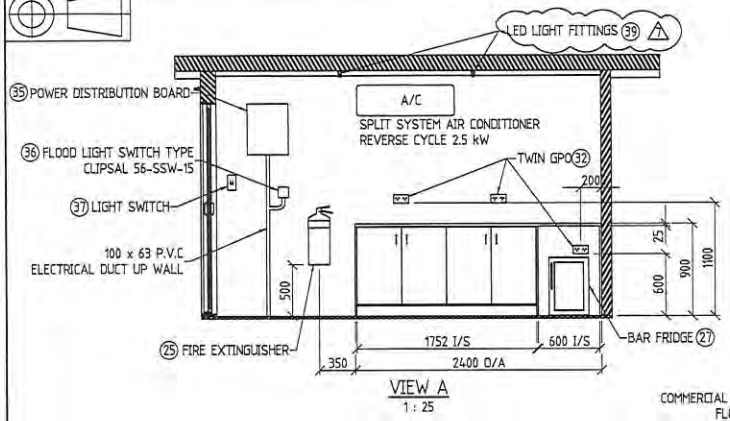
DRAWN TU 2/12/2014
CHECKED JR 2/12/2014
ENGINEER
APPROVED

DRAWING TITLE
WEIGHBRIDGE
AUSTRALIAN STEEL
36m ASSEMBLED WEIGHBRIDGE
GENERAL ARRANGEMENT

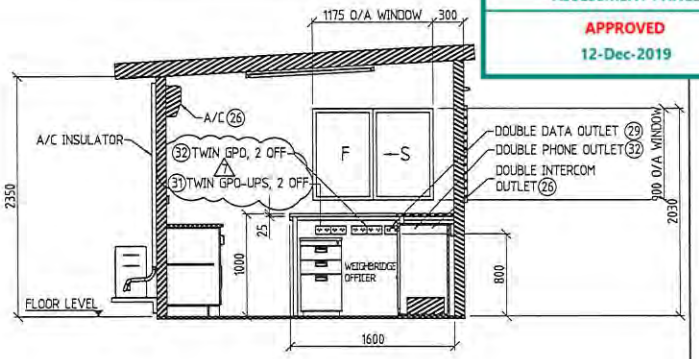
SITE VARIOUS
SIZE A1
PROJECT STANDARD DRAWING
DRAWING NO S-020-A0000
SHEET 2 OF 5
REV 3

DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019

SHIRE OF KONDININ
RECEIVED
03 OCT 2019
File No



VIEW A
1 : 25



VIEW B
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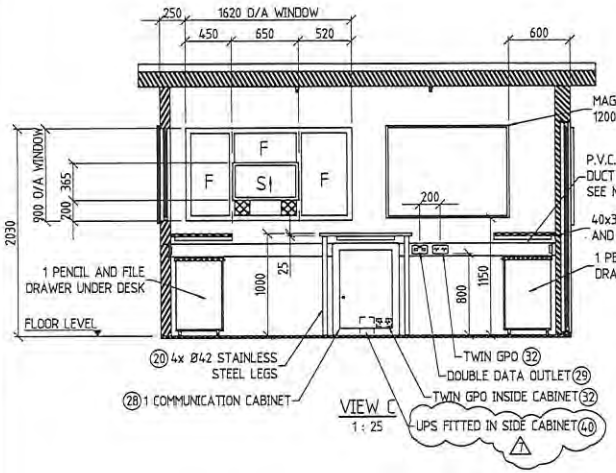

VIEW C
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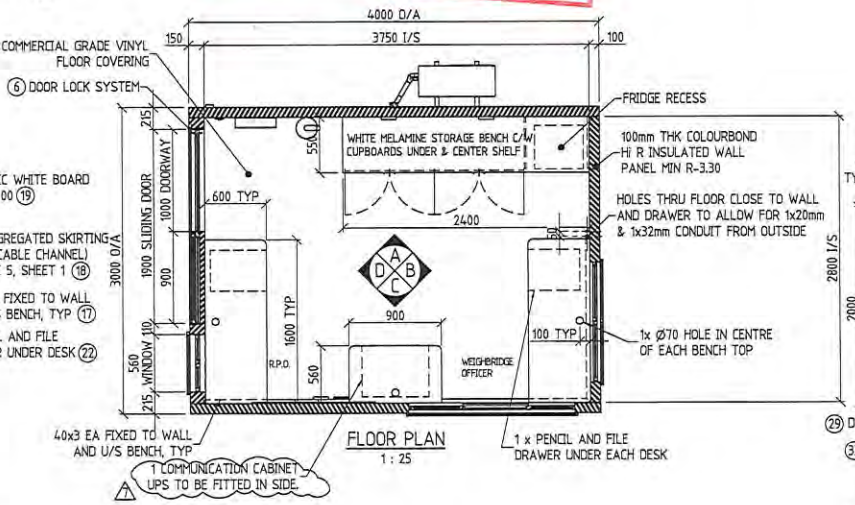
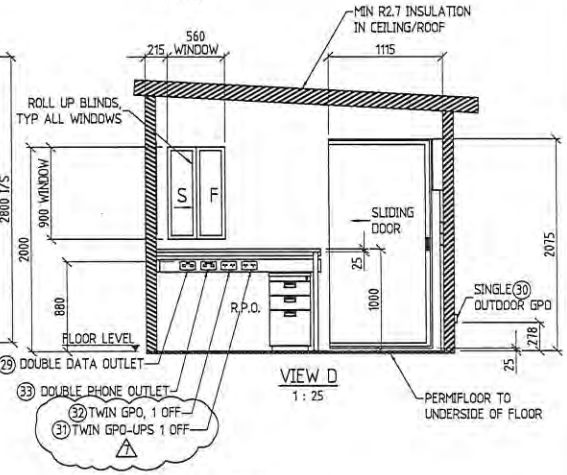
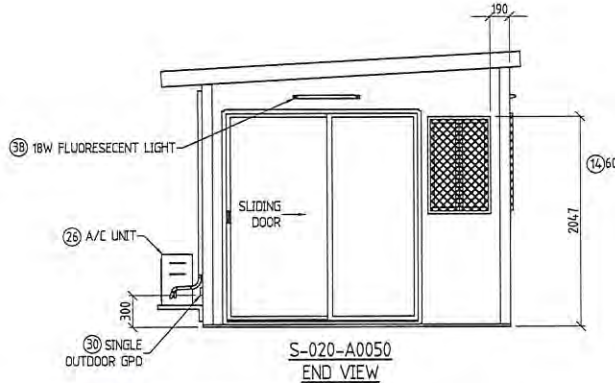


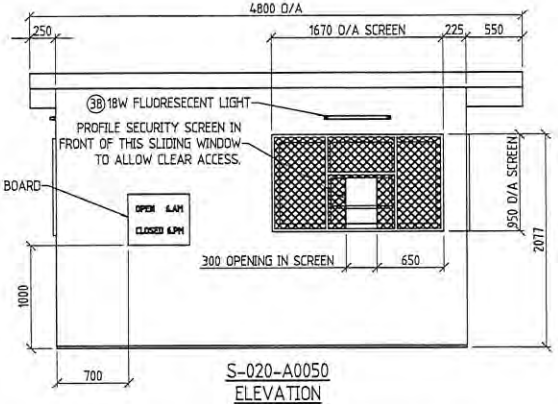
FLOOR PLAN
1 : 25



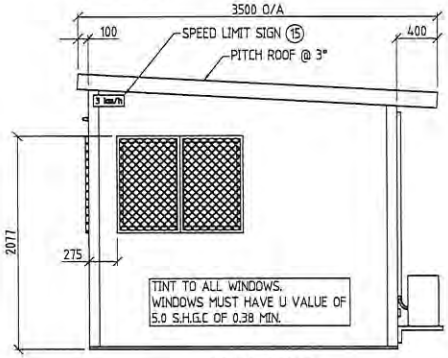
VIEW D
1 : 25



S-020-A0050
END VIEW



S-020-A0050
ELEVATION
HUT LAYOUT



S-020-A0050
END VIEW

CBHGROUP

CBH GROUP HEAD OFFICE
30 DELHI STREET, WEST PERTH W.A 6005
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING - ASK!

REF DRG No.	REFERENCE DRAWING TITLE	REV	DATE	REVISIONS	BY	CHK	APP
		7	15.09.2017	ITEM 39, GPO-UPS ADDED	VP	SM	DF
		6	06.09.2017	COMMS CABINET PART NUM ADDED	TTW	JH	CBH
		5	11.04.2017	FIRE EXTINGUISHER ADDED	TTW	DD	DD
		4	18.01.2017	HOLE IN FLOOR ADDED FOR LOAD CELL CABLE	AME	JW	
		3	18.03.2016	NEW SLIDE DOOR ADDED	TTW	VP	MD
		2	30.07.2015	REFERENCE DRAWINGS REMOVED	TTW	JB	CBH
		1	18.11.2014	NOTES ADDED, WINDOW CHANGED	TTW	VP	CBH
		0	2/12/2014	ISSUED FOR CONSTRUCTION	TU	JR	CBH

DESIGNER	CBH	14/02/2014	
DRAWN	TU	2/12/2014	
CHECKED	JR	13/02/2014	
APPROVED	CBH	14/02/2014	

DRAWING TITLE
WEIGHBRIDGE
AUSTRALIAN STEEL
HUT LAYOUT
GENERAL ARRANGEMENT

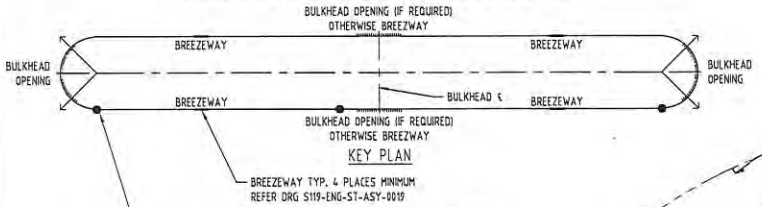
SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD DRAWING
DRAWING No: S-020-A0050
SHEET: 2 OF 2
REV: 7

DEVELOPMENT ASSESSMENT PANEL

APPROVED

12-Dec-2019

ACCESS MAY BE CONSTRUCTED IN AREAS INDICACTED BELOW

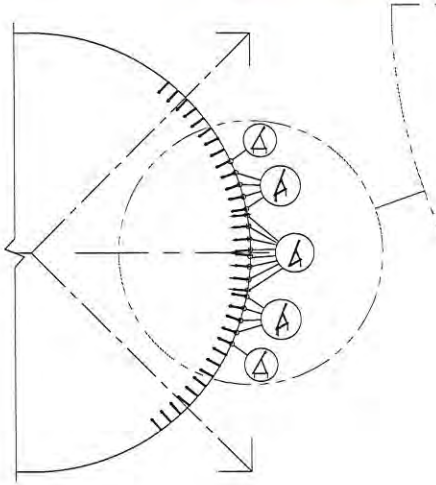


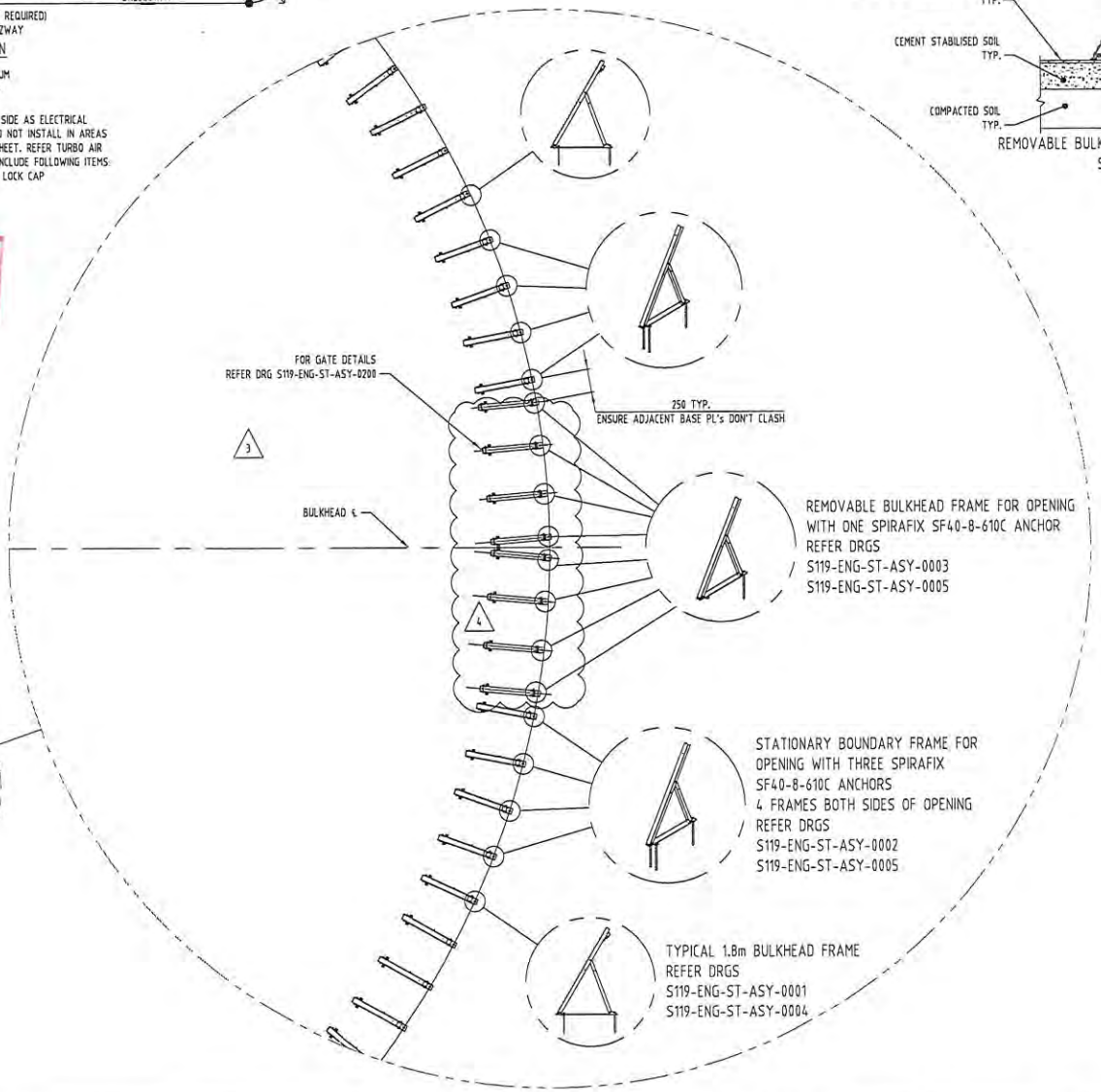
KEY PLAN

BREEZEWAY TYP. 4 PLACES MINIMUM
REFER DRG S119-ENG-ST-ASY-0019

THREE FUMIGATION T-PIECES TO BE INSTALLED ON SAME SIDE AS ELECTRICAL CONNECTION. INSTALL AT HALF HEIGHT ON OBH WALL. DO NOT INSTALL IN AREAS WHERE SHEETS OVERLAP. DO NOT INSTALL IN BOTTOM SHEET. REFER TURBO AIR VENDOR DRAWING 175, PART VPT 2545-CM REVISION 2. INCLUDE FOLLOWING ITEMS:

3
a. 1X HEAVY DUTY CAP C/W CAM LOCK & CAM LOCK CAP
b. SPLIT SLEEVE C/W LOCKING PIN AND CHAIN
c. T-PIECE MOUNT TO SUIT CORRUGATED SIDE

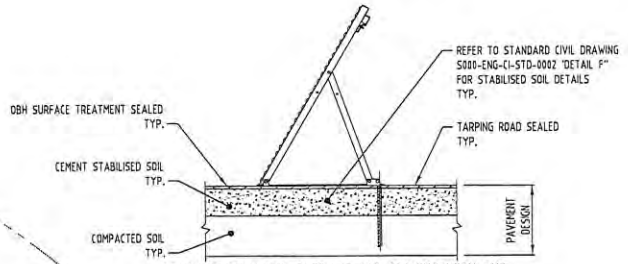




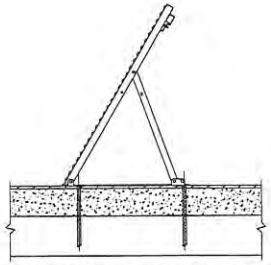
REMOVABLE BULKHEAD FRAME FOR OPENING WITH ONE SPIRAFIX SF40-8-610C ANCHOR
REFER DRGS
S119-ENG-ST-ASY-0003
S119-ENG-ST-ASY-0005

STATIONARY BOUNDARY FRAME FOR OPENING WITH THREE SPIRAFIX SF40-8-610C ANCHORS
4 FRAMES BOTH SIDES OF OPENING
REFER DRGS
S119-ENG-ST-ASY-0002
S119-ENG-ST-ASY-0005

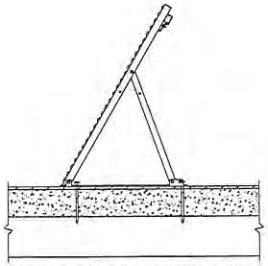
TYPICAL 1.8m BULKHEAD FRAME
REFER DRGS
S119-ENG-ST-ASY-0001
S119-ENG-ST-ASY-0004



REMOVABLE BULKHEAD FRAME FOR OPENING WITH ONE SPIRAFIX SF40-8-610C



STATIONARY BOUNDARY FRAME FOR OPENING WITH THREE SPIRAFIX SF40-8-610C



TYPICAL S119 1.8m BULKHEAD FRAME WITH Ø20 STAKES

NOTES:
1. REMOVAL TOOL REQUIRED FOR SPIRAFIX ANCHORS, M12 SPANNER/SOCKET, HANDLE LENGTH TO SUIT CONDITIONS.

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DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE
S119-ENG-ST-ASY-0001	OPEN BULKHEAD FRAME 1.8m GENERAL ARRANGEMENT
S119-ENG-ST-ASY-0002	STATIONARY BOUNDARY FRAME 1.8m GENERAL ARRANGEMENT
S119-ENG-ST-ASY-0003	REMOVABLE ACCESS FRAME 1.8m GENERAL ARRANGEMENT
S119-ENG-ST-ASY-0004	TYPICAL FRAME ASSEMBLY GENERAL ARRANGEMENT
S119-ENG-ST-ASY-0005	TYPICAL ACCESS FRAME ASSEMBLY GENERAL ARRANGEMENT
S000-ENG-CI-STD-0002	SITE ACCESS ROADS TYP SECTIONS AND DETAILS

REV	DATE	REVISIONS	BY	CHK'D	APP'D
4	23.07.2019	ACCESS FRAME LOCATION MODIFIED	SCR	BC	NH
3	07.02.2019	FUMIGATION T-PIECE, NOTES & DM ADDED	SCR	BC	NH
2	11.12.2018	HOLD ADDED TO BREEZEWAY DRG	AME	NH	NH
1	26.10.2018	ADDED FUMIGATION TEES AND BREEZEWAYS	CF	MR	NH
0	20.09.2018	ISSUED FOR USE	CF	MR	NH

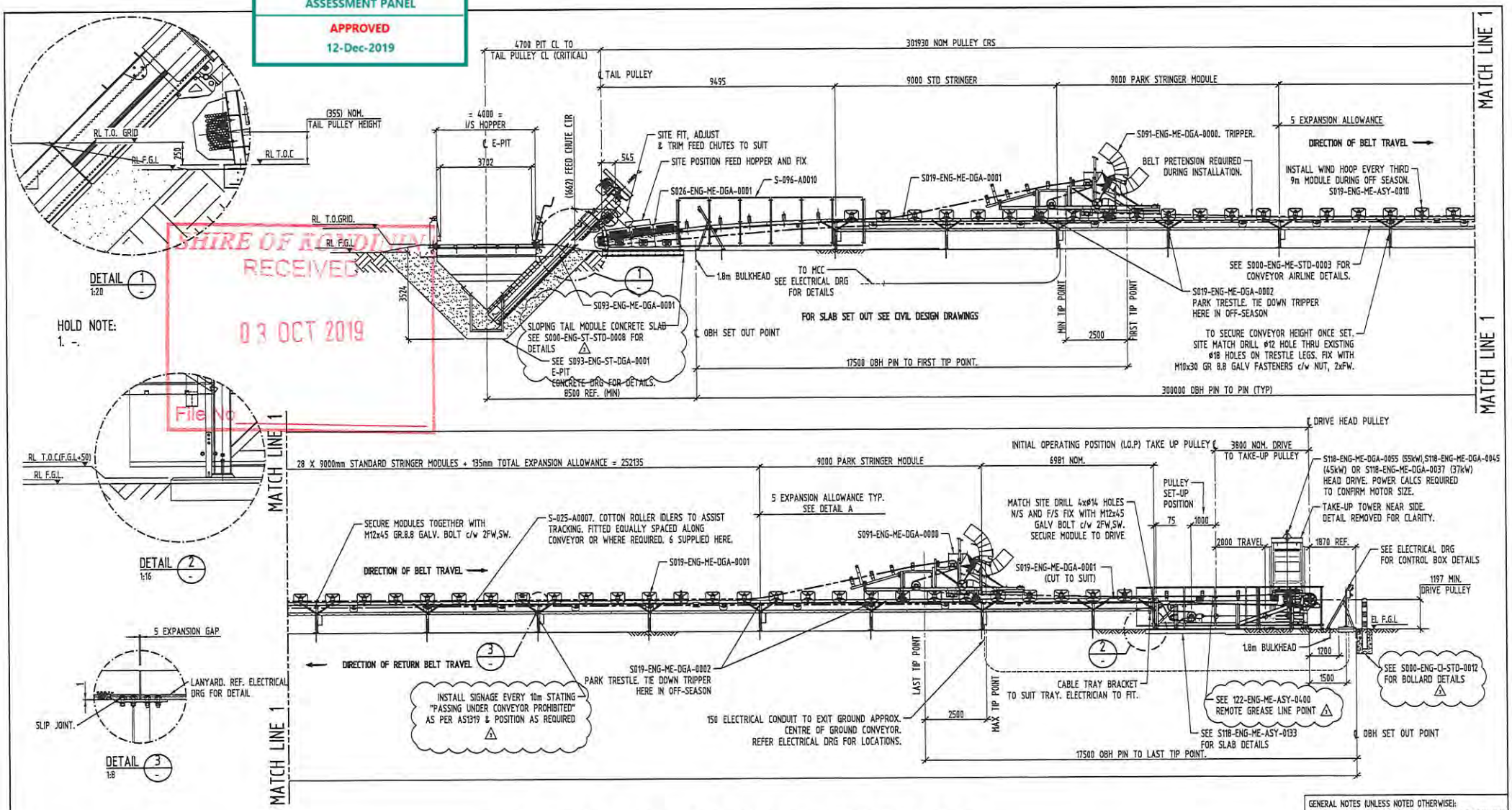
SCALE: AS SHOWN
NORTH POINT

DESIGNED	MR	20.09.2018
DES. CHECK	MR	20.09.2018
DRAWN	CF	20.09.2018
CHECKED	MR	20.09.2018
APPROVED	NH	20.09.2018

DRAWING TITLE
1.8m OPEN BULKHEAD
BULKHEAD ACCESSWAY OPENING
GENERAL ARRANGEMENT

SITE: VARIOUS
SHEET SIZE: A1
PROJECT: TYPICAL 1.8m BULKHEAD
DRAWING NO: S119-ENG-ST-DGA-0001
REV: 4

DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019



NOTE
ALL CONVEYOR TAKE UP MASS AND POWER REQUIREMENTS TO BE A SITE SPECIFIC CALCULATION WITH CONSIDERATIONS FOR CIVIL DESIGN R.I.'S.

ADDITONAL EQUIPMENT TO CONSIDER

- BFT SQUARE STORAGE CUBE, RWT-NMD-HS267-001.
- COMPRESSOR-INGERSOL RAND TYPE 30 COMPRESSOR 2475C7-8, 5.5kW 21CFM C/W 230L AIR RECEIVER.

BELT LENGTH CALCULATION TO BE CARRIED OUT PRIOR TO ORDERING

ELEVATION TYPICAL CLS GROUND CONVEYOR TO SUIT 300m 1.8m BULKHEAD C/W SLOPING TAIL FEED ON

CONVEYOR BELT	
SPEED	3.9 m/s
WIDTH	900 mm
DESIGNATION 900mm 3EP200 3mm x 1.5mm	
RATING RUN/START	- kN
TAPE LENGTH 617m + 3m SPLICE = 620m m	
THICKNESS	9.1mm±0.2 mm
TOP COVER/BOTTOM COVER	3/1.5 mm
COVER GRADE EM0R-0Z, AS1332:2010, MOULD EDGE	
MASS	9.75 kg/m

CONVEYOR DATA	
CAPACITY	500 tph
CAPACITY MAX. FUTURE	- tph
LIFT (EFFECTIVE)	- m
WEIGHT REQ'D FOR G.T.U. TO BE CALCULATED	kg
MATERIAL	WHEAT
BULK DENSITY	770 kg/m³
SURCHARGE ANGLE	10 °
POWER DEMAND	TO BE CALCULATED kW
POWER INSTALLED	55, 45 OR 37 kW

DRIVE CONFIGURATION	
MOTOR:	TECO MAXe3 DTS/H184SDD4R-Extd
- POWER	55 kW
- SPEED	1485 rpm
- FRAME	258SC-V
DRIVE PULLEY:	ø538 mm
GEARBOX:	BONFIG-A093 UH98 PZ50-71 18.5 B3 TA

DRIVE CONFIGURATION	
MOTOR:	TECO MAXe3 DTS/H184SDD4R-Extd
- POWER	45 kW
- SPEED	1480 rpm
- FRAME	225SC-V
DRIVE PULLEY:	ø530 mm
GEARBOX:	BONFIG-A093 UH98 PZ25 18.7 B3 TA

DRIVE CONFIGURATION	
MOTOR:	TECO MAXe3 DTS/H183700D4R-Extd
- POWER	37 kW
- SPEED	1480 rpm
- FRAME	225SC-V
DRIVE PULLEY:	ø530 mm
GEARBOX:	BONFIG-A093 UH98 PZ25 18.7 B3 TA

GENERAL NOTES (UNLESS NOTED OTHERWISE):
1. ALL STEELWORKS, WELDING & FABRICATION TO CONFORM WITH AS1554 CAT SP.
2. REMOVE ALL BURRS & SHARP EDGES.
3. ASSEMBLY TO BE CONTINUOUS FULLY WELDED WITH MINIMUM 3mm FILLET FOR 3mm PLATE
   6mm FILLET FOR 4mm TO <12mm PLATE
   8mm FILLET FOR 12mm TO <20mm PLATE
   10mm FILLET FOR 20mm TO <32mm PLATE
4. ALL FASTENERS TO BE GR.8.8 GALV.
5. ALL STEEL PLATE & SHEET TO BE MIN. GR.250
6. ALL STRUCTURAL STEEL TO BE MIN. GR.300
7. ALL GALVANISED STEEL TO BE IN ACCORDANCE WITH AS1397 AND OF GRADE G22275 OR EQUIV.

CBH GROUP HEAD OFFICE
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WEST PERTH
W.A. 6005
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FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE
-	-

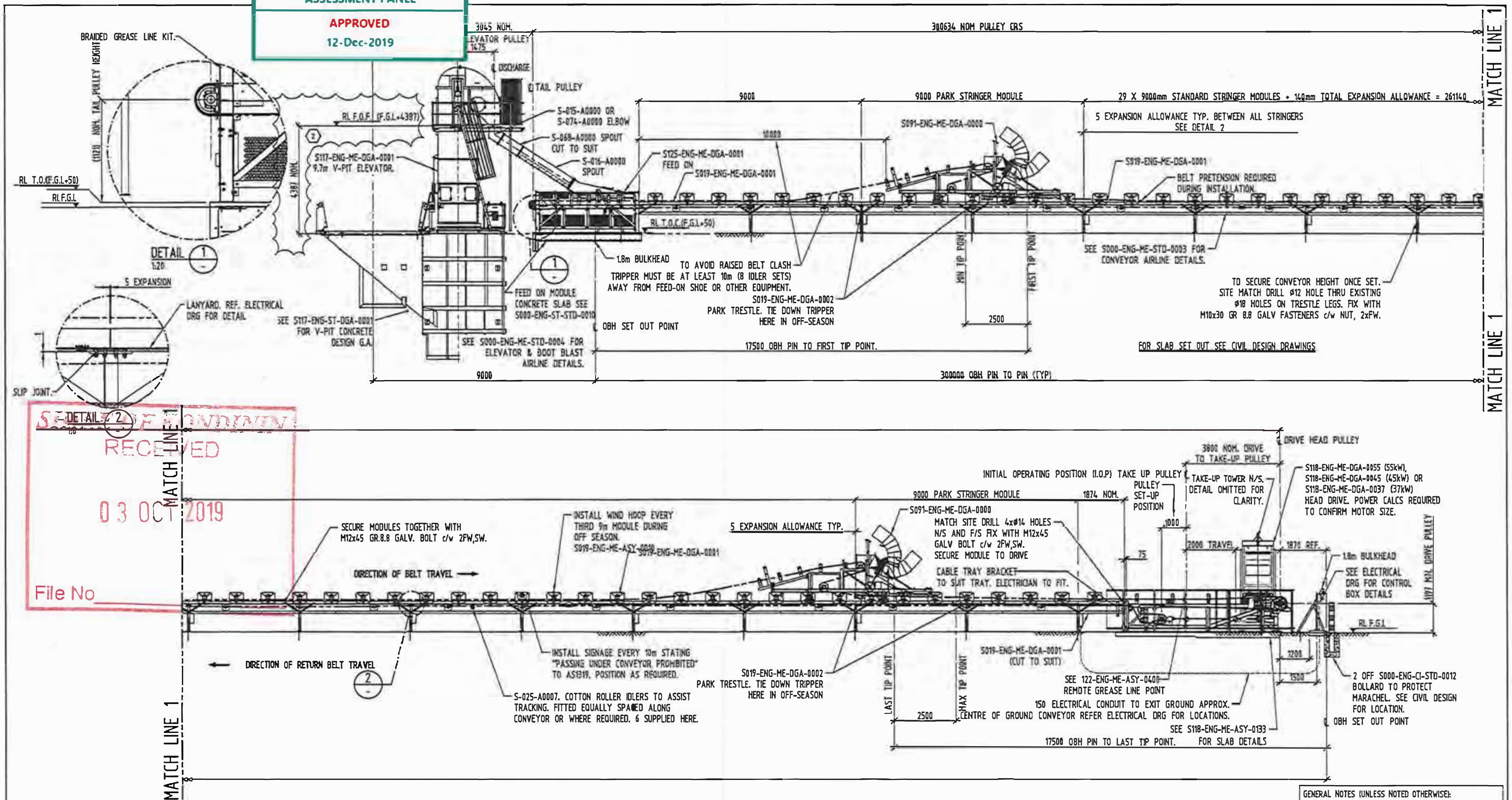
REV	DATE	REVISIONS	BY	CHK'D	APP'D
3	31.07.2019	SIGNAGE, REMOTE GREASE POINTS & BOLLARDS ADDED	SCR	AME	PJC
2	27.12.2018	AUGER PIT REFERENCE CHANGED,BOLLARDS REMOVED	AME	SCR	PJC
1	16.11.2018	PARK TRESTLE MOVED 9m AWAY FROM FEED ON	AME	PJC	NH
0	07.11.18	ISSUED FOR USE	AME	PJC	NH

SCALE NTS

DESIGNED	VP	25.06.2018
DES. CHECK	P.J.C	07.11.18
DRAWN	VP	25.06.2018
CHECKED	P.J.C	07.11.18
APPROVED	NH	07.11.18

DRAWING TITLE
TYPICAL DRAWING
BELT CONVEYOR 900W BELT CLS 300M OBH
ø400 AUGER E-PIT C/W HEAD DRIVE
GENERAL ARRANGEMENT

SITE	VARIOUS
SHEET SIZE	A1
PROJECT	STANDARD
DRAWING NO	S000-ENG-ME-STD-0002
REV.	3



ELEVATION TYPICAL CLS GROUND CONVEYOR TO SUIT 300m 1.8m BULKHEAD C/W FEED ON MODULE

NOTE
ALL CONVEYOR TAKE UP MASS AND POWER REQUIREMENTS TO BE A SITE SPECIFIC CALCULATION WITH CONSIDERATIONS FOR CIVIL DESIGN R.L'S.

ADDITONAL EQUIPMENT TO CONSIDER

- BFT SQUARE STORAGE CUBE, RWT-NMD-HS267-001.
- COMPRESSOR-INGERSOL RAND TYPE 30 COMPRESSOR 2475C7-8, 5.5kW 21CFM C/W 230L AIR RECEIVER.

HOLD NOTE:
1. -
2. NEW HEIGHT & RL T.B.C (PLANNED 150mm INCREASE)

BELT LENGTH CALCULATION TO BE CARRIED OUT PRIOR TO ORDERING

CONVEYOR BELT	
SPEED	3.9 m/s
WIDTH	900 mm
DESIGNATION	900mm 3EP200 3mm x 1.5mm
RATING RUN/START	- kN
TAPE LENGTH	615m + 3m SPLICE = 618m
THICKNESS	8.1±0.2 mm
TOP COVER/BOTTOM COVER	3/1.5 mm
COVER GRADE EMOR+OZ AS1332.2000,MOULD EDGE	
MASS	9.75 kg/m

CONVEYOR DATA	
CAPACITY	580 tph
CAPACITY MAX. FUTURE	- tph
LIFT (EFFECTIVE)	- m
WEIGHT REQ'D FOR G.T.U.	TO BE CALCULATED kg
MATERIAL	WHEAT
BULK DENSITY	770 kg/m³
SURCHARGE ANGLE	10 °
POWER DEMAND	TO BE CALCULATED kW
POWER INSTALLED	55, 45 OR 37 kW

DRIVE CONFIGURATION	
MOTOR:	TECO MAXe3 015/H0055D04R-Extd
- POWER	55 kW
- SPEED	1485 rpm
- FRAME	250SC-V
DRIVE PULLEY:	ø530 mm
GEARBOX:	BONFIG-A903 UH90 P250-78 10.5 B3 TA

DRIVE CONFIGURATION	
MOTOR:	TECO MAXe3 015/H0045D04R-Extd
- POWER	45 kW
- SPEED	1480 rpm
- FRAME	225MC-V
DRIVE PULLEY:	ø530 mm
GEARBOX:	BONFIG-A803 UH90 P225 10.7 B3 TA

DRIVE CONFIGURATION	
MOTOR:	TECO MAXe3 015/H0037D04R-Extd
- POWER	37 kW
- SPEED	1480 rpm
- FRAME	225SC-V
DRIVE PULLEY:	ø530 mm
GEARBOX:	BONFIG-A803 UH90 P225 10.7 B3 TA

GENERAL NOTES (UNLESS NOTED OTHERWISE):
1. ALL STEELWORKS, WELDING & FABRICATION TO CONFORM WITH AS1554 CAT SP.
2. REMOVE ALL BURRS & SHARP EDGES.
3. ASSEMBLY TO BE CONTINUOUS FULLY WELDED WITH MINIMUM 3mm FILLET FOR 3mm PLATE
   6mm FILLET FOR 4mm TO <12mm PLATE
   8mm FILLET FOR 12mm TO <20mm PLATE
   10mm FILLET FOR 20mm TO <32mm PLATE
4. ALL FASTENERS TO BE GR.8.8 GALV.
5. ALL STEEL PLATE & SHEET TO BE MIN. GR.250
6. ALL STRUCTURAL STEEL TO BE MIN. GR.300
7. ALL GALVANISED STEEL SHEET TO AS1397 AND OF GRADE G2Z275 OR EQUIV. ALL H.D GALVANISED FERROUS ARTICLES TO AS/NZS4680

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DO NOT SCALE FROM THIS DRAWING

REV	DATE	REVISIONS	BY	CHK'D	APP'D
0	18.04.2019	ISSUED FOR USE	AME	SCR	PJC
A	25.06.2018	COPIED FROM STD-999-0005 ISSUED FOR APPROVAL	VP	PJC	NH

REF DRG No. | REFERENCE DRAWING TITLE

SCALE NTS
NORTH POINT

DESIGNED	VP	25.06.2018
DES. CHECK	PJC	-
DRAWN	VP	25.06.2018
CHECKED	PJC	-
APPROVED	NH	-

DRAWING TITLE
TYPICAL DRAWING
BELT CONVEYOR 900W BELT CLS 300M OBH 9.7m V-PIT ELEVATOR C/W HEAD DRIVE GENERAL ARRANGEMENT

SITE: VARIOUS
SHEET SIZE: A1
PROJECT: STANDARD
DRAWING No: S000-ENG-ME-STD-0006
REV: 0

ROADSWEST
ENGINEERING GROUP PTY LTD
Civil Engineering Consultancy & Project Management

TRAFFIC IMPACT ASSESSMENT

CBH HYDEN GRAIN RECEIVAL FACILITY

EXPANSION & SITE UPGRADE

SHIRE OF KONDININ

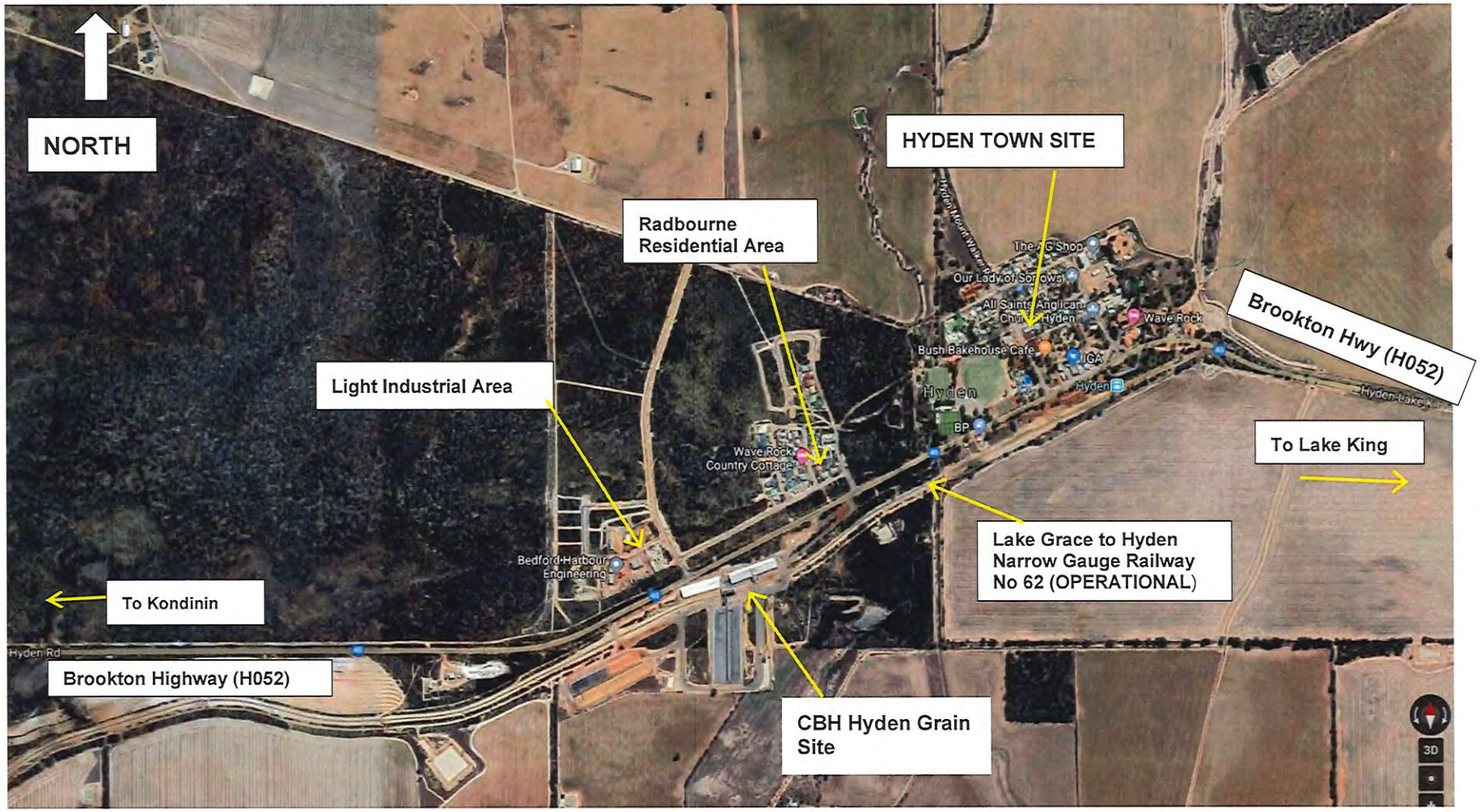
Revision Status Record

Revision Number	Description	Date Issued	Prepared By	Authorised By
0	Issued to Client	18/2/19	T SARAULLO	T SARAULLO
1	Issued to Client	3/7/19	T SARAULLO	T SARAULLO
2	Report modified to include drawings 571-ENG-CI-DCO-0007-E & 0009-A	15/11/19	E FRIIS	T SARAULLO

DEVELOPMENT
ASSESSMENT PANEL
APPROVED
12-Dec-2019

TABLE OF CONTENTS

1 Locality Plan



NOT TO SCALE

2 Background

2.1 General

This report outlines the methodology adopted and criteria used to undertake a traffic impact assessment associated with a proposal to increase the grain storage capacity at CBH's Grain Receival Site in Hyden.

The location of CBH property in relation to the adjacent roads within the Shire of Kondinin, is shown in Section 1 Locality Plan.

This traffic impact assessment report is required to provide the Shire of Kondinin, the WA Department of Planning and the Main Roads of Western Australia, with sufficient information so that CBH can obtain formal planning approval and to proceed with the detailed planning and construction phases of this project.

Figure 1 shows the location of the CBH property in the town of Hyden and access to the adjacent road network.

The additional grain storage capacity is required as part of CBH's 2019 – Hyden Expansion and Enhancement Site Upgrade, part of their state-wide initiative to improve efficiencies at primary grain receival sites.

2.2 Site Inspection

A site inspection of the CBH property and adjacent roads was undertaken by Mr Tony Saraullo Senior Project Manager for Roadswest Engineering Group Pty Ltd, on 5th February 2019.

Figure 1. Location of existing CBH property accesses and the proposed area for additional grain storage.

3 Description of the Development

In summary the development application is proposing to upgrade the property to include:

- Widening and bitumen sealing, the truck marshalling area including interconnected internal road.
- Shorten two existing open bulkheads (OBH's)
- Four OBH's with a total capacity of 148,200 tonnes on sealed pads covered with tarpaulins when filled with grain
- Two hopper pits and ground conveyors in between the OBH's
- Pad for future generator and compressor
- Remove an existing weighbridge and construct a new weighbridge and hut
- Interconnected stormwater drainage

The upgrade will allow an additional 136,600 tonnes of grain storage capacity in the medium to long term.

A site plan of the proposed additional storage bulkheads, hardstand and internal road modifications, is shown on CBH Drawings No. 571-ENG-CI-DCO-0007_E and No. 571-ENG-CI-DCO-0009_A.

Refer APPENDIX 1.

4 Existing Operational Conditions

4.1 Affected roads

Brookton Hwy (H052) is the only road that has direct access to the CBH grain facility. Brookton Hwy is a state highway and is controlled and maintained by the Main Roads of Western Australia and as such any proposed development impacting on this road and within their road reserve will require planning, designing and constructing in accordance with their standards and guidelines.

Meeking Court is a local road controlled by the Shire of Kondinin that accesses the Hyden Light Industrial Area. This road will not be affected by the CBH upgrade proposal.

Radbourne Drive is a local road that accesses a residential area and is located adjacent to the existing CBH entry only driveway. From observations on site, it appears the separation of the intersections does not impact on the heavy vehicle turning into CBH.

CBH operate and maintain an existing internal road system for use by all heavy and light vehicles that access their property .Refer to Figure 1

4.2 Restricted Access Vehicles (RAV) Network

Brookton Hwy designated by Main Roads of Western Australia (MRWA) as RAV 7 road network. RAV 7 can accommodate prime mover and trailer combinations up to a maximum length of 36.5m and up to a maximum gross mass of 107.5 tonnes. Refer to Figure 2

Cartage contractors and hauliers that access the CBH use a variety of combinations of truck- trailer/s configurations and a number operate under mass permit conditions.

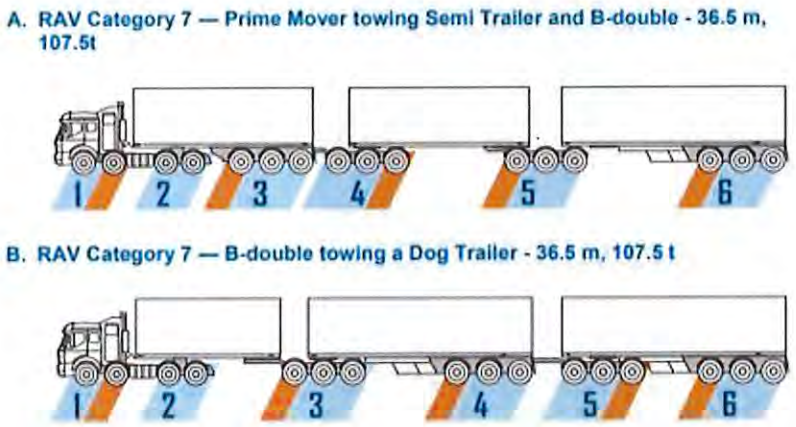


Figure 2 – Demonstrates 2 typical vehicle combinations that are used on the MRWA RAV 7 road network.

4.3 Existing Accesses

4.3.1 Entry Only Access off Brookton Hwy

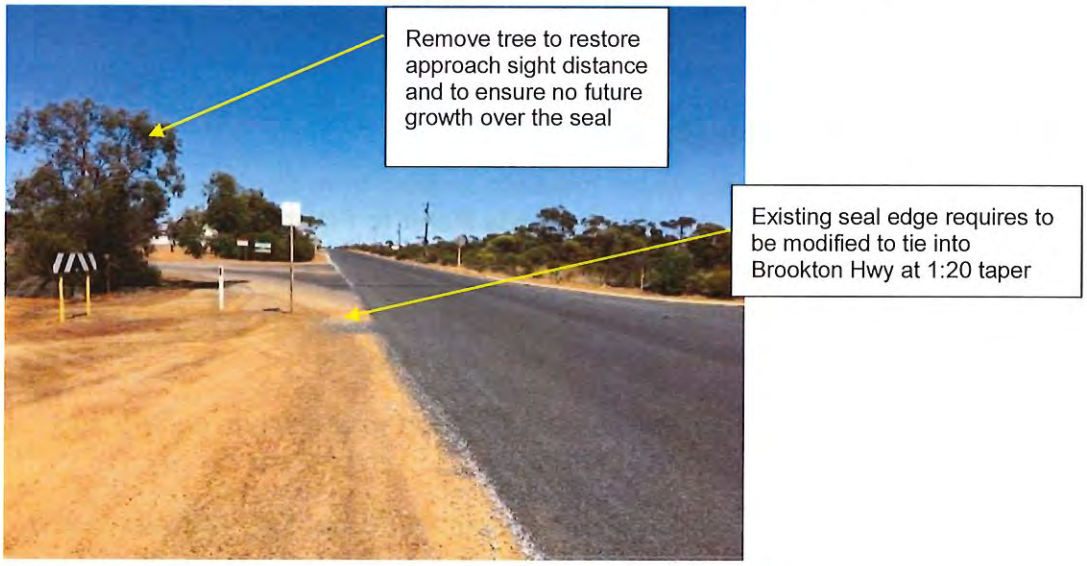
There is a main entrance driveway which provides access from Brookton Hwy into the CBH property and connects into internal roads Refer to Figure 1 and Photographs 1-2

This access is 13.0m wide at the property boundary and is deemed adequate to cater for RAV 7 heavy vehicles turning Right IN and Left IN movements.

The existing driveway seal edge on the eastern side currently finishes square and there is no approach taper. Refer Photograph 2

In addition some overhanging tree branches obscure the forward sight distance and a faded "ENTRY ONLY" sign requires to be replaced and relocated away from the seal edge. Refer Photograph 3

Photograph 1 View east– Main ENTRY ONLY driveway to CBH



Photograph 2 View west– Main ENTRY ONLY driveway to CBH

Photograph 3 View west– Main ENTRY ONLY driveway to CBH

4.3.2 Exit Only Access into Brookton Street

This an existing EXIT ONLY driveway used by all heavy vehicles exiting from the CBH Hyden Site. This access is 17.8m wide at the property boundary. The left Out and Left In movement onto Brookton Hwy for RAV 7 vehicles is assessed as having adequate width. Refer to Appendix 2 for heavy vehicle wheel path assessment.

Photograph 4 View West existing EXIT only driveway

Photograph 5 View east along Brookton Hwy -Exit only driveway to the left

4.3.3 Exit/ Entry Access Brookton Hwy

There is an existing access road off Brookton Hwy located 280m west of Meeking Court intersection. This access is currently used by CBH as a western entry and exit. The road is not gazetted and it crosses the railway line to access CBH property.

This access is planned to be removed as part of the upgrade proposal, to better control the heavy vehicle traffic control around the CBH facility. In addition the current location along the Brookton Highway is within a 110Km/hr speed zone and located at the end of a horizontal curve. Together presents a high risk of conflicts to the road user.

Photograph 6 View West along Brookton Hwy , showing ENTRY/EXIT driveway on left

Photograph 7 View south from Brookton Hwy –showing an existing ENTRY/EXIT driveway and railway crossing. Both railway and driveway to be **closed** as part of the CBH grain storage expansion proposal

Refer to the Locality Plan and Figure 1 showing the external road network system, in the vicinity of CBH Grain facility.

Adjacent Road intersections will not be affected by the proposed development.

4.4 Traffic Data –Affected Roads

Refer to Figure 3 for detailed information on existing roads that will be affected by the proposal.

Item	*Description*	***Brookton Highway (Marshall St)***
1	Hierarchy of Road and Road No	H052 Main Road MRWA Network State Highway_Rural
2	Function and purpose	Important east west inter regional route linking connector road between Perth Metropolitan Area and th south eastern wheat belt, used by heavy vehicles to transport grain, stock, fertilizer and general freight. Also an important link for tourists accessing Wave Rock at Hyden and the Great Southern coastline to Esperance via Lake King and Ravensthorpe
3	Width of Existing Seal	Nominally 8.6m seal over 10.0m wide formation
4	MRWA Restricted Access Vehicle route (RAV)	Up to RAV7 36.5m long Tandem Drive N7.3 Up to Tri Drive TD4.3 up to 107.5tonne with conditions
5	Speed Zones within the study area	80Km/Hr
6	Average Daily Traffic (ADT) Refer to APPENDIX 3 for detailed MRWA traffic count data obtained from their Road Information Branch on 31st January 2019	Count Stn No 6112 along Brookton Hwy at SLK 309.36, 1.8Km west of CBH exit driveway 1/7/2018 to 25/11/2016 (22 week count)= 580vpd
7	Composition of Traffic	25.7% Heavy Vehicles Classes 3 to 12
8	Estimate for Traffic Growth	No history data accessible however estimated to grow by 2% incrementally from 2018 to 2023

Figure 3 – Affected Roads -Traffic data and other features

4.5 Traffic Data – Additional Traffic

In order to assess the impact on the external road network and for the purposes of this report, the following criteria has being used in the calculation of the additional traffic:

- Typical vehicle used for inbound haulage task is carting a 35 tonne load.
- The additional storage units will be full, after 3 months during the notional harvest period Mid October to Mid-January
- Grain out loading via road, during non-harvest periods is assumed to be minimal due to the active status of the rail way, however for purposes of this assessment it was assumed to be 20% of the total storage capacity
- For the purposes of this assessment the calculated Annual Daily Traffic (ADT) covering the harvest period will be adopted.
- Specific out loading tasks using road trains, during the non-harvest period of the year, is anticipated to generate a lower ADT than harvest period cartage
- The ADT for the additional traffic in and out of CBH as a result of this proposal, has being calculated as 72 vehicles per day (VPD)

CBH Grain Receival Facility Hyden
Traffic Data collected by during Harvest Periods for 2015 to 2019

Source: CBH Operations Branch February 2019

Harvest Year	2015	2016	2017	2018	2019	Average over 5 years
Period of Traffic Data collection	17/10/14 to 7/01/15	22/10/15 to 5/01/16	27/10/16 to 13/01/17	30/10/17 to 8/01/18	5/11/18 to 14/01/19	
No of days in the period	83	75	78	70	71	75.4
Total Tonnes carted IN	95115.46	84249.26	94749.16	139598.68	119560.47	106654.6
Total Number of heavy vehicles entered	2773	2389	2764	3854	3366	3029.2
ADT based on No of vehicles (includes empty OUT)	67	64	71	110	95	81.3
ADT based on tonnes carted 35Tonne payload	65	64	69	114	96	81.9

TABLE 1 CBH Operations Branch – Summary of grain and truck count data compiled during last 5 year harvest periods at CBH Hyden.

TABLE 2 demonstrates the existing and forecast traffic volumes for the adjacent road network.

4.6 Forecast Traffic Analysis

Vehicle Description	EXISTING Traffic Brookton Hwy ADT *	FORECAST TRAFFIC Brookton Hwy ADT **	FORECAST TRAFFIC for Additional Storage ADT	TOTAL FORECAST TRAFFIC on Brookton Hwy after CBH Expansion in place ADT
Heavy Vehicles Classes 3 to 12	149	161	72	233
Light Vehicles Classes 1 to 2	431	466	4	470
TOTAL	580	627	76	703

TABLE 2: Existing traffic data and forecast growth

Legend

ADT = Average Daily Traffic

* Traffic count data extracted from MRWA Road Information System March 2016 (Refer APPENDIX 3 for detailed traffic count reports)

** Based on a compound growth rate of 2% over 5 years

4.7 Accident Data

Investigations into MRWA's crash information database reveal that from the 1st January 2013 to 31st December 2017 there was no recorded crash incidents on Brookton Hwy in the vicinity of the CBH entry and Exit driveways.

The closest recorded accident location was 2.9Km west of the CBH entry involving a single vehicle running of the road verge and hitting a tree. There was no injures but property damage was rated as "major"

Refer to Appendix 4 for detailed crash data report extracted from MRWA

4.8 Existing Speed Zones

The speed zone along Brookton Hwy at the CBH Entry and Exit driveways is posted at 80Km/Hr

The speed zone decreases to 50Km/Hr 300m to the east from the CBH Entry driveway eastbound approach to Hyden

The 110Km/hr/80Km/hr speed zone change is located 375m west from the CBH entry driveway

CBH Internal Road is zoned at 20Km/Hr and reduces to 5Km/Hr within the grain unloading and weighbridge areas.

4.9 Existing Pedestrian Movements

There are no pedestrian facilities footpaths or tracks along Brookton Hwy in the vicinity of the Entry and Exit points.

4.10 Existing Road Deficiencies

4.10.1 Bituminous seal surfaces

Observations made during the site inspection, show that the existing sealed pavement surfaces are in a stable condition and are robust sufficiently to accommodate for the proposed increased heavy vehicle traffic.

4.10.2 Road Shoulders

It was noted that width of the unsealed road shoulders along Brookton Hwy varied from 0.6m to 0.8m however the sealed width is nominally 8.6m to 8.8m which is adequate for the future traffic

The westbound approach to the entry driveway requires to be better delineated by removing the square cut off seal edge and installing a 1:20 taper onto the Brookton Hwy seal edge. Refer to Photograph No 2 and 3

In addition the overhanging branches at this entry requires to be removed to restore the forward sight distance.

4.10.3 Road Signage

1) The "NO ENTRY "sign at the EXIT driveway, are small and does not warn traffic sufficiently in advance. This sign should be replaced with a larger sign "B" size and oriented better for approaching heavy vehicles.

2) The existing advance warning trucks ahead signs, for both the entry and exit driveways do not reflect that road trains configurations use the entry/exit. See pictures below

With the increased traffic volumes of road train traffic, more emphasis should be placed on a larger warning sign with a road train configuration such as shown in the pictures below. Refer to Appendix 5 demonstrates the fabrication size and specification for the manufacture of these signs.

4.10.4 Heavy Vehicle turning movements

The turning swept paths for a typical RAV 7 network heavy vehicle combination was superimposed onto the Entry and Exit driveways and confirmed that there is sufficient existing seal width, to accommodate the 36.5m B-Triple Road Train Refer to APPENDIX 2 that shows turning paths.

5 Planned Operational Conditions

5.1 Development Opening Time

The CBH grain handling operations including the proposed additional inbound and out loading operations resulting from the new open bulkhead storage areas, is planned to be carried out 5 days per week generally throughout the year and 7 days a week during harvest period (October to February)

6 Recommendations and Conclusions

After consideration of all of the development information provided, the traffic data and observations from the site inspection, the author recommends the following:

- The additional heavy vehicle traffic forecasted to be generated due to the additional grain storage bulkheads is assessed as **not** having a significant impact on Brookton Hwy, and the immediate adjacent road network.

- The existing CBH accesses onto Brookton Hwy, have adequate width and capacity to accommodate for the additional heavy vehicles generated by the planned grain storage expansion.

- The existing bitumen sealed surfaces at the ENTRY and EXIT accesses and on the Brookton Hwy, are rated as in good condition.

- The existing Entry/ Exit access road off Brookton Hwy located 280m west of Meeking Court intersection, is required to be closed and forms part of the scope of works for the CBH Hyden Expansion Project.

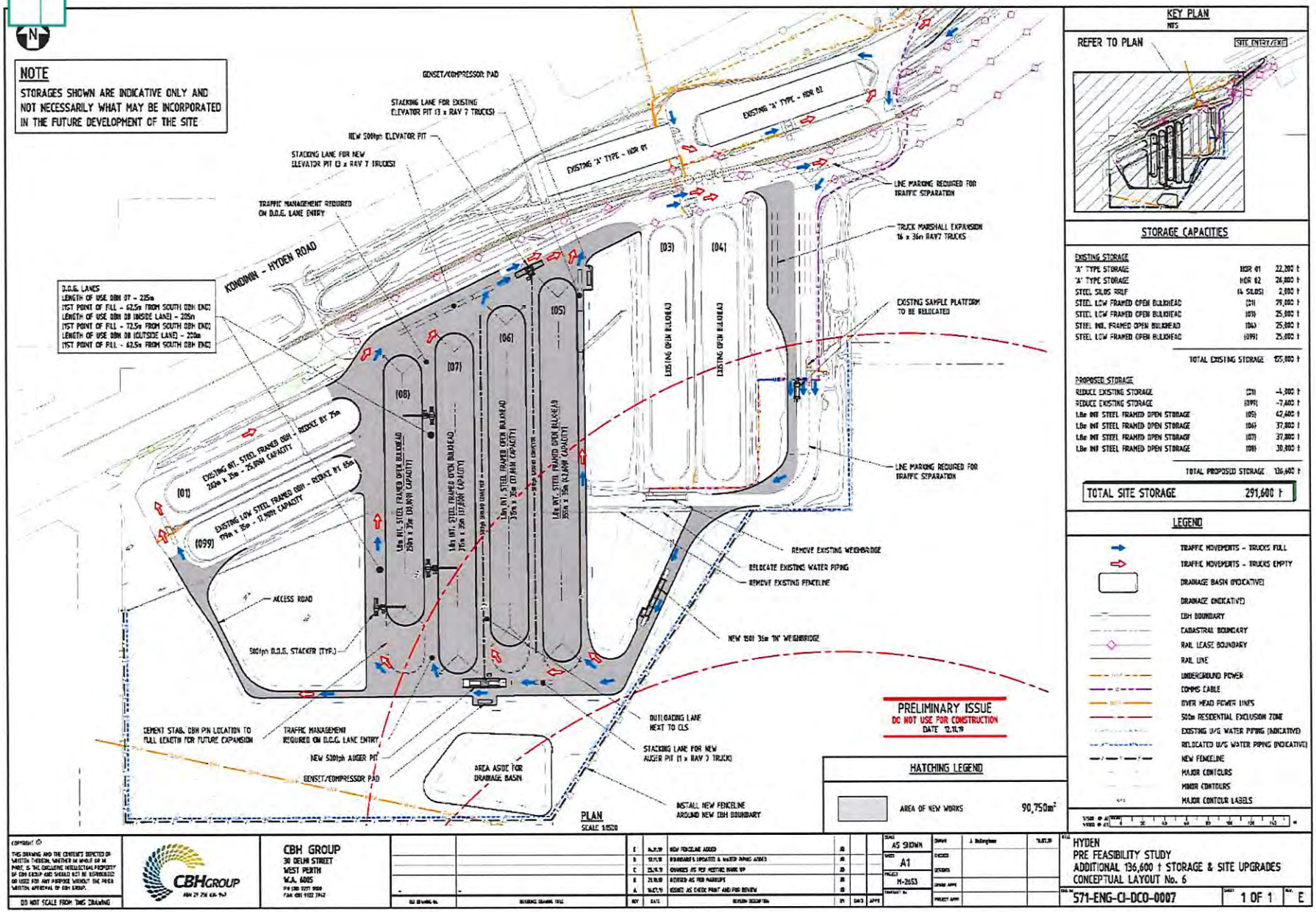
- The existing advance warning truck ahead signs on Brookton Hwy, for both the entry and exit driveways do not depict the actual road train configurations that will use the entry and exit driveways. Recommend to remove the existing single post warning signs and installation of new 2 post signs as shown in the drawing at APPENDIX 5 of this report, for each of the eastbound and westbound traffic directions.

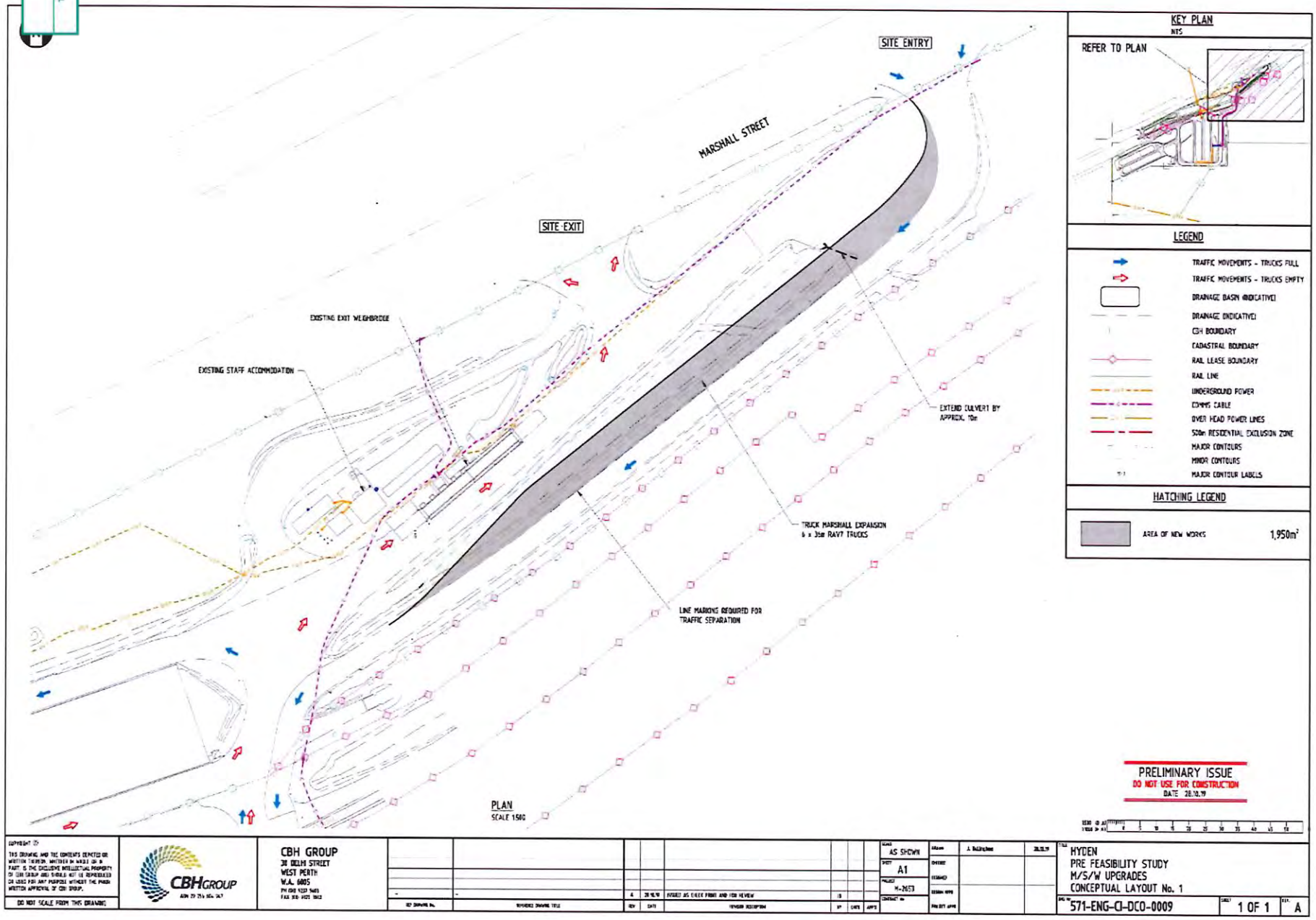
- The westbound approach to the CBH entry driveway requires to be better delineated by removing the square cut off seal edge and installing a 1:20 taper onto the Brookton Hwy seal edge. Refer to Photograph No 3. In addition overhanging tree branches should be lopped back to a minimum of 4m from the seal edge to restore the required Entering Sight Distance.

END

APPENDIX 1

Concept Plan of the proposed additional grain storage area





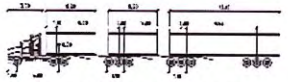
APPENDIX 2

Road Train wheel turn paths -Exit and Entry Driveways

EXISTING TURN MOVEMENTS

PLAN

N.T.S.



36.5m B-TRIPLE ROAD TRAIN (MRWA)

3	ISSUED FOR REVIEW	13-02-19
No.	DESCRIPTION	AMENDED & DATE
AMENDMENTS		

BASE DATA INFORMATION

SURVEY GRID: -
HEIGHT DATUM: AHD
DWG PATH:
PREPARED: SN 15-02-19
DESIGN: SN 15-02-19
VERIFIED:
APPROVED:

ROADSWEST ENGINEERING GROUP PTY LTD
PROJECT MANAGEMENT & CIVIL ENGINEERING

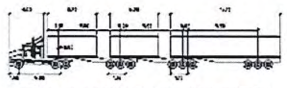
CBH HYDEN EXPANSION
0
EXISTING RAV 7 TURN MOVEMENTS
36.5m TRIPLE ROAD TRAIN

ROADSWEST ENGINEERING GROUP
JOB NUMBER: R2010-27
DRAWING NUMBER: R2010-27-SK01- A
AMEND.

SIZE: A1 N.T.S.

EXISTING TURN MOVEMENTS

PLAN
N.T.S.



36.5m B-TRIPLE ROAD TRAIN (MRWA)

SCALE N.T.S. A1

AMENDMENTS	BASE DATA INFORMATION		CBH HYDEN EXPANSION	ROADSWEST ENGINEERING GROUP
A STUDY FOR REVIEW 15-02-19	HEIGHT DATUM AHD	ROADSWEST ENGINEERING GROUP PTY LTD PROJECT MANAGEMENT & CIVIL ENGINEERING	EXISTING RAV 7 TURN MOVEMENTS 36.5m TRIPLE ROAD TRAIN	R2010-27
	DESIGNED SH 15-02-19 DRAWN DM 15-02-19			R2010-27-SK02 - A

APPENDIX 3

Existing Traffic Count Data- Brookton Hwy MRWA

mainroads WESTERN AUSTRALIA

SITE 6112

Hourly Volume

Kondinin Hyden Rd (H052)

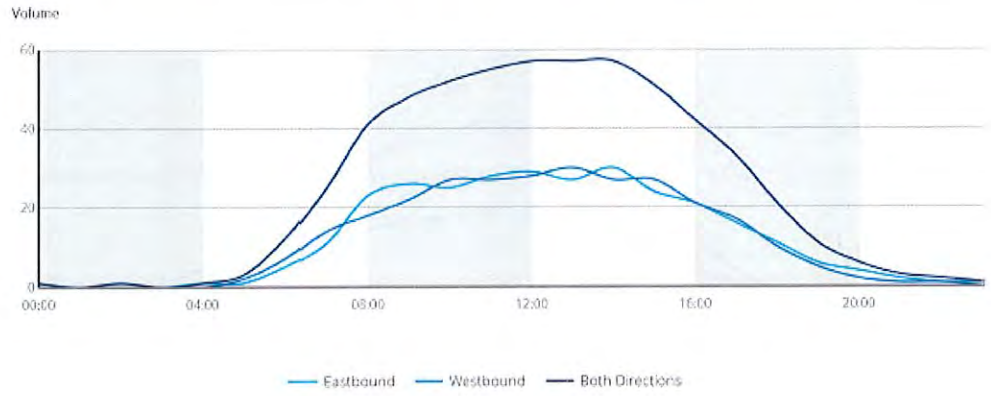
East of Worland Hill Rd (SLK 309.36)

2018/19
Monday to Friday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	1	0	1	1	0	1	100.0
01:00	0	0	0	0	0	0	0.0
02:00	0	1	1	0	1	1	100.0
03:00	0	0	0	0	0	0	0.0
04:00	1	0	1	1	0	1	100.0
05:00	1	2	3	0	0	0	0.0
06:00	5	7	12	2	1	3	25.0
07:00	11	14	25	3	4	7	28.0
08:00	23	18	41	6	4	10	24.4
09:00	26	22	48	9	5	14	29.2
10:00	25	27	52	6	8	14	26.9
11:00	28	27	55	7	7	14	25.5
12:00	29	28	57	7	7	14	24.6
13:00	27	30	57	5	9	14	24.6
14:00	30	27	57	9	7	16	28.1
15:00	24	27	51	6	9	15	29.4
16:00	21	21	42	5	6	11	26.2
17:00	16	17	33	3	3	6	18.2
18:00	11	10	21	2	2	4	19.0
19:00	6	5	11	2	1	3	27.3
20:00	4	2	6	1	0	1	16.7
21:00	2	1	3	0	0	0	0.0
22:00	1	1	2	0	0	0	0.0
23:00	1	0	1	0	0	0	0.0
TOTAL	293	287	580	75	74	149	25.7

Peak Statistics

AM	TIME	11:45	11:15	11:15	08:30	10:00	09:00
	VOL	29	29	56	9	8	14
PM	TIME	14:15	13:30	13:30	14:15	13:30	12:45
	VOL	30	35	62	9	11	17



DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019

mainroads WESTERN AUSTRALIA

SITE 6112

Hourly Volume

Kondinin Hyden Rd (H052)

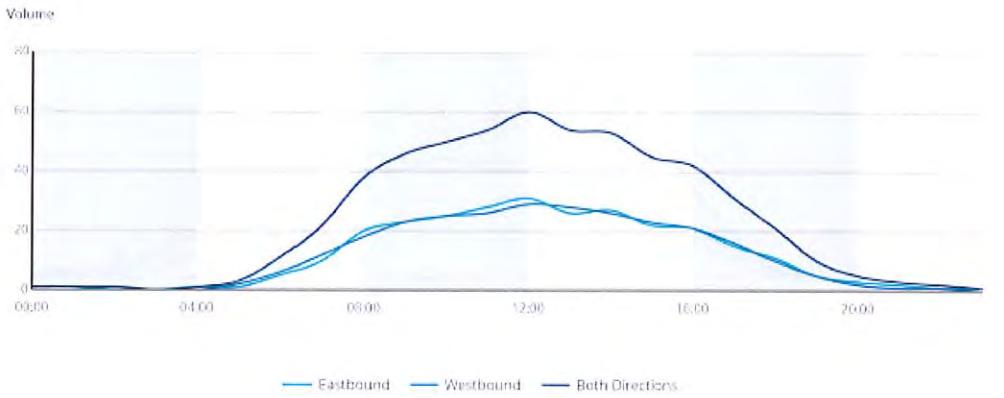
East of Worland Hill Rd (SLK 309.36)

2018/19
Monday to Sunday

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	1	0	1	1	0	1	100.0
01:00	1	0	1	1	0	1	100.0
02:00	0	1	1	0	1	1	100.0
03:00	0	0	0	0	0	0	0.0
04:00	1	0	1	1	0	1	100.0
05:00	1	2	3	0	0	0	0.0
06:00	5	6	11	2	1	3	27.3
07:00	10	12	22	3	3	6	27.3
08:00	20	18	38	5	4	9	23.7
09:00	23	23	46	7	6	13	28.3
10:00	25	25	50	6	6	12	24.0
11:00	28	26	54	6	6	12	22.2
12:00	31	29	60	7	7	14	23.3
13:00	26	28	54	5	7	12	22.2
14:00	27	26	53	6	6	12	22.6
15:00	22	23	45	4	6	10	22.2
16:00	21	21	42	5	6	11	26.2
17:00	15	16	31	3	3	6	19.4
18:00	11	10	21	2	2	4	19.0
19:00	5	5	10	1	1	2	20.0
20:00	3	2	5	0	0	0	0.0
21:00	2	1	3	0	0	0	0.0
22:00	1	1	2	0	0	0	0.0
23:00	1	0	1	0	0	0	0.0
TOTAL	280	275	555	65	65	130	23.4

Peak Statistics

AM	TIME	11:30	11:15	11:15	09:15	09:30	09:30
	VOL	31	29	59	8	8	15
PM	TIME	12:00	13:30	12:00	12:45	13:15	12:45
	VOL	31	31	60	7	9	16



DEVELOPMENT ASSESSMENT PANEL
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mainroads WESTERN AUSTRALIA

SITE 6112

Hourly Volume

2018/19
Weekend

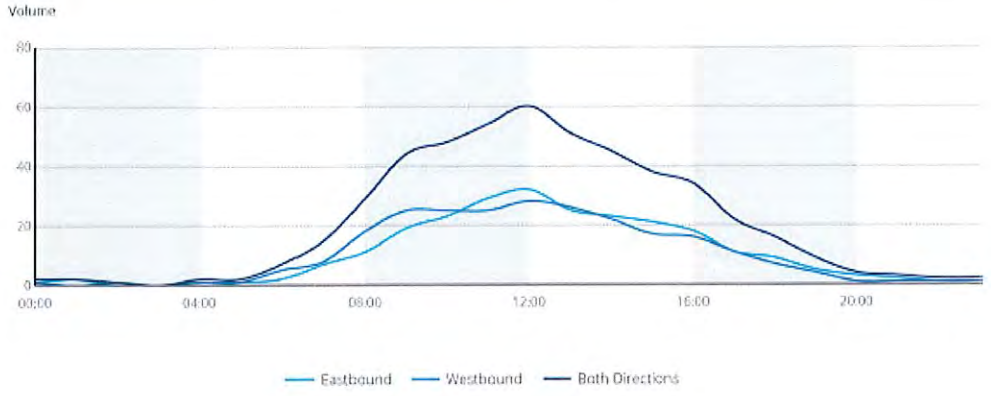
Kondinin Hyden Rd (H052)

East of Worland Hill Rd (SLK 309.36)

	All Vehicles			Heavy Vehicles			
	EB	WB	Both	EB	WB	Both	%
00:00	1	1	2	0	0	0	0.0
01:00	2	0	2	2	0	2	100.0
02:00	0	1	1	0	1	1	100.0
03:00	0	0	0	0	0	0	0.0
04:00	1	1	2	0	0	0	0.0
05:00	1	1	2	0	0	0	0.0
06:00	2	5	7	0	1	1	14.3
07:00	7	8	15	2	1	3	20.0
08:00	11	18	29	2	5	7	24.1
09:00	19	25	44	5	6	11	25.0
10:00	23	25	48	4	4	8	16.7
11:00	29	25	54	5	4	9	16.7
12:00	32	28	60	6	5	11	18.3
13:00	25	26	51	3	4	7	13.7
14:00	23	22	45	3	3	6	13.3
15:00	21	17	38	3	2	5	13.2
16:00	18	16	34	3	2	5	14.7
17:00	11	11	22	1	2	3	13.6
18:00	9	7	16	1	2	3	18.8
19:00	5	4	9	0	1	1	11.1
20:00	3	1	4	0	0	0	0.0
21:00	2	1	3	0	0	0	0.0
22:00	1	1	2	0	0	0	0.0
23:00	1	1	2	0	0	0	0.0
TOTAL	247	245	492	40	43	83	16.9

Peak Statistics

AM	TIME	11:30	09:30	11:30	11:15	09:00	11:15
	VOL	34	28	62	9	6	13
PM	TIME	12:00	12:45	12:00	12:00	12:45	12:00
	VOL	32	30	60	6	6	11



DEVELOPMENT ASSESSMENT PANEL
APPROVED
12-Dec-2019

APPENDIX 4

Detailed Crash Report – MRWA Database

Detailed Crash History

Report Criteria

Road	SLK	CWY
H052 - Brookton Hwy	309.03 to 312.25	All

Parameter	Value	Description
From Date	01/01/2013	
To Date	31/12/2017	
Crash Type	All	
Severity	All	

Road	SLK	CWY	True Dist	Loc End Date	Dist Error	Intersection	Date	Day	Time	Severity	Crash No.	Type	Light Cond	Road Cond	Speed Limit	Traffic Control	Road Feature	Road Alignment	Speed Factor	MR Nature	Location	RUM	Unit	Unit Type	From Dir	To Dir	Veh/Ped Move	First Object Hit	Second Object Hit	Third Object Hit	Target Impact Point
H052	309.39	0	305.16		0.00		25/09/2016	Sunday	1055	PDO Major	2016290102	Midblock	Daylight	Wet		No Sign Or Control		Straight		Hit Object	On Left Verge After Leaving Cway	72:Off Path On Straight: Off Left Cway Obj	Colliding	Car			Out Of Control: Gravel Shoulder	Shrub	Tree	Tree	

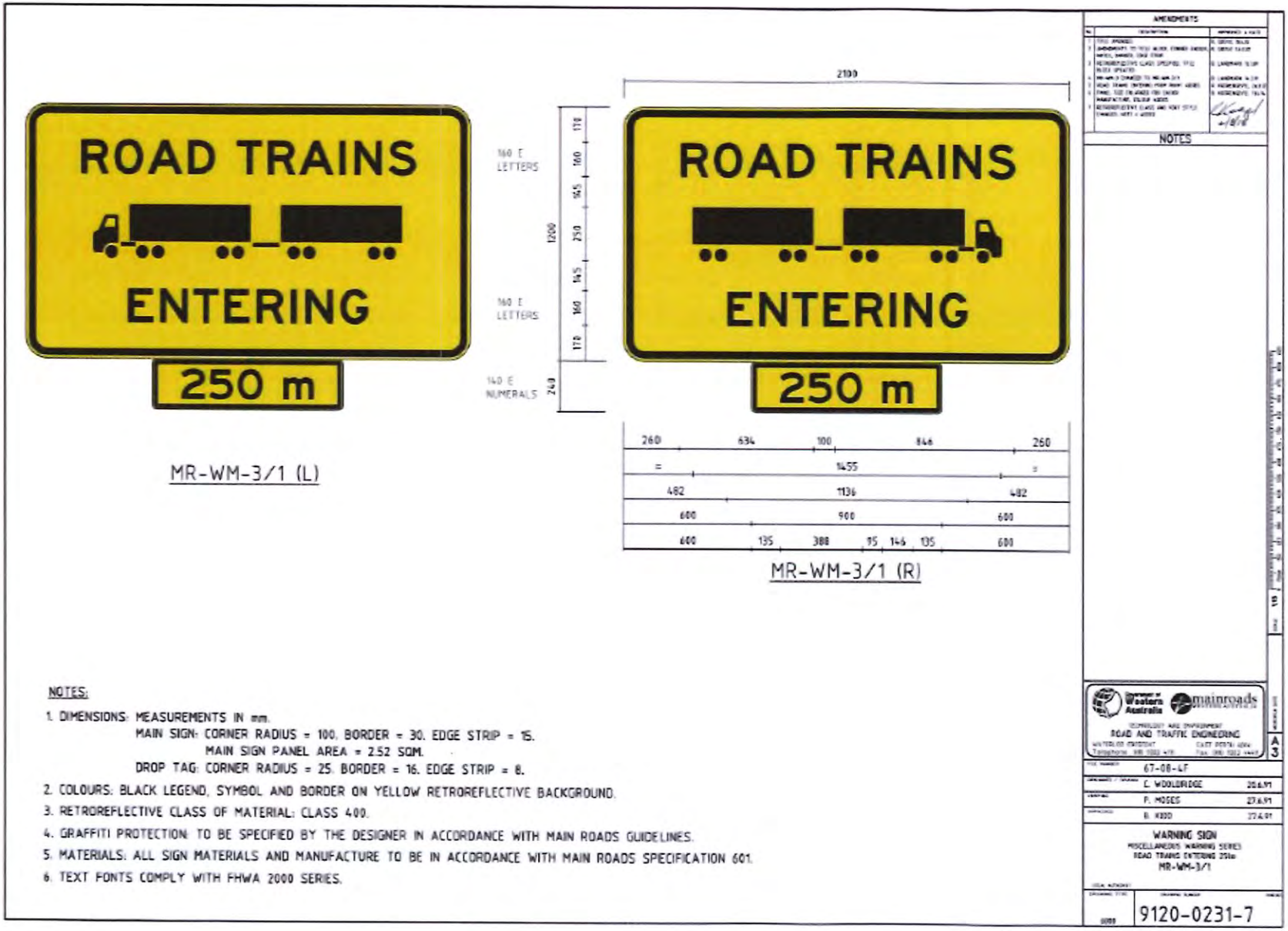
Legal Speed Limit

Road	Road Name	Start SLK	End SLK	CWY	Start True Dist	End True Dist	Speed Limit
H052	POE: 307.85 + POE GAP (0.18 KM) = 308.03						
		308.03	310.52	S	304.60	307.29	50 km/h or State Limit
		310.52	311.59	S	307.29	308.36	60
		311.59	312.46	S	308.36	309.23	50

Run on 31-Jan-2019 13:22 by Tony Saraullo Page 1 of 1 reporting.centre@mainroads.wa.gov

APPENDIX 5

Recommended Advance Warning Signage



NOTES:

1. DIMENSIONS: MEASUREMENTS IN mm.
   MAIN SIGN: CORNER RADIUS = 100, BORDER = 30, EDGE STRIP = 15.
   MAIN SIGN PANEL AREA = 2.52 SQM.
   DROP TAG: CORNER RADIUS = 25, BORDER = 16, EDGE STRIP = 8.
2. COLOURS: BLACK LEGEND, SYMBOL AND BORDER ON YELLOW RETROREFLECTIVE BACKGROUND.
3. RETROREFLECTIVE CLASS OF MATERIAL: CLASS 400.
4. GRAFFITI PROTECTION: TO BE SPECIFIED BY THE DESIGNER IN ACCORDANCE WITH MAIN ROADS GUIDELINES.
5. MATERIALS: ALL SIGN MATERIALS AND MANUFACTURE TO BE IN ACCORDANCE WITH MAIN ROADS SPECIFICATION 601.
6. TEXT FONTS COMPLY WITH FHWA 2000 SERIES.

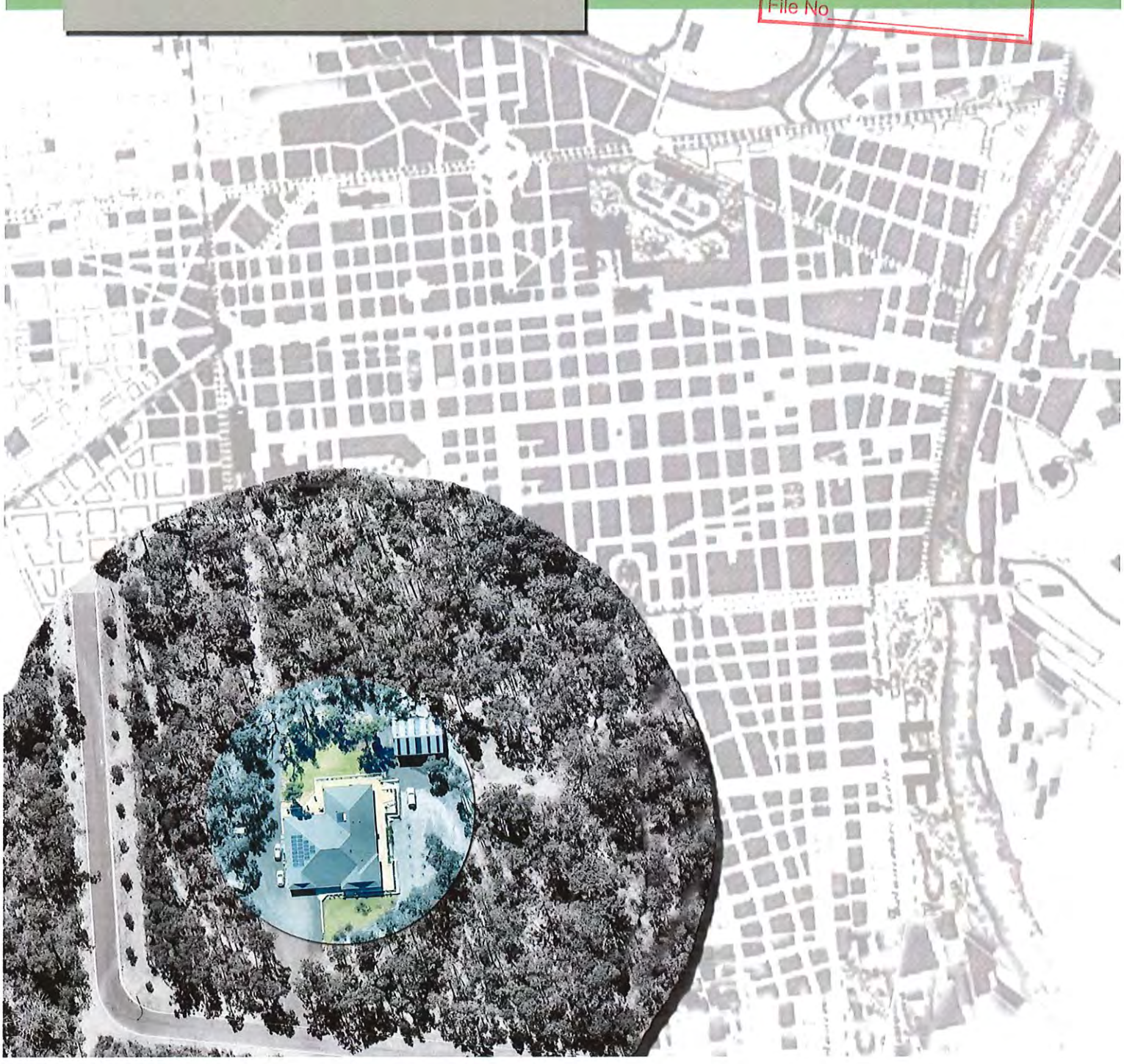
END OF REPORT

DEVELOPMENT
ASSESSMENT PANEL

APPROVED

12-Dec-2019

Bushfire Management Plan



Report Details		
Project:	Proposed Development and Subdivision	
Project Address:	Lots 201 & 202, Marshall St, Hyden WA 6359	
Prepared by:	James Terenciuk, BPAD Accredited Level 2 Assessor, BPAD36529, MAIBS, AIMM.	
/ Job Number	**Report Version**	**Date Submitted:**
11484	3	15 November 2019

BUSHfire attack level reports wa

GREEN START CONSULTING
fast building approvals

Address: Suite 26, 443 Albany Highway, Victoria Park, WA 6100, **Phone:** (08) 6114 9356
Email: admin@greenstartconsulting.com.au, **Web:** www.greenstartconsulting.com.au

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APPROVED
12-Dec-2019

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1. Background Information

This Bushfire Management Plan was prepared to provide guidance for the planning and management of potential bushfire threat. The standards and recommendations within this plan are based on the performance criteria as set out in Guidelines for Planning in Bushfire Prone Areas (Version 1.3, Dec-2017).

This Bushfire Management Plan meets the requirements of SPP 3.7 and the Guidelines for Planning in Bushfire Prone Areas.

James Terenciuk
Level 2 BPAD Practitioner

1.1 Purpose of Plan

The purpose of this Plan is minimise the occurrence and impact of bushfires and their devastating effects to life, property and the environment, and to document fire prevention requirements at the Site. By providing acceptable solutions the BAL level can be managed to an acceptable level.

1.2 Objectives

The objectives of this Plan are to:

- Define areas where values are located
- Define and rank hazard areas
- Identify individuals and organizations responsible for fire management and associated works within the area of the plan
- Develop fire management strategies for all land with regard to life, property and the environment
- Nominate an assessment procedure that evaluates the effectiveness and impact of proposed and existing fire prevention work and strategies
- Identify performance criteria and acceptable solutions for all fire management works, including acceptable solutions for fire breaks, low fuel areas and building construction standards.

This Plan will achieve the objectives by:

- Assessing the bushfire attack level
- Determining bushfire management requirements
- Determining ongoing management responsibilities

1.3 Statement against Other Relevant Documents

This Bushfire Management Plan meets the intent of:

1. State Planning Policy 3.7,
2. Guidelines for Planning in Bushfire Prone Areas,
3. Local planning strategy references to bushfire risk management,
4. Local planning scheme provisions relating to bushfire risk management,
5. Applicable structure plans, special control area provisions, previous planning approvals or similar referencing bushfire risk management applicable to the subject site,
6. Standard fire break orders of the area; and
7. AS3959 Construction of Buildings in Bushfire-Prone Areas.

1.4 Proposal details

The Site is located about 331 km East of the Perth CBD. As illustrated on Figure 1 – Proposed Subdivision and Figure 2 – Conceptual layout, the proposal seeks approval for the site expansion and additional grain receival/storage facilities at the Hyden grain receival site.

Half of the proposed development was located on the grain receival site lot 201 and has a minor encroachment on the CBH Westrail lease area. The other half was located on adjoining lot 202 which 12.86 ha purchased from the Landowner, Vernon Brown. The proposed development on lot 31 formerly lots 201 and 202 and encroaching the Westrail lease area includes the following:

- Widen truck marshalling areas and sealed, interconnected internal roads
- Shorten two existing open bulkheads (OBH's)
- Four OBH's with a total capacity of 148,200 tonnes on sealed pads covered with tarpaulins when filled with grain
- Two hopper pits and ground conveyors in between the OBH's
- Pad for future generator and compressor
- Remove existing and install a new weighbridge and hut
- Interconnected stormwater drainage.

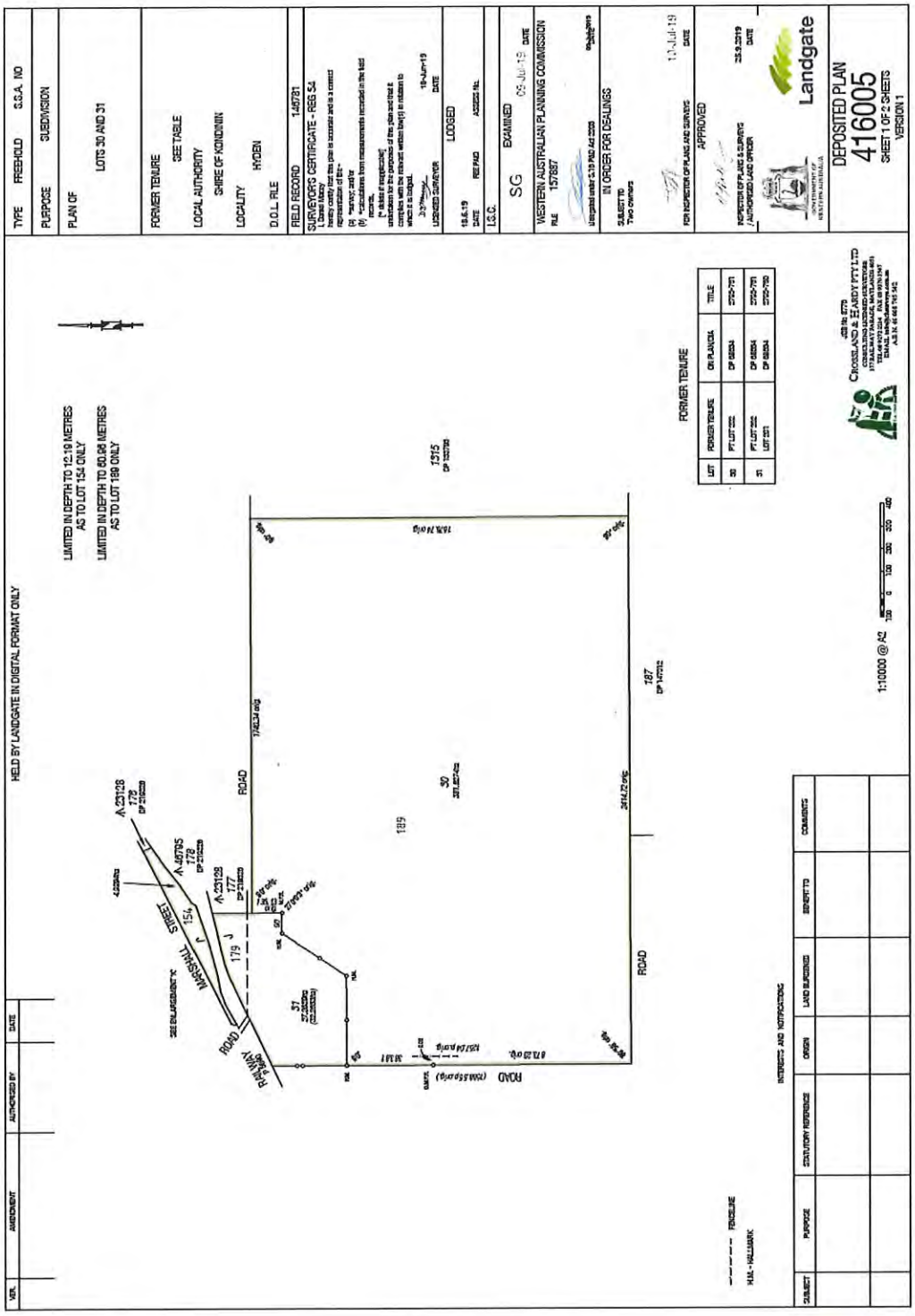
The site has been identified as being located within a bushfire prone area according to the most recent map published by the Department of Fire and Emergency Services (refer to Figure 3).

There are no relevant environmental considerations, including local reserves, State Forest, National park, wetlands, Bush Forever sites, etc. within the site or being affected by the development.

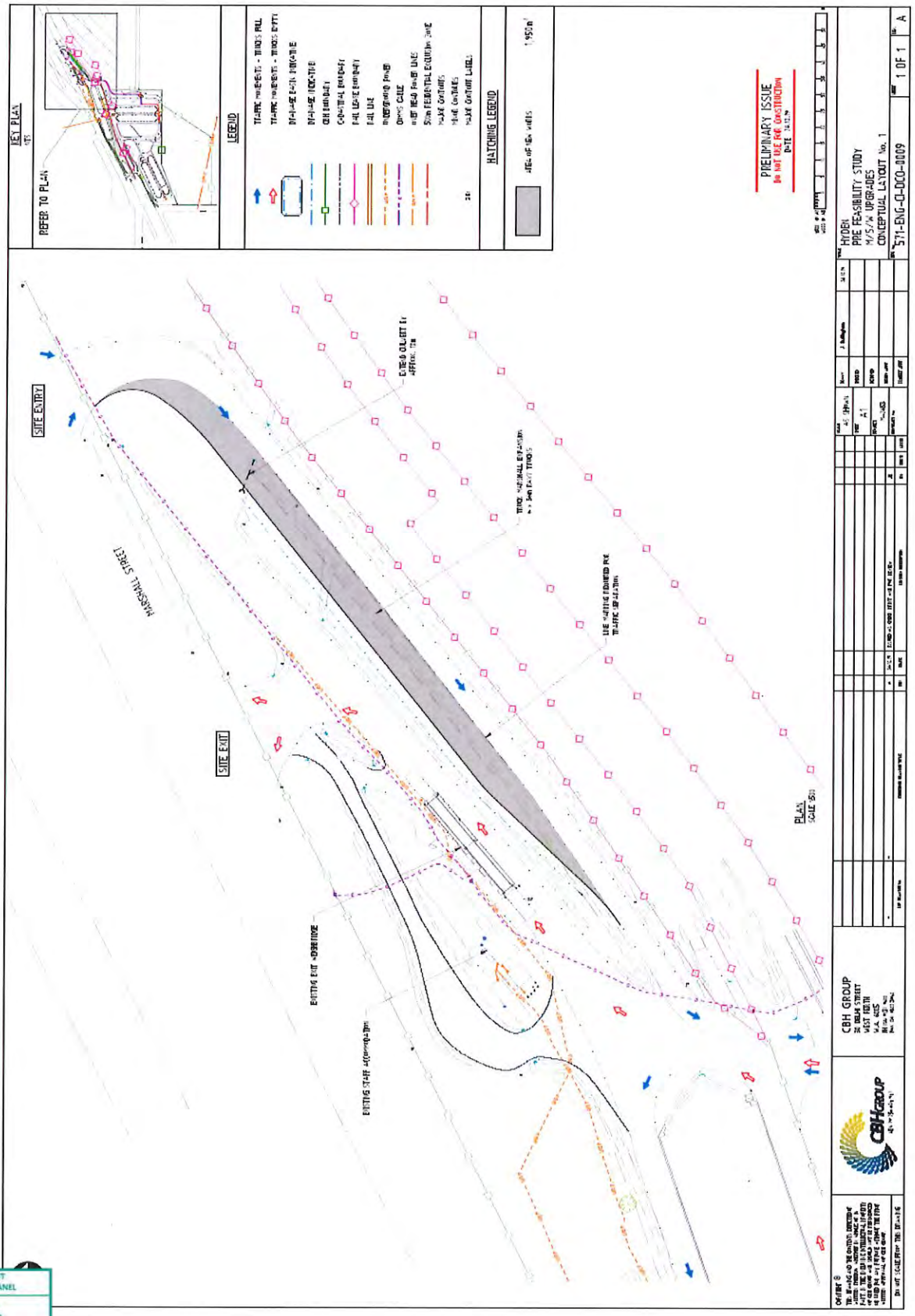
There are no known previous bushfire assessments that have been undertaken for the site.

No noncomplying areas have been identified.

1.4.1 Figure 1: Proposed subdivision



1.4.2 Figure 2: Conceptual Layout



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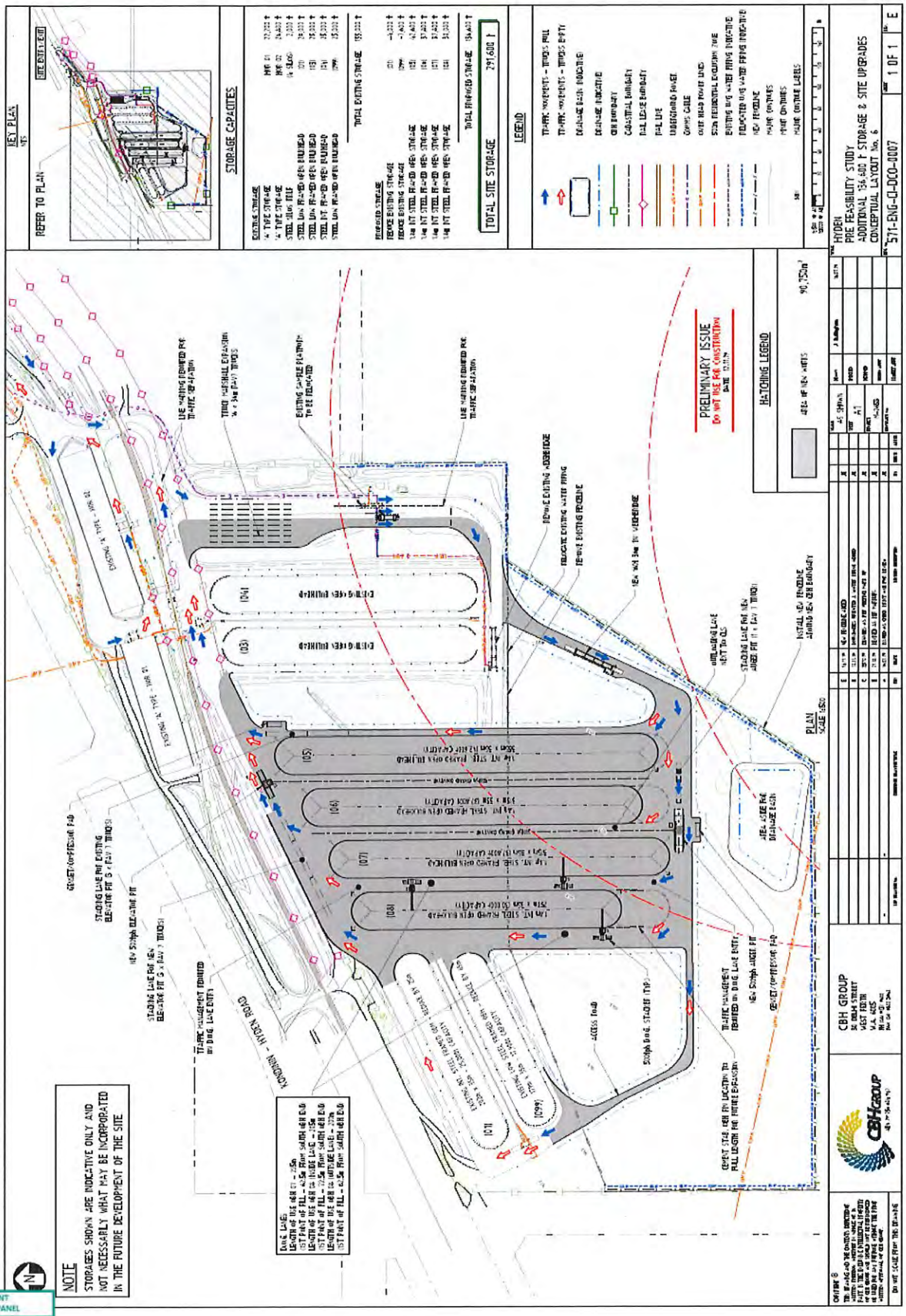

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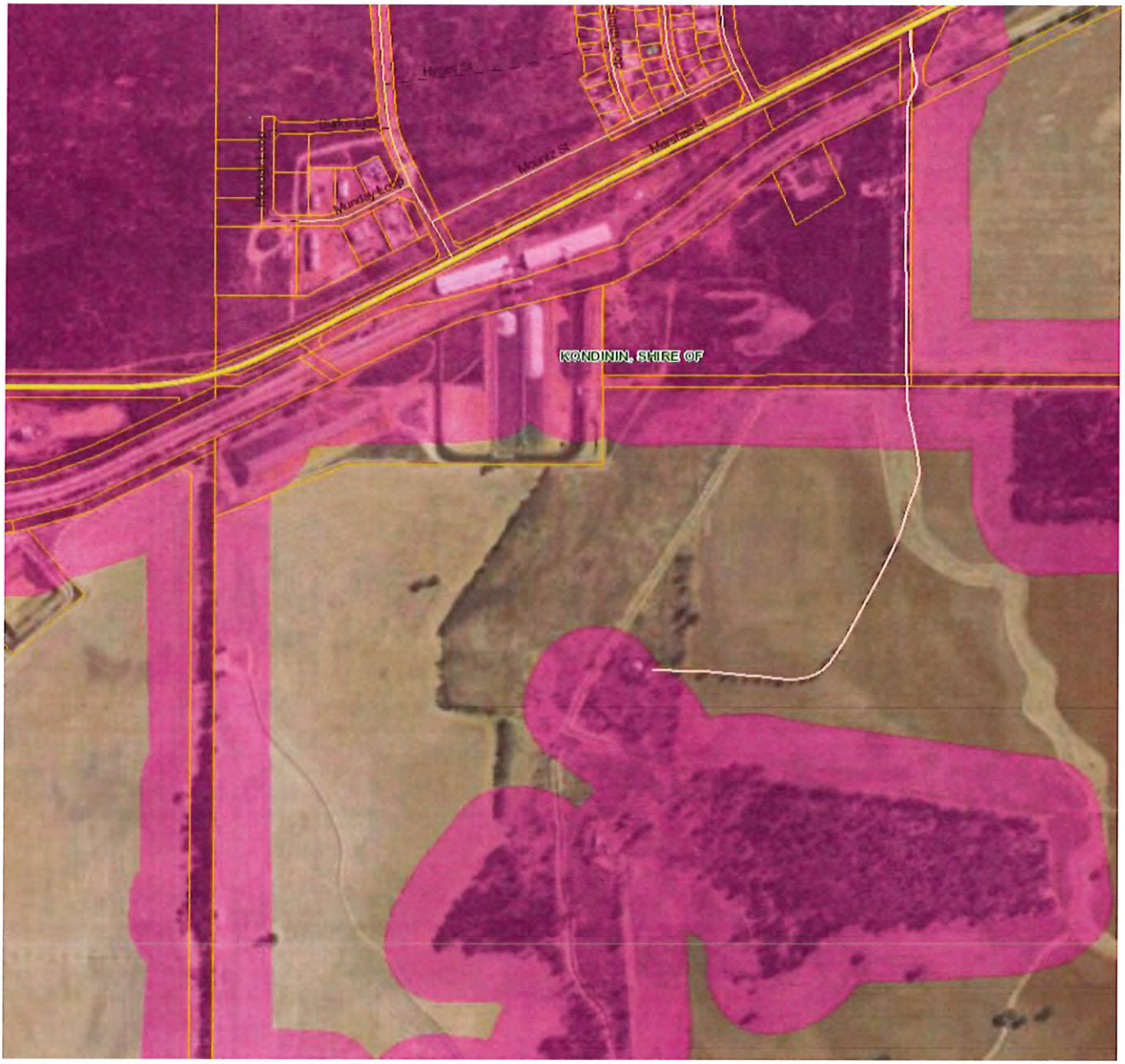
1.4.3 Figure 3: Map of Bushfire Prone Areas for the subject site



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2. Bushfire assessment Results

2.1 Assessment Inputs

The location and extent of the classifiable vegetation in relation to the proposed developments have been assessed and recorded in the attached BAL Assessment Report extract. The BAL Assessment Report is produced based on a methodology 1 assessment, with the vegetation being assessed "as is" in accordance with AS3959. The initial BAL rating is given in the table below.

Table 2A: Worst case BAL that applies to the site

Method 1				
Plot	**Vegetation Classification**	**Effective Slope**	**Separation (m)**	**BAL**
1	Class C Shrubland	Flat land	< 0	BAL – FZ
2	Class C Shrubland	Flat land	< 0	BAL – FZ
3	Excludable – Clause 2.2.3.2(a)	-	102	BAL – LOW
4	Excludable – Clause 2.2.3.2(d)	-	-	BAL – LOW
5	Excludable – Clause 2.2.3.2(e) Excludable – Clause 2.2.3.2(f)	-	-	BAL – LOW
6	Class C Shrubland	Flat land	82	BAL – 12.5
7	Class G Grassland	Flat land	42	BAL – 12.5

Table 2B: Determined Bushfire Attack Level (BAL)

The Determined Bushfire Attack Level (highest BAL) for the proposed development has been determined in accordance with clause 2.2.6 of AS 3959-2009 using the above analysis.

Determined Bushfire Attack Level	**BAL – FZ**
Photo ID: 1 **Plot:** 1	
Vegetation Classification or Exclusion Clause	
Class C Shrubland - Closed heath C-10	
Description / Justification for Classification	
Found in wet areas and/or areas affected by poor soil fertility or shallow soils. Shrubs 1–2 m high often comprising Banksia, Acacia, Hakea and Grevillea. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.	

DEVELOPMENT ASSESSMENT PANEL
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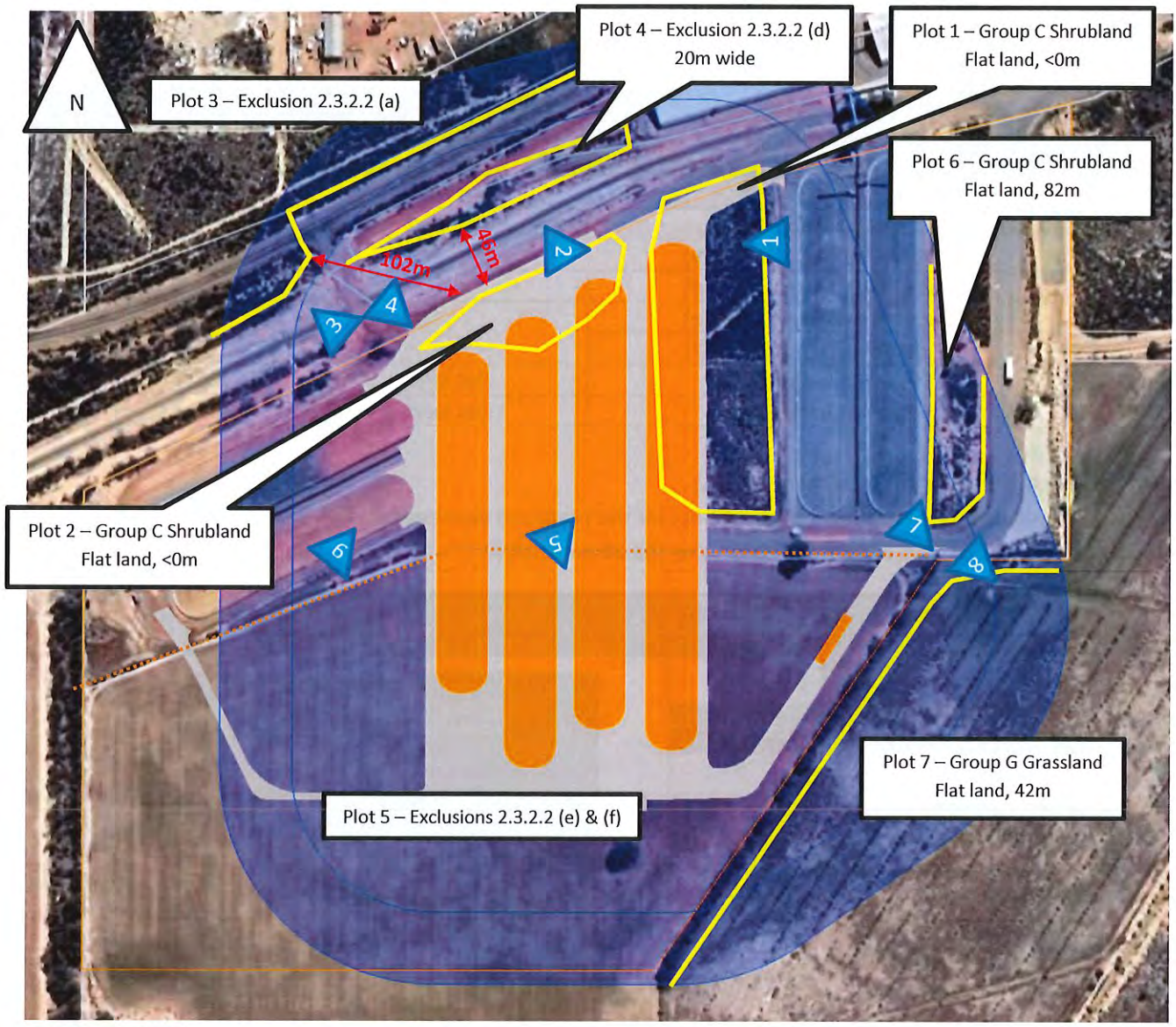
2.2 Assessment outputs

2.2.1 Site Assessment & Site Plans

The assessment of this site was undertaken by a BPAD Accredited Practitioner for the purpose of determining the Bushfire Attack Level in accordance with AS 3959 - 2009 Simplified Procedure (Method 1).



Legend

- 1 = Photo location
- = 150m and 100m wide buffers
- = Vegetation plots
- = Proposed constructions
- = Proposed Site boundaries
- = Removed boundary line

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2.2.2 Vegetation Classification

All vegetation within 100m of the site development was classified in accordance with Clause 2.2.3 of AS 3959-2009. Each distinguishable vegetation plot with the potential to determine the Bushfire Attack Level is identified below.

Photo ID: 1 **Plot:** 1 **Vegetation Classification or Exclusion Clause** Class C Shrubland - Closed heath C-10 **Description / Justification for Classification** Found in wet areas and/or areas affected by poor soil fertility or shallow soils. Shrubs 1–2 m high often comprising Banksia, Acacia, Hakea and Grevillea. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.	
Photo ID: 2 **Plot:** 2 **Vegetation Classification or Exclusion Clause** Class C Shrubland - Closed heath C-10 **Description / Justification for Classification** Found in wet areas and/or areas affected by poor soil fertility or shallow soils. Shrubs 1–2 m high often comprising Banksia, Acacia, Hakea and Grevillea. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.	
Photo ID: 3 **Plot:** 3 **Vegetation Classification or Exclusion Clause** Excludable - 2.2.3.2(a) >100m from site **Description / Justification for Classification** Vegetation of any type that is more than 100m from the site.	

Photo ID:	4	Plot:	4

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(d) Strip <20m in width

Description / Justification for Classification

Strip of vegetation less than 20m in width (measured perpendicular to the elevation exposed to the strip of vegetation) regardless of length and not within 20m of the site or each other, or other areas of vegetation being classified.

Photo ID:	5	Plot:	5

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(e) Non Vegetated Areas

Excludable - 2.2.3.2(f) Low Threat Vegetation

Description / Justification for Classification

Non-vegetated area: CBH site.

Low threat vegetation: managed grassland (under 100mm), strips of vegetation and windbreaks.

Photo ID:	6	Plot:	5

Vegetation Classification or Exclusion Clause

Excludable - 2.2.3.2(e) Non Vegetated Areas

Description / Justification for Classification

Non-vegetated area: CBH site.

Shrubland (plot 1 and 2) in the background.

Photo ID: 7 **Plot:** 6 **Vegetation Classification or Exclusion Clause** Class C Shrubland - Closed heath C-10 **Description / Justification for Classification** Found in wet areas and/or areas affected by poor soil fertility or shallow soils. Shrubs 1–2 m high often comprising Banksia, Acacia, Hakea and Grevillea. Wet heaths occur in sands adjoining dunes of the littoral (shore) zone. Montane heaths occur on shallow or water-logged soils.	
Photo ID: 8 **Plot:** 7 **Vegetation Classification or Exclusion Clause** Class G Grassland – Dense sown pasture G-25 **Description / Justification for Classification** All forms, including situations with shrubs and trees, if the overstorey foliage cover is less than 10%.	
Photo ID: 9 **Plot:** 5 **Vegetation Classification or Exclusion Clause** Excludable - 2.2.3.2(f) Low Threat Vegetation **Description / Justification for Classification** Low threat vegetation: grassland managed in a minimal fuel condition, nature strips and windbreaks.	

Photo ID:	10	**Plot:**	5
Vegetation Classification or Exclusion Clause			
Excludable - 2.2.3.2(f) Low Threat Vegetation			
Description / Justification for Classification			
Low threat vegetation: grassland managed in a minimal fuel condition, nature strips and windbreaks.			

Photo ID:	11	**Plot:**	5
Vegetation Classification or Exclusion Clause			
Excludable - 2.2.3.2(f) Low Threat Vegetation			
Description / Justification for Classification			
Low threat vegetation: grassland managed in a minimal fuel condition, nature strips and windbreaks. Woodland (Plot 1) in the right hand side and background.			

Photo ID:	12	**Plot:**	5
Vegetation Classification or Exclusion Clause			
Excludable - 2.2.3.2(f) Low Threat Vegetation			
Description / Justification for Classification			
Low threat vegetation: grassland managed in a minimal fuel condition, nature strips and windbreaks. Woodland (Plot 2) in the background.			

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3. Assessment against the Bushfire Protection Criteria

3.1 Compliance

Each of the elements listed within Appendix 4 of the Guidelines for Planning in Bushfire Prone Areas has been addressed in the bushfire management plan as per the following table.

Bushfire protection criteria	Method of Compliance/Acceptable Solutions	Proposed bushfire management strategies
Element 1: Location	A1.1 Development location	The proposed subdivision and development would ensure all future constructions are located in an area subjects to BAL-29 or lower in order to comply with the *Guidelines for Planning in Bushfire Prone Areas*.
Element 2: Siting and design of development	A2.1 Asset Protection Zone	The Asset Protection Zone will be maintained within the boundary of the lot. All future construction is to be surrounded by an APZ of a sufficient width to ensure the potential radiant heat impact of a bushfire does not exceed BAL-29. Refer to Figure 4 which indicates the minimum width of the APZ to be maintained for BAL-29. The standards for APZ from the *Guidelines* are attached in Appendix 1.
Element 3: Vehicular access	A3.1 Two access routes	The existing network demonstrates that access provided to the subject site will be primarily via Marshall St, giving a choice of two safe egress destinations to the East (Hyden-Lake King Rd) and West (Kondini-Hyden Rd). Both are available to all people at all times.
	A3.2 Public road	All public roads are constructed to meet the requirements of Table 6 column 1 (attached in Appendix 2).
	A3.3 Cul-de-sac (including dead-end-road)	N/A
	A3.4 Battle-axe	N/A
	A3.5 Private driveway longer than 50m. A private driveway is to meet detailed requirements contained within the Guidelines.	The site's driveway is used by heavy vehicles and complies with the requirements of Table 6, Column 3.
	A3.6 Emergency access way	N/A
	A3.7 Fire services access routes (perimeter roads)	N/A
	A3.8 Firebreak width	Have a 3 metre firebreak clear of all inflammable material on all rural and townsite land as per the Shire of Kondinin's requirements (excerpt attached in Appendix 3).
Element 4: Water	A4.1 Reticulated areas	The site has access to reticulated water. The fire hydrant is located on Mouritz St (Refer to Figure 4 for the location).
	A4.2 Non-reticulated areas	N/A
	A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)	N/A

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3.1.1 Figure 6 ial representation of the bushfire management strategies

Legend

- Subject land
- Proposed Construction
- Existing Constructions
- New sealed Access
- Asset Protection Zone
- Firebreak
- H Hydrant
- 1 Notes

Notes

1) Shrubland is the primary vegetation plot.
2) The minimum width for the Asset Protection Zone (APZ) is 9m. The vegetation in shte APZ is to comply with Schedule 1 Element 2 of the Guidelines (attached as appendix).
3) The existing network within the development meets Table Column 3 (attached as appendix). The whole site will be in a trafficable surface in compliance with Table 6 (i.e. gravel and bitumen surface). Refer to Figure 2 - Conceptual Layout.
4) The site has access to reticulated water. The closest water hydrant is on Mourits St, about 75m from the subject site.
5) 3m wide firebreak clear of all inflammabe material immediately inside all external boundaries of the site. Refer to Appendix 3.

Location Details: Lot 201 & 202, Marshall Street, Hyden WA 6359
Local Government Area: Shire of Kondinin
Assessment Date: 20.02.2019
Date of aerial photo: 01.01.05

Prepared by: James Tereciuk
Accreditation Level: Level 2 BPAD Bushfire
Accrediation Number: BPAD36529
Accrediation Expiry Date: February 2020

4. Responsibilities for Implementation and Management of the Bushfire Measures

LANDOWNER/DEVELOPER – PRIOR TO SALE OR OCCUPANCY	
No.	**Management Action**
1	For future construction: maintain the Asset Protection Zone (APZ) to the dimensions and standard stated in the BMP and the Bushfire Lot Management Statement.
2	Comply with the relevant local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.
3	Landowners/occupiers to thoroughly read this BMP. If there are any items which require clarification it is recommended that they contact the author of this report.
LOCAL GOVERNEMENT – ONGOING MANAGEMENT	
No.	**Management Action**
1	Local government to ensure the maintenance of public roads complies with the public road standard established in accordance with Table 6 (attached as appendix).

To ensure that the above individuals/organisations are able to comply with the Bushfire Management Plan they are to be notified of their responsibilities by the developer and be given a copy of the endorsed Bushfire Management Plan.

This Bushfire Management Plan relates to a specific planning approval and should be referred to periodically as part of the owner's fire mitigation strategy. As time passes, any items found to require review due to changing circumstances are to be brought to the attention of the local government and the Bushfire Management Plan author.

Certification by bushfire consultant
I James Terenciuk, certify that at the time of inspection, the BAL ratings contained within this BMP are correct; and implementation have been undertaken in accordance with the BMP.

Clearance by local government is recommended.

James Terenciuk
Level 2 BPAD Practitioner

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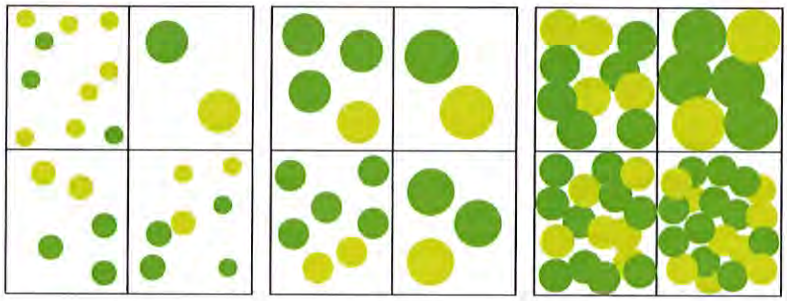
5 November 2019

5. Appendix 1: Schedule 1: Standard for Asset Protection Zones (Appendix 4 of the Guidelines)

- **Fences:** within the APZ are constructed from non-combustible materials (e.g. iron, brick, limestone, metal post and wire).
  It is recommended that solid or slatted non-combustible perimeter fences are used.
- **Objects:** within 10 metres of a building, combustible objects must not be located close to the vulnerable parts of the building i.e. windows and doors.
- **Fine Fuel load:** combustible dead vegetation matter less than 6 millimetres in thickness reduced to and maintained at an average of two tonnes per hectare.
- **Trees (> 5 metres in height):** trunks at maturity should be a minimum distance of 6 metres from all elevations of the building, branches at maturity should not touch or overhang the building, lower branches should be removed to a height of 2 metres above the ground and or surface vegetation, canopy cover should be less than 15% with tree canopies at maturity well spread to at least 5 metres apart as to not form a continuous canopy.

Figure 18: Tree canopy cover – ranging from 15 to 70 per cent at maturity



- **Shrubs (0.5 metres to 5 metres in height):** should not be located under trees or within 3 metres of buildings, should not be planted in clumps greater than 5m2 in area, clumps of shrubs should be separated from each other and any exposed window or door by at least 10 metres. Shrubs greater than 5 metres in height are to be treated as trees.
- **Ground covers (<0.5 metres in height)**: can be planted under trees but must be properly maintained to remove dead plant material and any parts within 2 metres of a structure, but 3 metres from windows or doors if greater than 100 millimetres in height. Ground covers greater than 0.5 metres in height are to be treated as shrubs.
- **Grass:** should be managed to maintain a height of 100 millimetres or less.

6. Appendix 2: Table 6 – Vehicular access technical requirements

TECHNICAL REQUIREMENTS	1 Public road	2 Cul-de-sac	3 Private driveway	4 Emergency access way	5 Fire service access routes
Minimum trafficable surface (m)	6*	6	4	6*	6*
Horizontal clearance (m)	6	6	6	6	6
Vertical clearance (m)	4.5	N/A	4.5	4.5	4.5
Maximum grade <50 metres	1 in 10	1 in 10	1 in 10	1 in 10	1 in 10
Minimum weight capacity (t)	15	15	15	15	15
Maximum crossfall	1 in 33	1 in 33	1 in 33	1 in 33	1 in 33
Curves minimum inner radius (m)	8.5	8.5	8.5	8.5	8.5
*Refer to E3.2 Public roads: Trafficable surface					

E3.1 Two access route

Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions.

E3.2 Public road

Trafficable surface: Widths quoted for access routes refer to the width of the trafficable surface. A six metre trafficable surface does not necessarily mean paving width. It could, for example, include four metre wide having one metre wide constructed road shoulders. In special circumstances, where eight lots or less are being serviced, a public road with a minimum trafficable surface of four metres for a maximum distance of 90 metres may be provided subject to the approval of both the local government and Department of Fire and Emergency Services.

7. Appendix 3: Shire of Kondinin's Fire Information

Fire Breaks

All Owners and/or Occupiers of Land within the Shire of Kondinin are guided by the Bush Fires Act 1954.

Pursuant to the powers contained in Section 33 of the above Act, you are hereby required on or before 31st October and thereafter up to and including 15th March to have a 3 metre firebreak clear of all inflammable material on all rural and townsite land owned or occupied by you:

1. Immediately inside all external boundaries of the land; and
2. In such other positions as is necessary to divide land in excess of 200 hectares into areas not exceeding 200 hectares, each completely surrounded by a firebreak; and
3. Immediately surrounding any part of land used for crop; and
4. Parallel to and within 100 metres of the perimeter of all buildings, haystacks and fuel ramps situated on the land; and
5. Immediately surrounding any drum or drums or other receptacles situated on the land which are normally used for the storage of fuel, whether they contain fuel or not, provided that the firebreak required to comply with this paragraph only shall be not less than 5 metres wide; and
6. Immediately inside land on which bush has been bulldozed, chained or prepared in any similar manner for clearing by burning (whether you intend to burn the bush or not); provided that the firebreak required to comply with this paragraph only shall be not less than 7 metres wide. Where the land is prepared for clearing by burning after 19th September 2006 you shall provide the firebreak immediately.

Firebreak Variation

If it is considered by the owner or occupier of the land that it is impractical to clear firebreaks to comply with this notice due to soil erosion, the spread of salinity or for any other reason, a request for a variation may be made to the Council not later than the 1 September of each year.

Such a request must be in writing and include a detailed farm plan showing the proposed location of firebreaks or of the alterative fire protection methods to be used. If such a variation is not approved then the landowner shall comply with the requirements of this notice.

If it is considered to be impractical for any reasons to clear firebreaks as required by this notice, you may apply to Council or its duly authorised officer for permission to provide firebreaks in alternative positions on the land. If the Council, or its duly authorised officer does not grant permission, you shall comply with the requirements of this notice. The penalty for failing to comply with this notice is a fine not exceeding $5000.00 and a person in [illegible] is also liable, whether prosecuted or not, to pay the cost of performing the work directed in this notice if it is not carried out by the owner or occupier by the date required by this notice. If the requirements of this notice are carried out by burning, such burning must be in accordance with the relevant provisions of the Bush Fires Act.

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Chemical usage on road reserves

An application to use chemicals on road reserves for firebreak protection must be submitted to the Chief Executive Officer for approval.

Burning of roadside vegetation

No roadside burning is allowed by any persons within the Shire without the approval of the Council. Anybody who is found to have burnt any roadside vegetation or reserve vested in the Shire, either deliberately, by neglect or carelessness as per the Bush Fires Act 1954, may be made to pay the cost of spraying or re-vegetating the area.

Burning in the townsite

No fires in large open areas are to be lit in the townsite unless a town Fire Control Officer is advised of the intention to burn.

(excerpt from the Shire of Kondinin's website)

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Project Number & Title:	M-2653 HYDEN SITE EXPANSION
Contractor:	MCDOWALL AFFLECK PTY LTD

Document Information

CBH Document Number	Contractor Document Number	Document Name
571-2653-CI-RPT-0001	16150-SDR	Stormwater Design Report

Revision History

CBH Rev No	Contractor Rev No.	Description	Date	Approved By (Contractor)	Approved By (CBH)
A	A	Issued for Approval	28/6/19	H. Millen	
B	B	Updated	2/7/2019	H. Millen	
C	C	Updated	14/11/19	H. Millen	

REVISION STATUS

REV	DATE	DESCRIPTION	BY	CHECKED
A	28/06/2019	ISSUED FOR DA	MM	HM
B	02/07/2019	CONCEPT PLAN UPDATED	MM	HM
B	02/07/2019	CONCEPT PLAN UPDATED	MM	HM

Table of Contents

1. Introduction

McDowall Affleck has been appointed by CBH as Engineering Consultants for the proposed Bulkhead Expansion at Hyden.

The proposed expansion has a total area of approximately 8.6 hectares.

1.1 Objectives

The objective of this Stormwater Design Report (SDR) is to assess the predevelopment and post development conditions of the subject land in accordance with guidelines set by the CBH.

This SDR provides details on how stormwater will be managed to reduce the impacts of flooding from the expansion.

2. Pre-development Environment

2.1 Geotechnical Conditions

A Geotechnical investigation has been undertaken by Golder Associates Pty Ltd in February 2019. Based on the geotechnical test pits, the subsurface conditions across the site are relatively variable. The subsurface conditions can be generalised as follows:

Southern Portion of Site (Zone 1)

- TOPSOIL: Sandy CLAY / Silty SAND (CL/SM) – low to medium plasticity clay, fine to coarse grained sand, pale brown, non-plastic silt, trace to with fine to coarse gravel, with roots up to 1mm diameter, very stiff, dry, extending to a depth of about 0.1m, overlying.
- Sandy CLAY / Clayey SAND / Silty SAND (CL-CH/SC/SM) – low to high plasticity clay (typically low to medium plasticity near the surface, becoming medium to high plasticity at depth), fine to coarse grained sand, brown, grey, red and white, non-plastic silt, trace to with fine to coarse gravel, weakly to moderately cemented at some locations, dry to moist, dense to very dense or very stiff to hard, extending to the maximum depth investigated of 2.8m.

Exceptions to the above generalised profile were encountered at:

- Test pit HTP16, where a layer of sandy gravel was encountered between depths of about 0.4m and 0.9m.
- Test pit HTP12, where buried QuickPhos fumigation bags were encountered at about 0.4m depth within Sandy Clay fill material.

Northern Portion of Site (Zone 2)

- TOPSOIL: Sandy CLAY (CL) – low plasticity, pale brown and pale yellow, fine to coarse grained sand, with fine to medium gravel, with roots up to 10mm diameter, very stiff, dry, extending to about 0.1m depth, overlying.
- Sandy CLAY / Gravelly Clayey SAND (CL/SC) – low plasticity clay, fine to coarse grained sand, brown, yellow and red, up to about 40% fine to medium gravel, occasionally weakly to moderately cemented, very stiff to hard. Dry, extending to depths ranging from about 0.6m to 1.8m, overlying.
- Weathered Granite / Cemented Clayey SAND – pale yellow, orange and grey mottled red, fine to coarse grained sand, extremely weathered to residual soil granite, dry, extending to the maximum depth investigated of 2.2m.

ceptions to the above generalised profile were encountered at:

- Test pit HTP13, where a layer of fine to coarse grained sand was encountered overlying sandy gravel (inferred extremely weathered to residual soil granite) at about 0.1m depth.
- Test pits HTP14 and HTP15, where a layer of sandy gravel was encountered from surface to depths of about 1.3m.

Groundwater inflow was encountered at the base of test pit HTP02 at a depth of 2.8m. This is the location of one of the proposed E-pits. It is noted that shallow groundwater is likely to perch on the clayey soils after significant rainfall events. We do not expect groundwater will impact the proposed additions.

Groundwater flow has affected construction at other CBH sites, particularly where construction occurs during and following the wetter portion of the year. It is recommended that perimeter drainage be installed prior to bulk earthworks activities.

2.2 Existing Basins

Existing basins are located on the site capturing flow from the open bulkheads, as part of this expansion these basins will be removed and a new basin to the south installed.

3. Stormwater Management Principles

The CBH guidelines have been used as the basis for the stormwater management design within the site. The drainage philosophy and assumptions are as follow:

- Open drain channels and culverts sized to cater for 1 in 20 Post Development ARI;
- Open drains to have a minimum of 0.4m depth, maximum 1:3 side slopes and minimum 1.5m wide base;
- The basin is to cater for the 1 in 20-year ARI for post-development less pre-development storage volume.
- Erosion protection to be installed where velocities are calculated to be greater than 2m/s;

3.1 Rainfall Data

Design rainfall Intensity Frequency Duration (IFD) data was produced using the Bureau of Meteorology AEP software based on the co-ordinates of the proposed bulk heads.

The summary of the IFD table is shown below:

Table 1: Summary of IFD

	EY	Annual Exceedance Probability (AEP)					
Duration	1EY	50%	20%	10%	5%	2%	1%
1 min	1.28	1.48	2.17	2.69	3.25	4.06	4.74
2 min	2.23	2.56	3.65	4.46	5.29	6.49	7.49
3 min	2.99	3.44	4.94	6.05	7.21	8.87	10.3
4 min	3.62	4.17	6.02	7.41	8.87	11	12.8
5 min	4.14	4.78	6.95	8.58	10.3	12.8	14.9
10 min	5.97	6.91	10.2	12.7	15.3	19.2	22.5
15 min	7.14	8.28	12.2	15.2	18.4	23.1	27.1
30 min	9.38	10.8	15.9	19.7	23.7	29.6	34.5

1 hour	12.1	13.9	20.1	24.7	29.5	36.5	42.3
2 hour	15.5	17.7	25.4	31	36.9	45.4	52.4
3 hour	17.9	20.5	29.3	35.7	42.5	52.2	60.4
6 hour	22.9	26.2	37.5	46	54.9	68	79
12 hour	28.5	32.7	47.4	58.7	71	89	104
24 hour	34	39	57.2	71.8	88	112	133
48 hour	38.4	44.1	64.8	81.6	101	129	155
72 hour	40.7	46.5	6.7	85	104	134	161
96 hour	42.5	48.4	69.5	86.5	105	135	163
120 hour	44.2	50.1	71.1	87.5	106	135	163
144 hour	46	52	72.7	88.6	106	135	163
168 hour	47.9	54	74.6	89.9	106	136	163

3.2 Pre-development and Post- development Flow Calculation

After construction of the proposed bulk heads, the catchment will change as the open drain surrounding the new bulkheads will capture and direct the runoff into the proposed basin.

The rational method has been used to calculate the predevelopment and post development flow of the site with time of concentration calculated using kinematic wave equation.

The CBH design standard specifies a 20-year coefficient of runoff. ARR uses a 10-year coefficient as the basis of the calculations, therefore in accordance with ARR we have used a frequency factor to convert the 20-year coefficient to a 10-year coefficient for calculation purposes.

For predevelopment flow:

- Surface roughness coefficient n* = 0.035 for vegetated surface
- For 1 in 20 yrs, $C_{20} = 0.2$
- For 1 in 10 yrs, $C_{10} = 0.19$

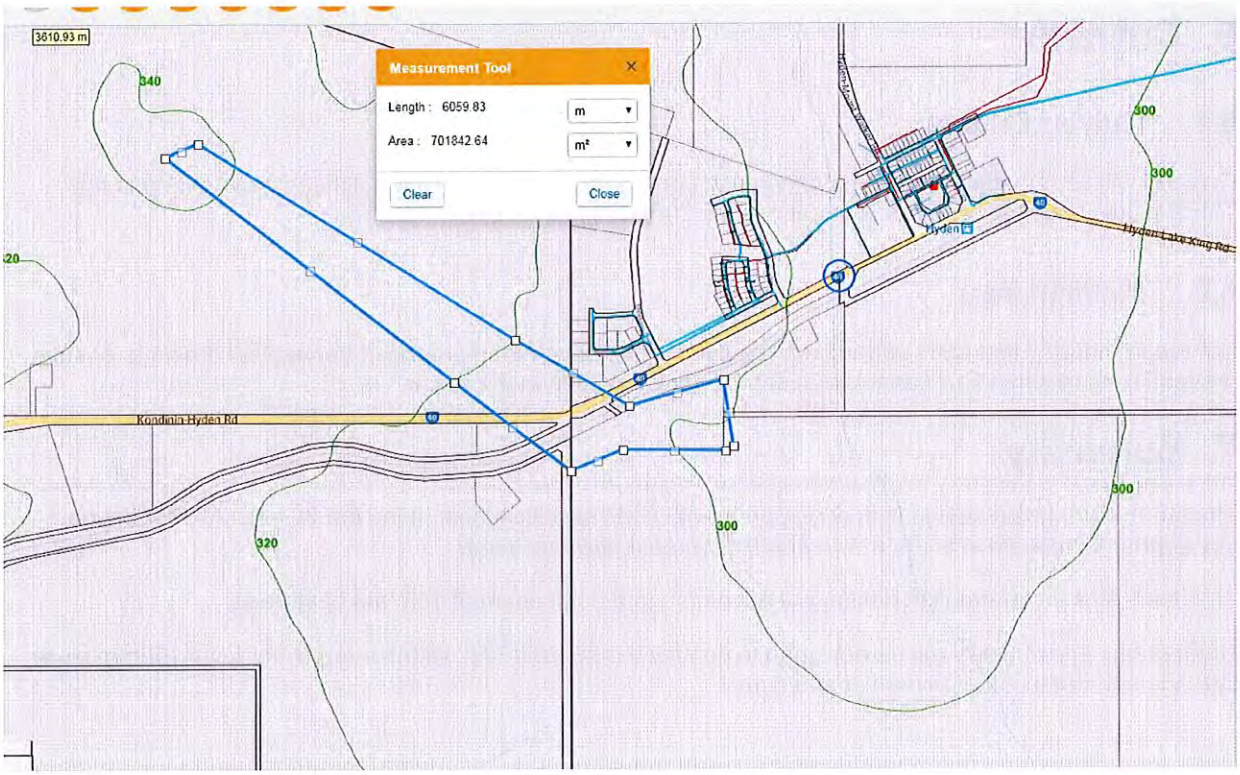
For post development flow:

- Surface roughness coefficient n*= 0.022 for open channels
- For 1 in 20 yrs, $C_{20} = 0.9$ for paved surface
- For 1 in 10 yrs, $C_{10} = 0.86$

4. Basins

4.1 External Catchment

The external catchment contributing to the basin's storage requirements is detailed below.



4.2 Basin Storage Calculation (Basin 01)

The basin's additional storage has been sized to store the 1 in 20-year ARI event with a minimum 300mm freeboard and a controlled discharge equal to or less than the predevelopment flow rate.

The Catchment contributing to the basin consists of a predevelopment area estimated at 701,842m^2, over which 90,750m^2 of impervious area is being developed.

Storage volumes are calculated using the Modified Copas equation and is shown in Appendix 2.

Basis of design and assumptions are described as follows:

- Basin side slope is 1 in 3;
- Overflow discharge weir will be located above the top water level of the 1 in 20-year Post less Pre ARI;
- Infiltration rate into ground used 0.5 m/day due to the clayey soil conditions.
- Total Storage Required for the proposed bulkheads and external catchment is calculated 1,837m^3.

5. Open Channels

5.1 Open Channel Criteria

Drains will be sized under detailed design to carry the 20-year ARI with the top water level 100mm below the bottom of the pavement sub-base.

6. Culverts

6.1 Culvert Criteria

Culverts will be required beneath pavements to convey storm flow from the bulkheads and overland flow. The Design Criteria for culverts is to convey the 20-year post development ARI.

6.2 Maintenance

It is recommended that CBH undertakes regular maintenance of the proposed trapezoidal drains to ensure prevention of reduced flow capacity caused by sedimentation in the drains.

7. Summary

The stormwater basin design is in accordance with CBH specifications, being the 20-year ARI for the post development impervious surface with predevelopment flow discharge.

The basin size under detailed design will accommodate a minimum of 1837m3 of storage.

Open drains and culverts will be designed to convey the 20-year ARI, with the top water level 100mm lower than the sub-base of the pavement structure.

APPENDIX 1 – EXPANSION CONCEPT PLAN

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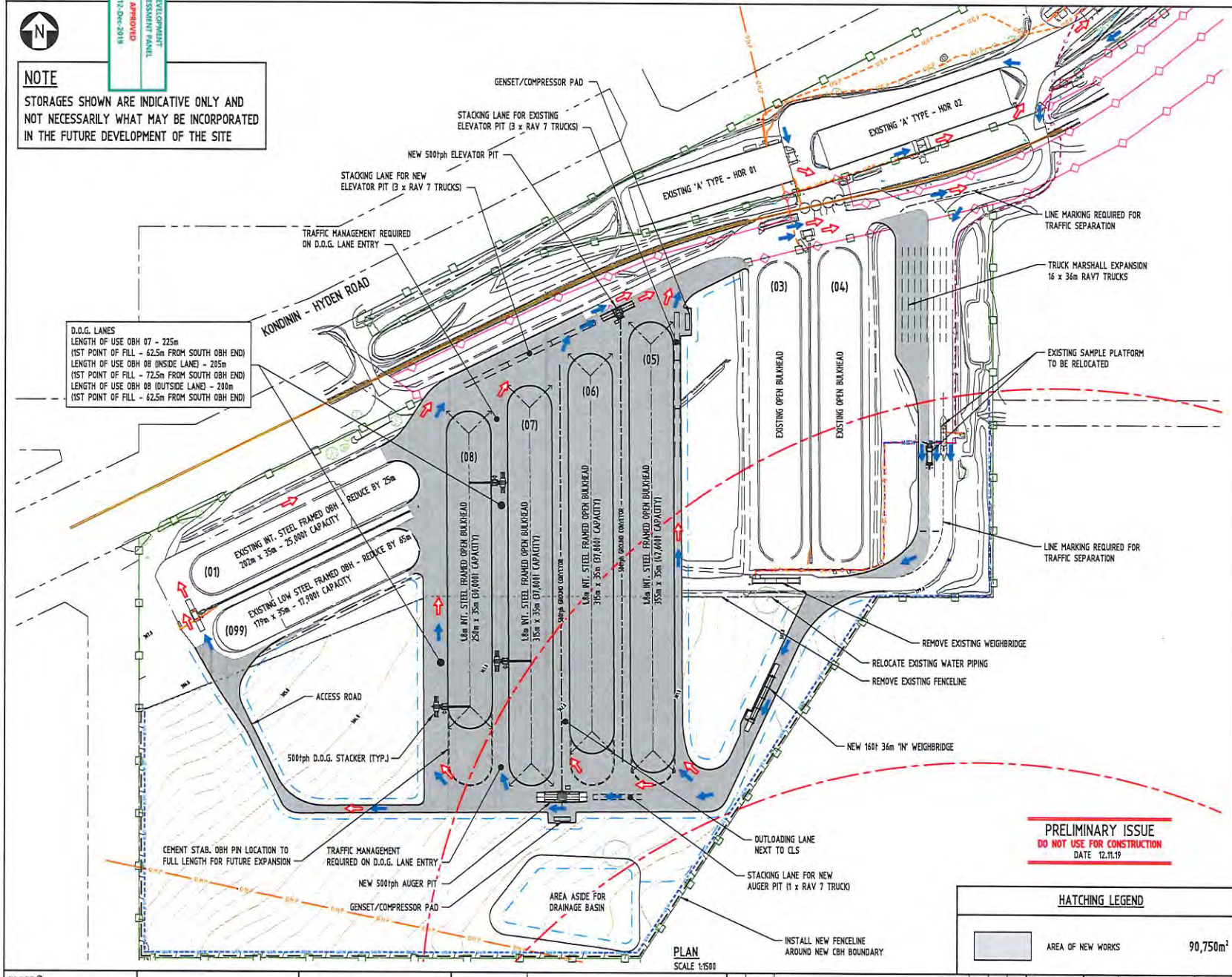
NOTE

STORAGES SHOWN ARE INDICATIVE ONLY AND NOT NECESSARILY WHAT MAY BE INCORPORATED IN THE FUTURE DEVELOPMENT OF THE SITE



PLAN
SCALE 1:1500

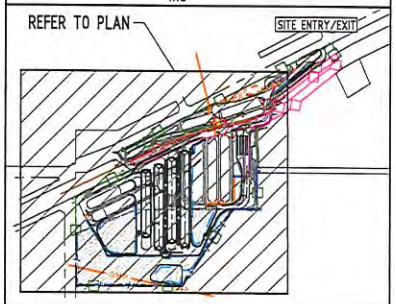
PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 12.11.19

HATCHING LEGEND

AREA OF NEW WORKS 90,750m²

KEY PLAN

NTS



STORAGE CAPACITIES

EXISTING STORAGE		
'A' TYPE STORAGE	HOR 01	22,200 t
'A' TYPE STORAGE	HOR 02	26,800 t
STEEL SILOS RRLF	(4 SILOS)	2,000 t
STEEL LOW FRAMED OPEN BULKHEAD	(01)	29,000 t
STEEL LOW FRAMED OPEN BULKHEAD	(03)	25,000 t
STEEL INT. FRAMED OPEN BULKHEAD	(04)	25,000 t
STEEL LOW FRAMED OPEN BULKHEAD	(099)	25,000 t
TOTAL EXISTING STORAGE		155,000 t

PROPOSED STORAGE		
REDUCE EXISTING STORAGE	(01)	-4,000 t
REDUCE EXISTING STORAGE	(099)	-7,600 t
1.8m INT STEEL FRAMED OPEN STORAGE	(05)	42,600 t
1.8m INT STEEL FRAMED OPEN STORAGE	(06)	37,800 t
1.8m INT STEEL FRAMED OPEN STORAGE	(07)	37,800 t
1.8m INT STEEL FRAMED OPEN STORAGE	(08)	30,000 t
TOTAL PROPOSED STORAGE		136,600 t

TOTAL SITE STORAGE 291,600 t

LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- DRAINAGE BASIN (INDICATIVE)
- DRAINAGE (INDICATIVE)
- CBH BOUNDARY
- CADASTRAL BOUNDARY
- RAIL LEASE BOUNDARY
- RAIL LINE
- UNDERGROUND POWER
- COMMS CABLE
- OVER HEAD POWER LINES
- 500m RESIDENTIAL EXCLUSION ZONE
- EXISTING U/G WATER PIPING (INDICATIVE)
- RELOCATED U/G WATER PIPING (INDICATIVE)
- NEW FENCELINE
- MAJOR CONTOURS
- MINOR CONTOURS
- MAJOR CONTOUR LABELS

1:500 @ A1 1:1000 @ A3 0 20 40 60 80 100 120 140 m

CBH GROUP
ABN 29 256 664 947
CBH GROUP
30 DELHI STREET
WEST PERTH
W.A. 6005
PH (08) 9237 9400
FAX (08) 9322 3942

REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
E	14.11.19	NEW FENCELINE ADDED	JD		
D	12.11.19	BOUNDARIES UPDATED & WATER PIPING ADDED	JD		
C	25.10.19	CHANGES AS PER MEETING MARK UP	JD		
B	21.10.19	REVISED AS PER MARKUPS	JD		
A	16.07.19	ISSUED AS CHECK PRINT AND FOR REVIEW	JD		

REF DRAWING No. | REFERENCE DRAWING TITLE

SCALE	AS SHOWN	
SHEET	A1	
PROJECT	M-2653	
CONTRACT No		
DRAWN	J. Dallingham	16.07.19
CHECKED		
DESIGNED		
DESIGN APPR		
PROJECT APPR		

TITLE
HYDEN
PRE FEASIBILITY STUDY
ADDITIONAL 136,600 t STORAGE & SITE UPGRADES
CONCEPTUAL LAYOUT No. 6

DRG No 571-ENG-CI-DCO-0007 | SHEET 1 OF 1 | REV. E

APPENDIX 2 - CALCULATIONS

Modified Copas Equation		Job No.	16150
		Rev	B
Project	CBH Hyden	Date	14/11/2019
		Calcs By	MM

IFD Location 32.4625S 118.8625E

Catchment Area BASIN

The Kinematic Wave Equation has been used to calculate overland flow times (AR&R 1987 Volume 1)

PARAMETERS

Pre Development	
Total Area (m^2)	701,842
Coeff of Runoff C_{10}	0.19
Slope (m/m)	0.031
n*	0.053
Length (m)	3,000

Constant Inflow Rate (l/s) = 0

Duration (min) = 0

Post Development	
Total Area (m^2)	701,842
Area of Pervious (m)	611,092
Area of Impervious (m^2)	90,750
Slope (m/m)	0.031
n*	0.022
Length (m)	3,000
C_{10} of Impervious	0.86
C_{10} of Pervious	0.19
Ave Coeff of Runoff C_{10}	0.28
Limit Post Development Outflow	Yes
Limit Post Development Outflow To 1 in X	20
Pipe Outflow Rate (l/s)	
Infiltration Rate (m/d)	0.5
Area of Infiltration (m^2)	5000
Infiltration Rate (l/s)	28.9
Total Outflow or Infiltration Rate (l/s)	28.9

RESULTS

Storm Event (Yr)	Pre Development		Post Development				
	T_c (min)	Predev Flow Rate (l/s)	T_s (min)	T_c (min)	PostDev flow Rate (l/s)	PostDev Outflow Rate (l/s)	Storage Required (m^3)
1	215.8	158	30	106.2	363	679	-433.8
2	200.1	186	50	99.0	409	679	-60.2
5	164.3	356	75	81.4	865	679	110.0
10	147.8	492	60	72.6	1189	679	800.0
20	134.5	650	60	65.4	1564	679	1,837.0
50	119.7	930	75	57.9	2295	679	3,856.0
100	111.2	1223	90	53.5	3036	679	5,620.0

Modified Copas Equation		Job No.	16150
		Rev	B
Project	CBH Hyden	Date	14/11/2019
		Calcs By	MM

DEVELOPMENT
ASSESSMENT PANEL

APPROVED
12-Dec-2019