25 July 2023

Peter Clarke
Shire of Kent
Email: ceo@kent.wa.gov.au

Dear Peter,

DEVELOPMENT APPLICATION - LOT 11 (NO. 67) JOLLEY ROAD, PINGRUP, WA, 6343
ADDITION TO AN EXISTING GRAIN HANDLING AND STORAGE FACILITY

CBH is seeking development approval from the Shire of Kent for an addition to its existing grain handling and storage facility at Lot 11 (No. 67) Jolley Road, Pingrup.

The subject application is proposed in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the Planning and Development (Local Planning Schemes) Regulations 2015 and the provisions of the Shire of Kent Local Planning Scheme No. 3.

On 22nd July 2022, the Shire of Kent approved a request by CBH for a temporary works exemption for an open storage bulkhead and associated vehicular access and drainage works. This temporary works exemption expired on 22 July 2023. This temporary approval was conditioned that '*at the end of the 12-month period, the temporary 'use' shall cease and all works' subject to the temporary exemption shall be removed from the site and the site reinstated to how it was prior to works/use being undertaken*'.

Due to the back-to-back record harvests over the last two years, CBH has a large amount of carryover grain left across the network that we continue to hold whilst we plan to store this year's forecasted above average harvest. The continued use of this bulkhead is integral to CBH's operations and long-term strategic plan. As such this development application seeks the permanent approval for these works.

The three main items of consideration for an application of this type are traffic generation, stormwater management and noise and dust management. Runoff from the temporary bulkhead is collected via open drain along the permitter of the storage bulkhead and is discharged to existing basins 01 and 02. No stormwater management issues are known to have been caused by stormwater infrastructure associated with these temporary works which have been in use for approximately seven months. No changes are proposed to the existing temporary system as part of this application as it is considered the stormwater runoff from the storage bulkhead the subject of this application will have a limited impact on either of its existing basins. A drainage report has been included as an attachment to this development application.

CBH shall ensure that noise from the specification and installation of any mechanical equipment as well as traffic and construction noise does not exceed assigned levels prescribed in the *Environmental Protection (Noise) Regulations 1997*, when it is received at a neighbouring property. CBH undertakes frequent noise and dust monitoring across its sites when required to ensure that dust and noise levels are measured and are mitigated whenever there is an exceedance.

A Traffic Impact Assessment was prepared in 2021 for a temporary storage bulkhead that did not end up being constructed. Whilst the proposed bulkhead the subject of this TIS does differ in capacity to the bulkhead the subject of this application, the transport elements and site-specific issues remain largely the same. Where the proposed development does differ from the information provided within the existing TIS, a Traffic Note has been provided addendum to this report outlining the elements that have changed since that assessment.

If local production exceeds the capacity of the Pingrup receival site CBH must out-turn grain simultaneously (harvest essential moves) to continue to offer a service to growers, and by doing so, increase the traffic on the surrounding road network during the peak harvest period. The proposal to retain the emergency storage will enable CBH to reduce the volume of Harvest Essential Moves (HEMs) with the intention of reducing trucks on road during the harvest, and instead holding the grain on site to out-turn over the remaining months of the year when the road network is less busy and at sufficient capacity to accommodate these moves. Table 1 of this addendum to the TIS further outlines the traffic movement reductions in the peak harvest period through retention of the storage bulkhead.

The proposed additional bulkhead is therefore aligned with the planning framework and is not considered to result in any new amenity impacts to the surrounding area. CBH respectfully requests the Application for Development Approval is considered by the Shire of Kent expeditiously given the straightforward nature of the application, it has already been constructed with no known amenity impacts as well as its general compliance with the Shire's planning framework.

Should you have any question in relation to the details provided in this submission, please contact Timothy Roberts on 9216 6061 or timothy.roberts@cbh.com.au

Yours Sincerely,

Timothy Roberts
Lead | Planning & Approvals

SHIRE OF KENT LOCAL PLANNING SCHEME NO.3

FORM 1 - APPLICATION FOR DEVELOPMENT APPROVAL

Landowner Details		
Name/s: Co-operative Bulk Handling Ltd		
ABN (if applicable): 29 256 604 947		
Postal Address: Level 6 No. 240 St George's Terrace, WA, Perth Postcode: 6000		
Work Phone: 08 9216 6061 Home Phone: Mobile Phone:	Fax:	E-mail: timothy.roberts@cbh.com.au
Contact Person for Correspondence: Timothy Roberts		
Signature:		Date: 08/08/2023
Signature:		Date:

NOTES:

i) Use and attach a separate copy of this page where there are more than two (2) landowners.

ii) The signature/s of all registered owner(s) as listed on the land's Certificate of Title is required. This application cannot proceed without the required signature/s. For the purposes of signing this application an owner includes the persons referred to in the Planning and Development (Local Planning Schemes) Regulations 2015 Schedule 2 clause 62(2). Land owned by an incorporated body (i.e. a company) must be signed by:

- *1 director of the company, accompanied by the company seal; or*
- *2 directors of the company; or*
- *1 director and 1 secretary of the company; or*
- *1 director if a sole proprietorship company.*

Print the full names and positions of company signatories underneath the signatures.

iii) A copy of the Certificate of Title for all land the subject of this application must be provided and can be purchased through Landgate directly if required (Certificate of Title - Landgate).

iv) If any property the subject of this application is owned by an incorporated body (i.e. a company) an ASIC company search must also be provided confirming who is authorised to sign this application form on behalf of the incorporated body (Search Company and Other Registers (asic.gov.au)).

v) Development Applications relating to Unallocated Crown Land, Unmanaged Crown Reserves, land under management order to the Shire of Kent where the development is not consistent with the reserve's purpose, or is used for commercial purposes, or land which is subject to a lease issued under the Land Administration Act 1997 need to be referred to the Lands Division of the Department of Planning, Lands and Heritage for consideration and signing.

Applicant Details (if different from owner)

Name/s: As above

Address:

Postcode:

Work Phone: Home Phone: Mobile Phone:	Fax:	E-mail:

Contact Person for Correspondence:

Signature:	Date:

NOTES:

i) Failure to provide a suitably completed development application form, a copy of the relevant Certificate/s of Title, sufficient plans and other supporting information and/or the correct application fee may result in the application being returned or placed on hold.

ii) The application fee payable will be confirmed by the local government following receipt of the application. Processing of the application will not commence until the fee is paid in full.

iii) As per Schedule 2 clause 64 of the Planning and Development (Local Planning Schemes) Regulations 2015 the information and plans provided with this application may be made available by the local government for public viewing in connection with the application.

iv) If public advertising of the application is required by the local government an additional fee in accordance with the local government's adopted schedule of fees and charges will be payable by the applicant. Further processing of the application following completion of public advertising will not proceed until the additional fee is paid in full.

v) The original of this application and supporting information and plans will be retained by the local government for its records and will not be returned to the applicant/landowner following final determination.

Property Details

NOTE: The details provided must match those shown on the relevant Certificate/s of Title.

Lot No: 11	House/Street No: 67	Location No:

Survey Diagram or Plan No:	Certificate of Title Volume No:	Certificate of Title Folio No:
419099	2986	813

Title encumbrances (*e.g. easements, restrictive covenants etc. as listed on the Second Schedule of the relevant Certificate/s of Title*):

Street name:	Suburb: Pingrup
Jolley Road	

Nearest street intersection:

Paterson Street, Newdegate-Pingrup Road & Tranter Road intersection

Proposed Development:

Nature of development: ☒ Works (New construction works with no change of land use)

☐ Use (Change of use of land with no construction works)

☐ Works and Use

NOTE: If the proposal involves advertising signage the Additional Information for Development Approval for Advertisements form (i.e. a Form 2) must be completed and submitted with this application.

Is an exemption from development claimed for part of the development? Yes ☐ No ☒

If yes, is the exemption for: ☐ Works

☐ Use

Description of proposed works and/or land use:

- 1 x 1.8m high x 420m x 55,020 tonnes capacity bulkhead
- associated drainage improvement works and new internal roads

Description of exemption claimed (if relevant):

NA

Nature of any existing buildings and/or land use:

Grain Handling & Storage Facility

Approximate cost of proposed development (excluding GST):

$1,100,000

OFFICE USE ONLY

Date application received:

Received by:

Application reference number:

Application fee payable: $

Date of receipt of application fee from applicant:

Receipt number for application fee:

Co-operative Bulk Handling Ltd
ABN 29 256 604 947

Level 6, 240 St Georges Terrace
Perth WA 6000 Australia

GPO Box L886
Perth WA 6842 Australia

Telephone
+61 8 9237 9600

Grower Service Centre
1800 199 083

cbh.com.au

CONSENT TO SIGN APPLICATIONS FOR DEVELOPMENT APPROVAL AND BUILDING PERMITS FOR LAND OWNED, LEASED OR LICENSED BY CO-OPERATIVE BULK HANDING LIMITED

This is to confirm that Co-operative Bulk Handling Limited (**CBH**) authorises each person who holds one of the following titles with CBH to sign and lodge on behalf of CBH all applications for development approval and building permits (and all documents associated with those applications) in connection with land owned, leased or licensed by CBH:

1. Chief External Relations Officer
2. Head of Government & Industry Relations
3. Manager – Government & Industry Relations
4. Principal – Planning & Approvals
5. Specialist - Regulatory Approvals

Should you require further information regarding any present or future applications for development approval or building permits, please do not hesitate to contact CBH Planning Approvals at PlanningApprovals@cbh.com.au.

This consent takes effect on the last date written below and from that date supersedes any and all previous consents to sign and lodge on behalf of CBH applications for development approval and / or building permits (and documents associated with those applications) in connection with land owned, leased or licensed by CBH.

Yours faithfully

Signed for and on behalf of Co-operative Bulk Handling Limited by or in the presence of:

Signature of Director

Name of Director: PAUL SADLEIR.

Date of signing: 21/12/2022.

Signature of ~~Director or~~ Company Secretary

Name of ~~Director or~~ Company Secretary: RICHARD CODLING

Date of signing: 21/12/2022

Co-operative Bulk Handling Ltd
ABN 29 256 604 947

Level 6, 240 St Georges Terrace
Perth WA 6000 Australia

GPO Box L886
Perth WA 6842 Australia

Telephone
+61 8 9237 9600

Grower Service Centre
1800 199 083

cbh.com.au

CONSENT TO SIGN APPLICATIONS FOR DEVELOPMENT APPROVAL AND BUILDING PERMITS FOR LAND OWNED, LEASED OR LICENSED BY CO-OPERATIVE BULK HANDING LIMITED

This is to confirm that Co-operative Bulk Handling Limited (**CBH**) authorises each of the following CBH personnel to sign and lodge on behalf of CBH all applications for development approval and building permits (and all documents associated with those applications) in connection with land owned, leased or licensed by CBH:

1. David Paton, acting Chief External Relations Officer (permanent position: Head of Government & Industry Relations).
2. Rob Dickie, acting Head of Government & Industry Relations (permanent position: Manager - Government & Industry Relations).
3. Kellie Todman, Manager – Government & Industry Relations.
4. Aaron Lohman, Principal – Planning & Approvals.
5. Timothy Roberts, Specialist - Regulatory Approvals.

Should you require further information regarding any present or future applications for development approval or building permits, please do not hesitate to contact CBH Planning Approvals at PlanningApprovals@cbh.com.au.

This consent takes effect on the last date written below and from that date supersedes any and all previous consents to sign and lodge on behalf of CBH applications for development approval and / or building permits (and documents associated with those applications) in connection with land owned, leased or licensed by CBH.

Yours faithfully

Signed for and on behalf of Co-operative Bulk Handling Limited by or in the presence of:

Signature of Director	Signature of ~~Director or~~ Company Secretary
PAUL SADLEIR	RICHARD CODLING
Name of Director	Name of ~~Director or~~ Company Secretary
21/12/2022	21/12/2022
Date of signing	Date of signing

WESTERN AUSTRALIA

REGISTER NUMBER	
11/DP419099	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
1	26/8/2020

VOLUME 2986 FOLIO 813

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

BGRoberts

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 11 ON DEPOSITED PLAN 419099

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

CO-OPERATIVE BULK HANDLING LTD OF LEVEL 6 240 ST GEORGES TERRACE PERTH WA 6000
(AF O466513) REGISTERED 7/8/2020

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND:	DP419099
PREVIOUS TITLE:	2141-111, 2141-112
PROPERTY STREET ADDRESS:	67 JOLLEY RD, PINGRUP.
LOCAL GOVERNMENT AUTHORITY:	SHIRE OF KENT

File No: BUIL.32
Record No: OCR6146

SHIRE OF KENT
NYABING ■ PINGRUP

24-26 Richmond St
Nyabing WA 6341
Ph: (08) 9829 1051
Fax: (08) 9829 1083
admin@kent.wa.gov.au

22 July 2022

Timothy Roberts
CBH Group
Level 6, 240 St Georges Terrace
PERTH WA 6000

By email: timothy.roberts@cbh.com.au

Dear Tim

TEMPORARY EXEMPTION – EMERGENCY GRAIN STORAGE AT LOT 11 JOLLEY ROAD, PINGRUP (CBH)

Please be advised that the Shire of Kent, in accordance with Clauses 61(1)(17) and 61(2)(f) of Schedule 2 – Deemed Provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015,* agrees to a temporary exemption at Lot 11 Jolley Road, Pingrup for a period of 12 months from the date of this letter to allow the following development to proceed:

- Emergency grain storage in the location as shown on the attached site plan. All works are to be located within 'development site' area;

- No more than 100mm excavation or fill from natural ground level is to be undertaken within the development site, unless otherwise agreed in writing by the Shire of Kent Chief Executive Officer;

This written agreement for a temporary exemption is subject to the following

(1) At the end of the 12-month period, the temporary 'use' shall cease and all 'works' subject to the temporary exemption shall be removed from the site and the site reinstated to how it was prior to works/use being undertaken.

(2) All works/use are to be undertaken within the lot boundaries of Lot 11 Jolley Road, Pingrup

Please note that this Temporary Exemption is issued on the basis that both prior approvals dated 23 December 2021 and 8 July 2022 are withdrawn noting that no development had commenced.

Yours sincerely

Adam Majid
Chief Executive Officer

HATCHING LEGEND

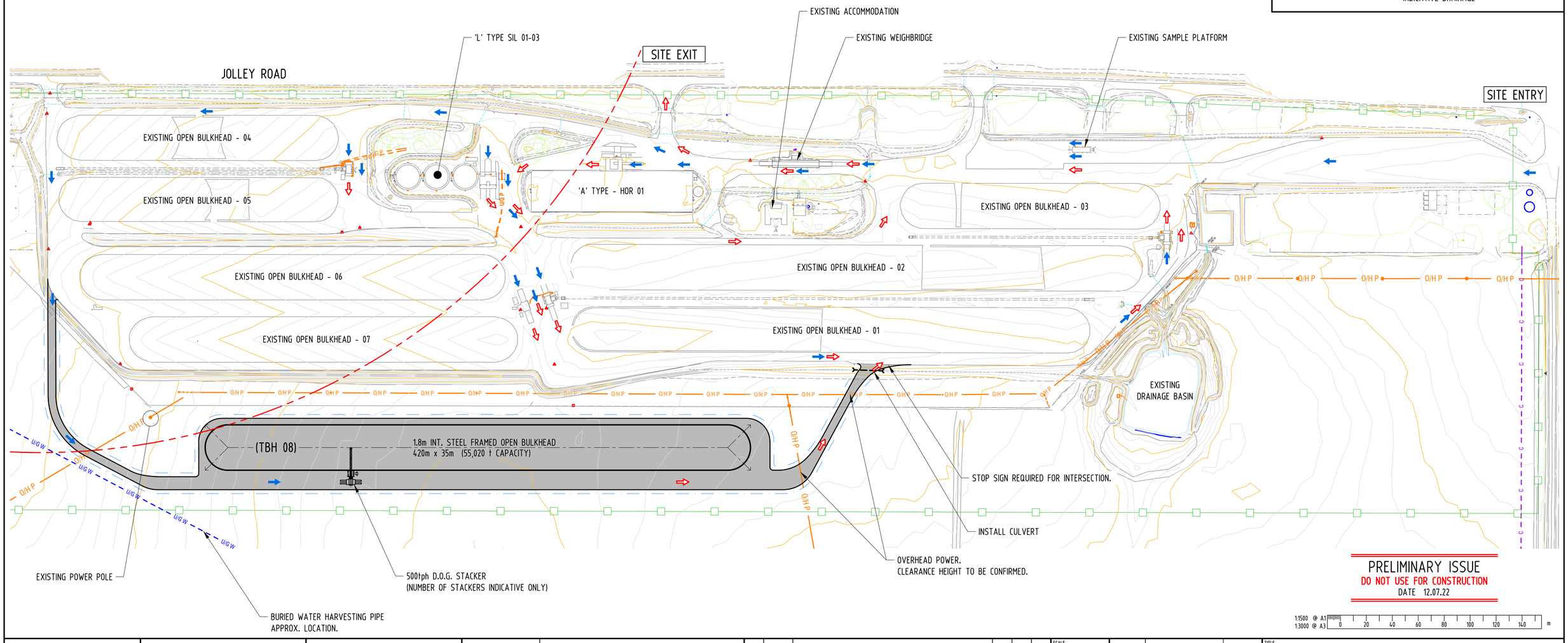
	AREA OF NEW WORKS	26,800 m^2

STORAGE CAPACITIES

EXISTING STORAGE		
'A' TYPE STORAGE	HOR 01	21,800 t
'L' TYPE STORAGE	3 SILOS	15,000 t
INT. STEEL FRAME OPEN BULKHEAD	(01)	40,000 t
INT. STEEL FRAME OPEN BULKHEAD	(02)	50,000 t
INT. STEEL FRAME OPEN BULKHEAD	(03)	25,000 t
LOW STEEL FRAME OPEN BULKHEAD	(04)	25,000 t
LOW STEEL FRAME OPEN BULKHEAD	(05)	25,000 t
INT. STEEL FRAME OPEN BULKHEAD	(06)	40,000 t
INT. STEEL FRAME OPEN BULKHEAD	(07)	39,300 t
TOTAL EXISTING STORAGE		281,100 t
PROPOSED STORAGE		
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 08)	55,020 t
TOTAL PROPOSED STORAGE		55,020 t
TOTAL SITE STORAGE		**336,120 t**

DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- LOT BOUNDARIES
- EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500m RADIUS
- CBH SITE BOUNDARY
- CBH RAIL LEASE BOUNDARY
- PROPOSED SITE BOUNDARY
- O/H P — OVERHEAD POWER LINES
- U/G P — UNDERGROUND POWER CABLES
- C — UNDERGROUND COMMS CABLES
- U/G W — UNDERGROUND WATER PIPES
- UNDERGROUND STORMWATER PIPES
- RAIL LINE
- INDICATIVE DRAINAGE



PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 12.07.22

1:1500 @ A1
1:3000 @ A3
0 20 40 60 80 100 120 140 m

CBH GROUP
ABN 29 256 604 947

CBH GROUP
LEVEL 6
240 ST GEORGE'S TERRACE
PERTH W.A. 6000
PH (08) 9237 9600
FAX (08) 9322 3942

REF DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
-	-	A	12.07.22	ISSUED AS CHECK PRINT AND FOR REVIEW	JB		

SCALE 1:1500
SHEET A1
PROJECT
CONTRACT No

DRAWN	J. Bullingham	12.07.22
CHECKED		
DESIGNED		
DESIGN APPR		
PROJECT APPR		

TITLE
PINGRUP
PRE FEASIBILITY STUDY
2022 EMERGENCY STORAGE
CONCEPTUAL LAYOUT No. 1

DRG No 591-ENG-CI-DCO-0002 | SHEET 1 OF 1 | REV. A

INSTALLATION NOTES:

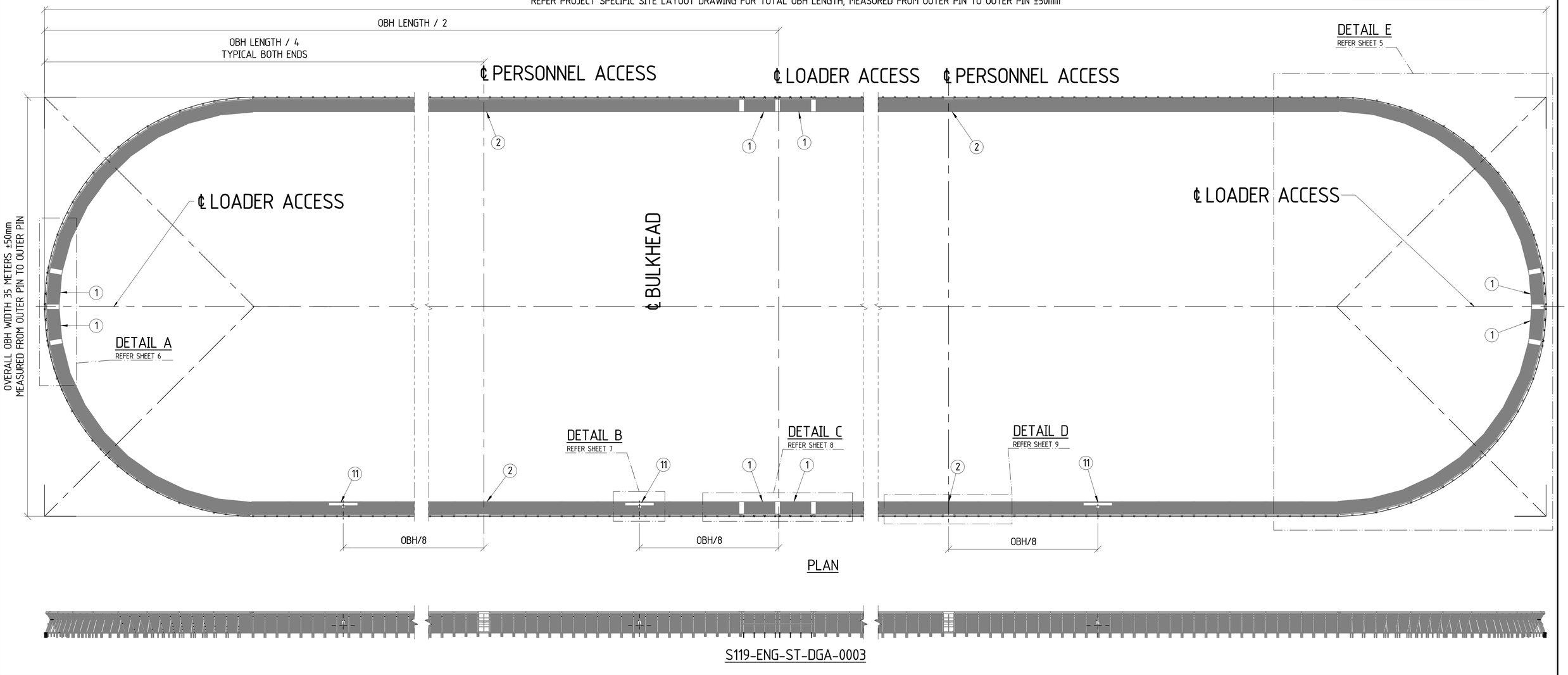
1. OBH LENGTH AND WIDTH DIMENSIONS ARE SPECIFIED FROM REAR PIN TO THE OPPOSITE REAR PIN. REFER PROJECT SPECIFIC SITE LAYOUT DRAWING FOR DIMENSIONS.
2. TOLERANCE FOR OVERALL OBH WIDTH AND LENGTH ARE +/- 50MM. TOLERANCE FOR FRAME SPACING +/- 10mm.
3. NOTE DIFFERENT ANCHORING DETAILS FOR DOOR/GATES AND FRAMES EITHER SIDE OF BULKHEAD OPENINGS. REFER ANCHORING DETAILS ON SHEETS 2 AND 3.
4. NOTE ADDITIONAL Z-CAPPING, WOOD AND CLADDING TRIMMING REQUIRED AT GATE JOINS. REFER SHEETS 6 AND 8 FOR DETAILS.
5. TYPICAL CLADDING OVERLAP IS 200mm, CENTERERED OVER THE CENTERLINE OF THE STRUT, FOR ALL JOINS EXCEPT AT GATE AND DOOR JOINS. REFER SHEETS 6 - 9.
6. ALL Z-CAPPING MUST BE ALIGNED AS ACCURATELY AS POSSIBLE. ANY MISALIGNMENT IN Z-CAPPING WILL TEAR THE OBH TARP. REFER NOTES ON SHEETS 6, 8 AND 9 FOR TOLERANCES.
7. FOUR PERSONNEL ACCESS DOORS TO BE INSTALLED AS SHOWN. TWO INSTALLED EACH SIDE AT MIDPOINTS BETWEEN END OF OBH AND CENTRE BULKHEAD OPENING.
8. THREE FUMIGATION T-PIECES TO BE INSTALLED ON SAME SIDE AS ELECTRICAL CONNECTION. REFER SHEETS 1 AND 7 FOR INSTALLATION DETAILS. REFER CBH DRAWING S119-ENG-ME-DER-0001 FOR VENDOR DRAWING OF T-PIECE.
9. DRAWING DEPICTS TYPICAL OBH SIZE OF 35M WIDE BY 300M LONG AND ASSOCIATED STANDARDISED REQUIRED QUANTITIES OF FUMIGATION TEES, PERSONAL ACCESS DOORS AND FRONT END LOADER ACCESS GATES. SITE SPECIFIC OBH REQUIREMENTS SHALL BE CONFIRMED WITH THE NOMINATED CBH REPRESENTATIVE PRIOR TO CONSTRUCTION.
10. BULKHEAD CONTENTS ARE INTENDED TO BE FUMIGATED IN A SEALED ENVIRONMENT BY USE OF WALL CANVICON AND OVER STACK TARPS - THE CONTRACTOR SHALL MINIMISE ANY MEANS WHICH COULD DETRIMENTALLY AFFECT THE SEALING CAPABILITY, SUCH AS SHARP EDGES THAT COULD CUT TARP.

PARTS LIST (PER UNIT)

ITEM No	DESCRIPTION	WIDTH	LENGTH	QTY	CBH OR SUPPLIER PART No	PROCESS	SAP Code	MASS Kg	TO DETAIL
1	FRONT END LOADER ACCESS GATE			REFER NOTE	S119-ENG-ST-ASY-0034	FIELD FIT	N/A	184.4	Yes
2	PERSONNEL ACCESS DOOR			REFER NOTE	S119-ENG-ST-ASY-0017	FITTING	N/A	17.1	Yes
3	STRAIGHT PIN STRUT ASSEMBLY			REFER NOTE	S119-ENG-ST-ASY-0004	FITTING	N/A	36.4	Yes
4	SPIRAL PIN STRUT ASSEMBLY			REFER NOTE	S119-ENG-ST-ASY-0005	FITTING	N/A	36.2	Yes
5	CUSTOM ORB ZINC ALUME 0.42mm BMT 550 MPa MIN. (YIELD)	762	3200	REFER NOTE	S119-ENG-ST-PRT-0010	FITTING	DREQ	1.3	No
6	DIA 20 STRAIGHT PIN ANCHOR		420	REFER NOTE	S-014-A0000	FIELD KIT	DREQ	1.1	Yes
7	SPIRAL PIN ANCHOR		300	REFER NOTE	S119-ENG-ST-DER-0052	FITTING	DREQ	0.8	Yes
8	Z CAPPING 1.6PL PGI	300	3000	REFER NOTE	S119-ENG-ST-PRT-0011	FAB SHEET	108015	11.4	Yes
9	TIMBER SAWN KARRI STRUC3 75mmx50mmx3m	75	3000	REFER NOTE	S119-ENG-ST-PRT-0014	FITTING	108594	6.2	No
10	TARP CLAMP 6PL	130	257	REFER NOTE	S119-ENG-ST-PRT-0012	FAB PROFILE	107901	1.6	Yes
11	FUMIGATION TEE PIECE			REFER NOTE	S119-ENG-ME-DER-0001	FITTING	N/A		Yes
12	RUBBER STRIP 450mm WIDE, 8mm THICK	450	2050	REFER NOTE	S119-ENG-ST-PRT-0048	FIELD KIT	DREQ	6.9	No
13	M10 x 120 GALV BOLT GR8.8 (50mm THREAD Min.)			REFER NOTE		FIELD KIT	DREQ	0.1	No
14	M10 GALV. NUT			REFER NOTE		FIELD KIT	DREQ	0.0	No
15	M10 GALV FW			REFER NOTE		FIELD KIT	DREQ	0.0	No
16	METAL TEK SCREW, HEX HEAD, 14g-20x22mm, CLASS 4, WITH SEAL			REFER NOTE		FIELD KIT	DREQ	0.0	No
17	METAL TEK SCREW, HEX HEAD, 14g-20x45mm, CLASS 4, WITH SEAL			REFER NOTE		FIELD KIT	DREQ		No
18	NOVALAST LTM 151			REFER NOTE		FIELD KIT	DREQ		No
19	BOSTIK SEAL AND FLEX 1			REFER NOTE		FIELD KIT	DREQ		No

** QTY NOTE: TO CALCULATE EXACT ORDER QUANTITYS, REFER TO THE 'CBH OBH PROCUREMENT CALCULATOR'-S119-ENG-ST-CAL-0001

REFER PROJECT SPECIFIC SITE LAYOUT DRAWING FOR TOTAL OBH LENGTH, MEASURED FROM OUTER PIN TO OUTER PIN ±50mm



PLAN

S119-ENG-ST-DGA-0003

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

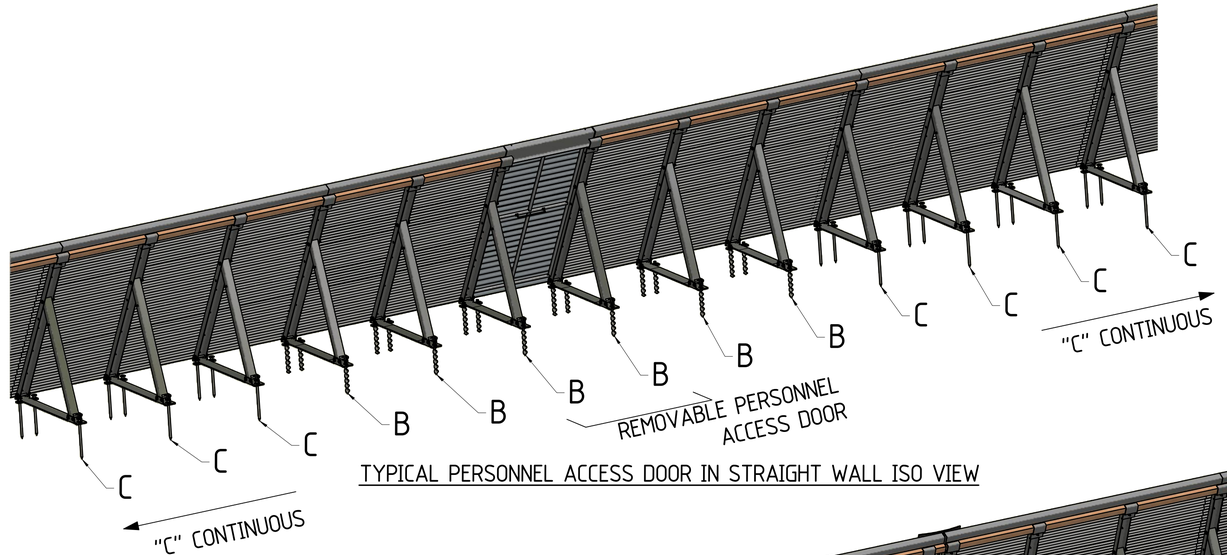
REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

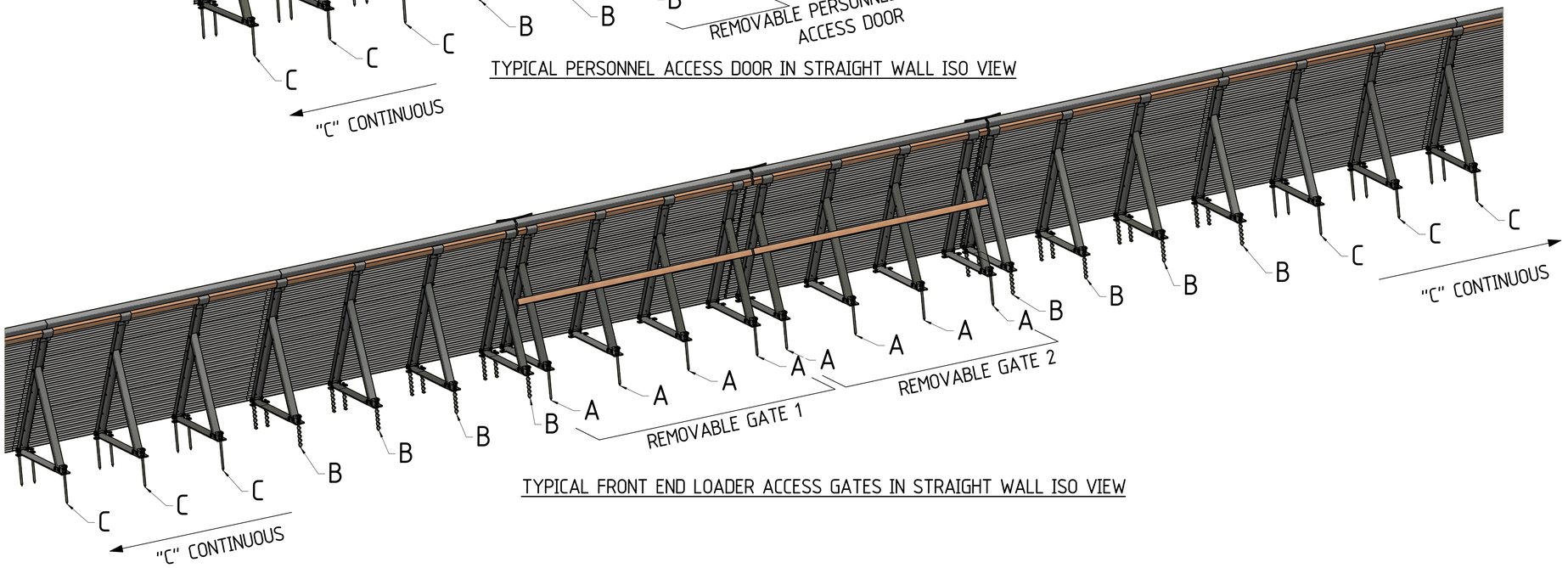
DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
OVERALL LAYOUT

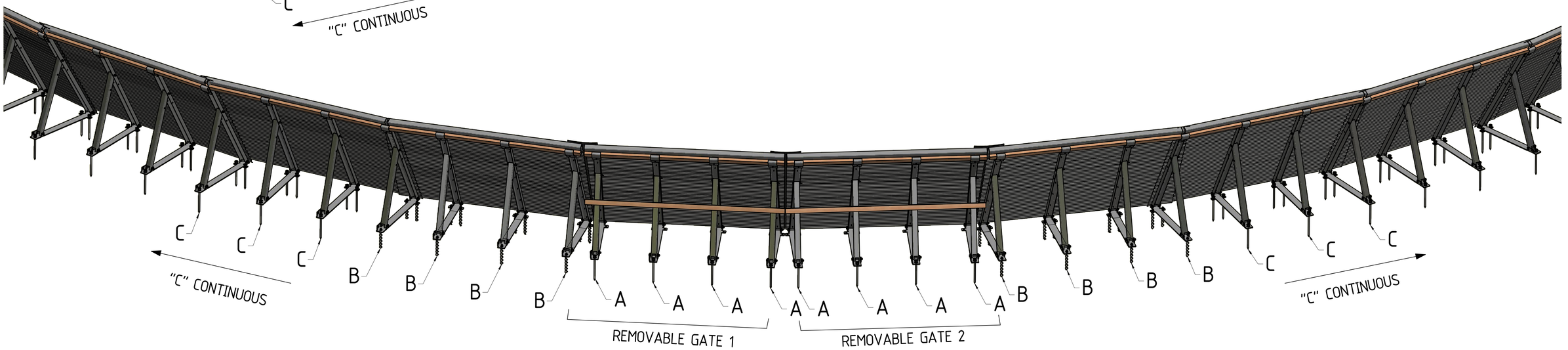
SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 1 OF 9
REV: 0



TYPICAL PERSONNEL ACCESS DOOR IN STRAIGHT WALL ISO VIEW



TYPICAL FRONT END LOADER ACCESS GATES IN STRAIGHT WALL ISO VIEW



TYPICAL FRONT END LOADER ACCESS GATES IN CURVED WALL ISO VIEW

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

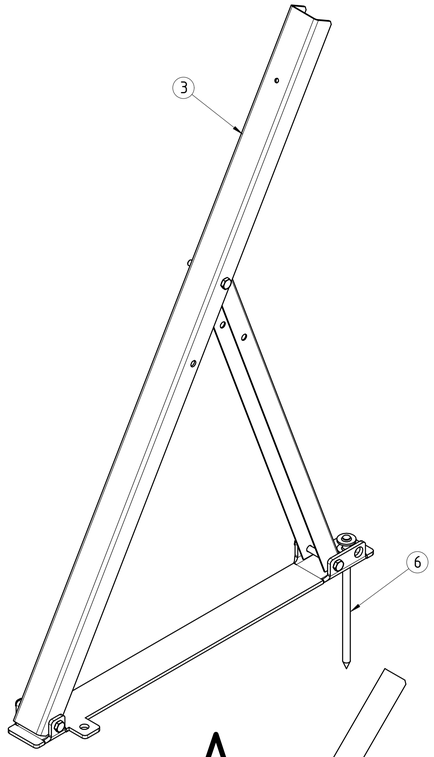
REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

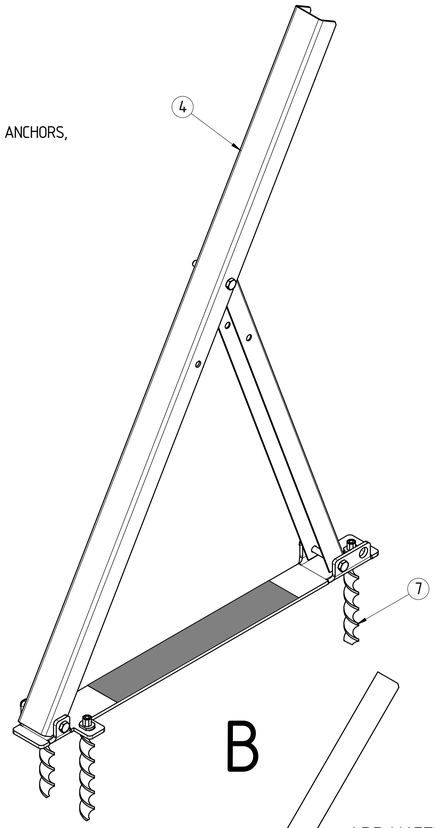
DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
ANCHORINGS LAYOUT

SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 2 OF 9
REV: 0

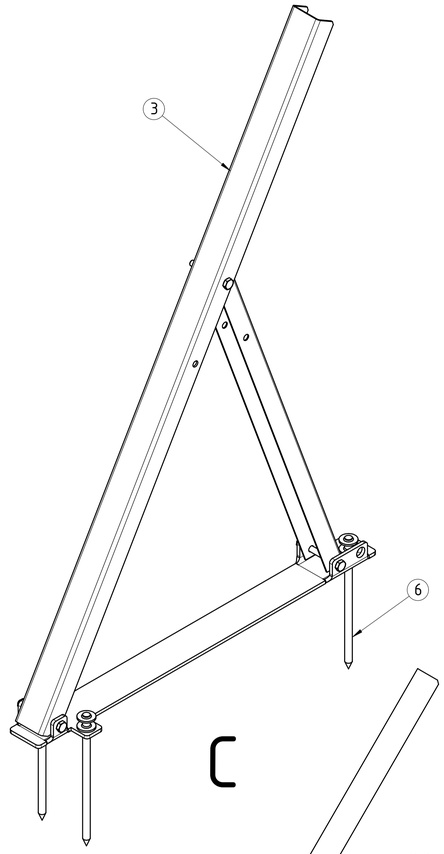


A

NOTES:
REMOVAL TOOL REQUIRED FOR SPIRAFIX ANCHORS,
M22 SPANNER/SOCKET,
HANDLE LENGTH TO SUIT CONDITIONS.



B



C

ARRANGEMENT 'A' NOTES:

- PURPOSE: ARRANGEMENT 'A' IS USED IN THE FRONT END LOADER ACCESS GATE ASSEMBLY (S119-ENG-ST-ASY-0034). ONLY 1 STRAIGHT PIN ANCHOR IS TO BE INSTALLED AS THE DOOR IS TO BE REMOVABLE.
- STRUT TYPE: STRAIGHT PIN STRUT
- PIN TYPE: STRAIGHT PIN ANCHOR
- PIN QUANTITY: 1

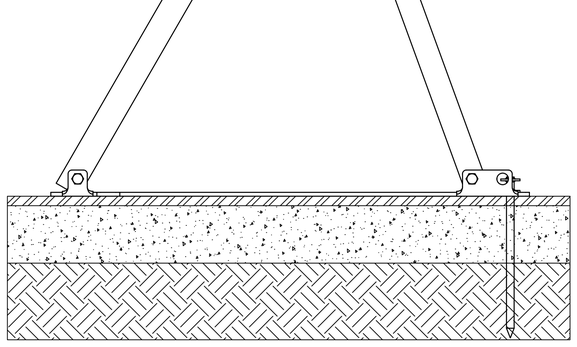
ARRANGEMENT 'B' NOTES:

- PURPOSE: ARRANGEMENT 'B' IS USED 4 STRUTS EITHER SIDE OF THE FRONT END LOADER ACCESS GATES AND 3 STRUTS EITHER SIDE OF PERSONNEL ACCESS DOORS, AS WHEN THE GATES/DOORS ARE REMOVED THE SURROUNDING STRUTS EXPERIENCE HIGHER WIND LOADS.
- STRUT TYPE: SPIRAL PIN STRUT
- PIN TYPE: SPIRAL PIN ANCHOR
- PIN QUANTITY: 3

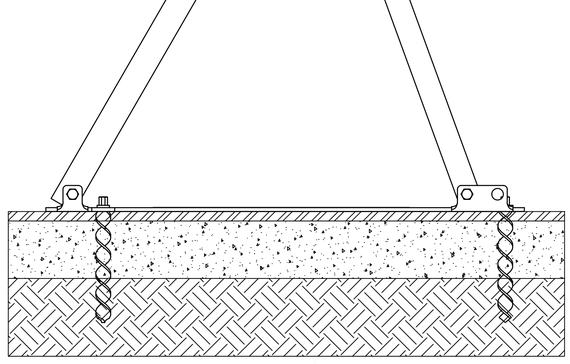
ARRANGEMENT 'C' NOTES:

PURPOSE: ARRANGEMENT 'C' IS USED IN ALL LOCATIONS, OTHER THAN WHERE ARRANGEMENT 'A' AND 'B' ARE USED

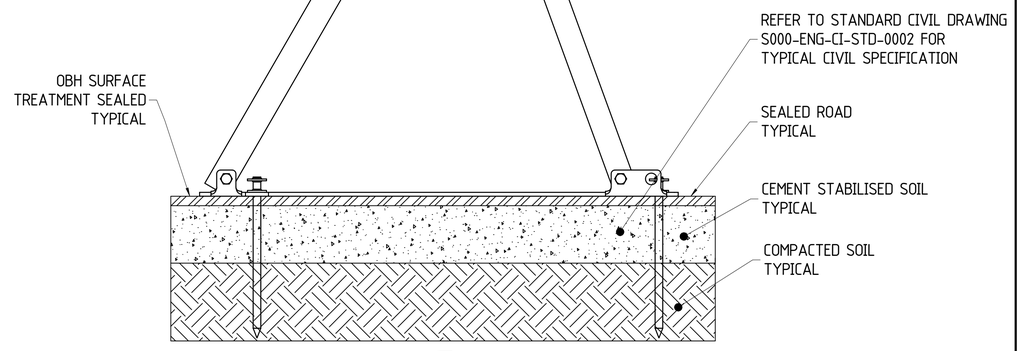
- STRUT TYPE: STRAIGHT PIN STRUT
- PIN TYPE: STRAIGHT PIN ANCHOR
- PIN QUANTITY: 3



A



B



C

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

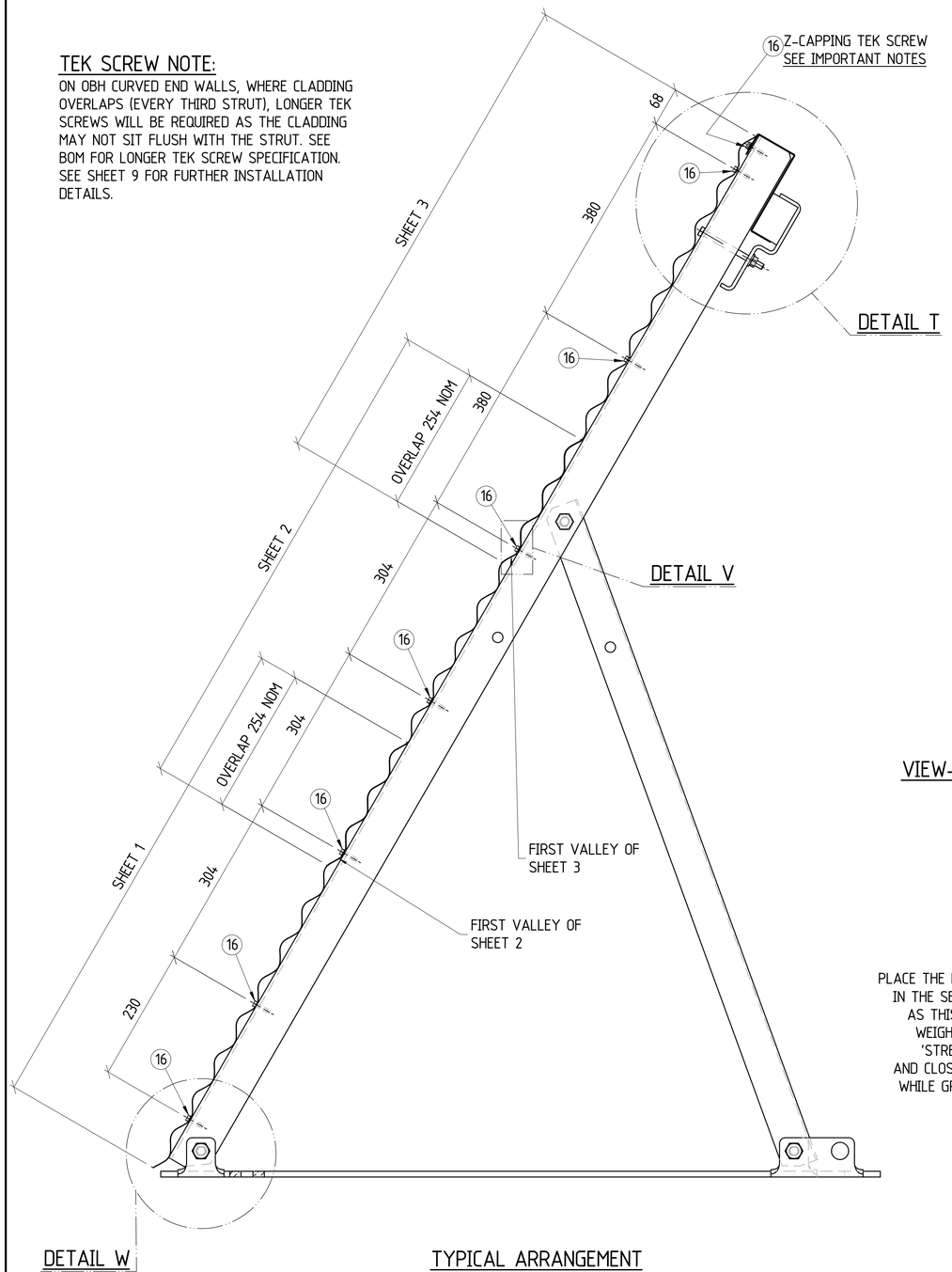
DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
TYPICAL ANCHORINGS

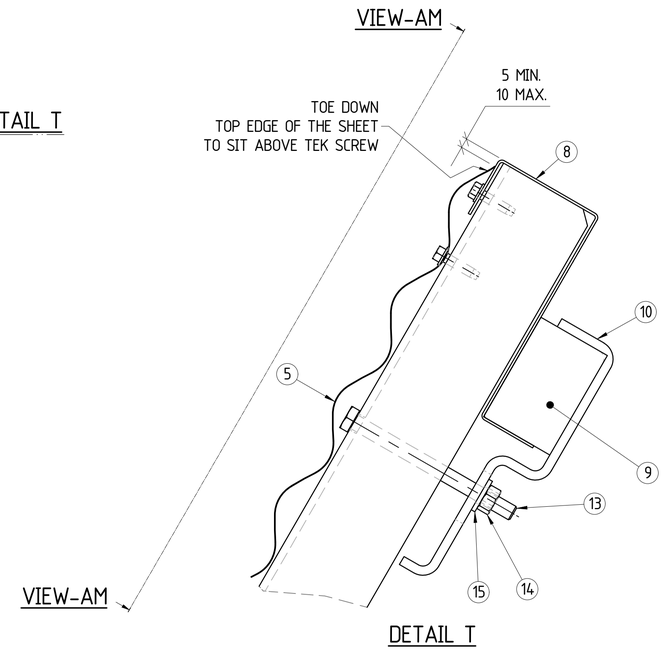
SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 3 OF 9
REV.: 0

TEK SCREW NOTE:

ON OBH CURVED END WALLS, WHERE CLADDING OVERLAPS (EVERY THIRD STRUT), LONGER TEK SCREWS WILL BE REQUIRED AS THE CLADDING MAY NOT SIT FLUSH WITH THE STRUT. SEE BOM FOR LONGER TEK SCREW SPECIFICATION. SEE SHEET 9 FOR FURTHER INSTALLATION DETAILS.



TYPICAL ARRANGEMENT

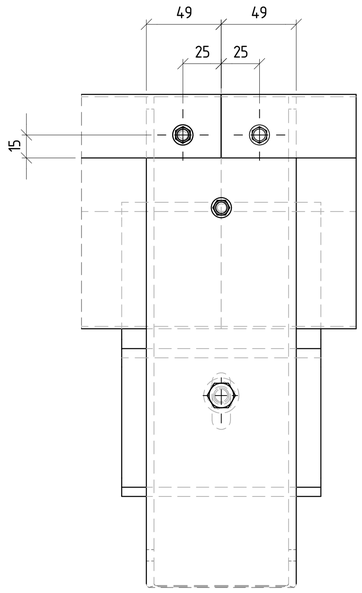


DETAIL T

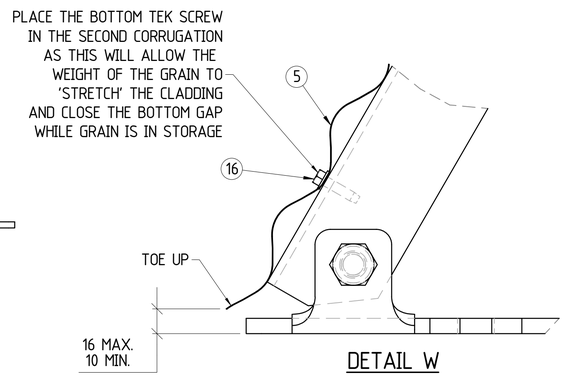
IMPORTANT NOTE:

TYPICAL ALL JOINTS, EXCEPT DOOR/GATE JOINS:

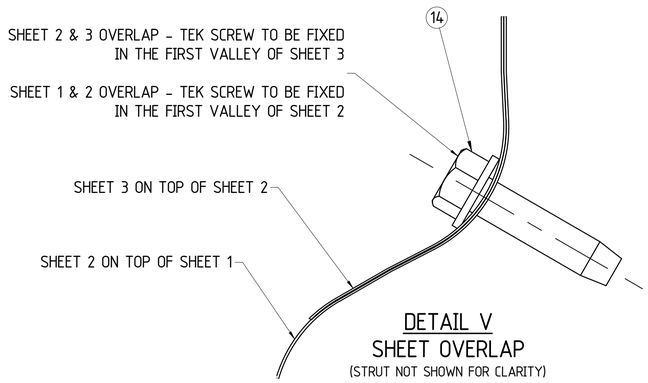
- 'Z' CAPPING SHALL BUTT JOIN TO THE CENTRE LINE OF THE STRUT.
- ALL Z CAPPING MUST BE ALIGNED AS ACCURATELY AS POSSIBLE. ANY MIS-ALIGNMENT IN THE 'Z' CAPPING WILL CREATE SHARP EDGES, WHICH MAY DAMAGE THE OBH TARP. MAXIMUM 'Z' CAPPING MISALIGNMENT TO BE 2mm IN ALL DIRECTIONS.
- WHERE 'Z' CAPPING BUTT JOINS OVER A STRUT, FIX 'Z' CAP WITH 2 x TEK SCREWS, ONE IN EACH 'Z' CAP (SHOWN BELOW)
- WHERE 'Z' CAPPING PASSES OVER A STRUT, FIX 'Z' CAP WITH 1 x TEK SCREW, INLINE WITH THE CENTRE OF THE STRUT.



VIEW-AM
(CLADDING NOT SHOWN FOR CLARITY)



DETAIL W



DETAIL V
SHEET OVERLAP
(STRUT NOT SHOWN FOR CLARITY)

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

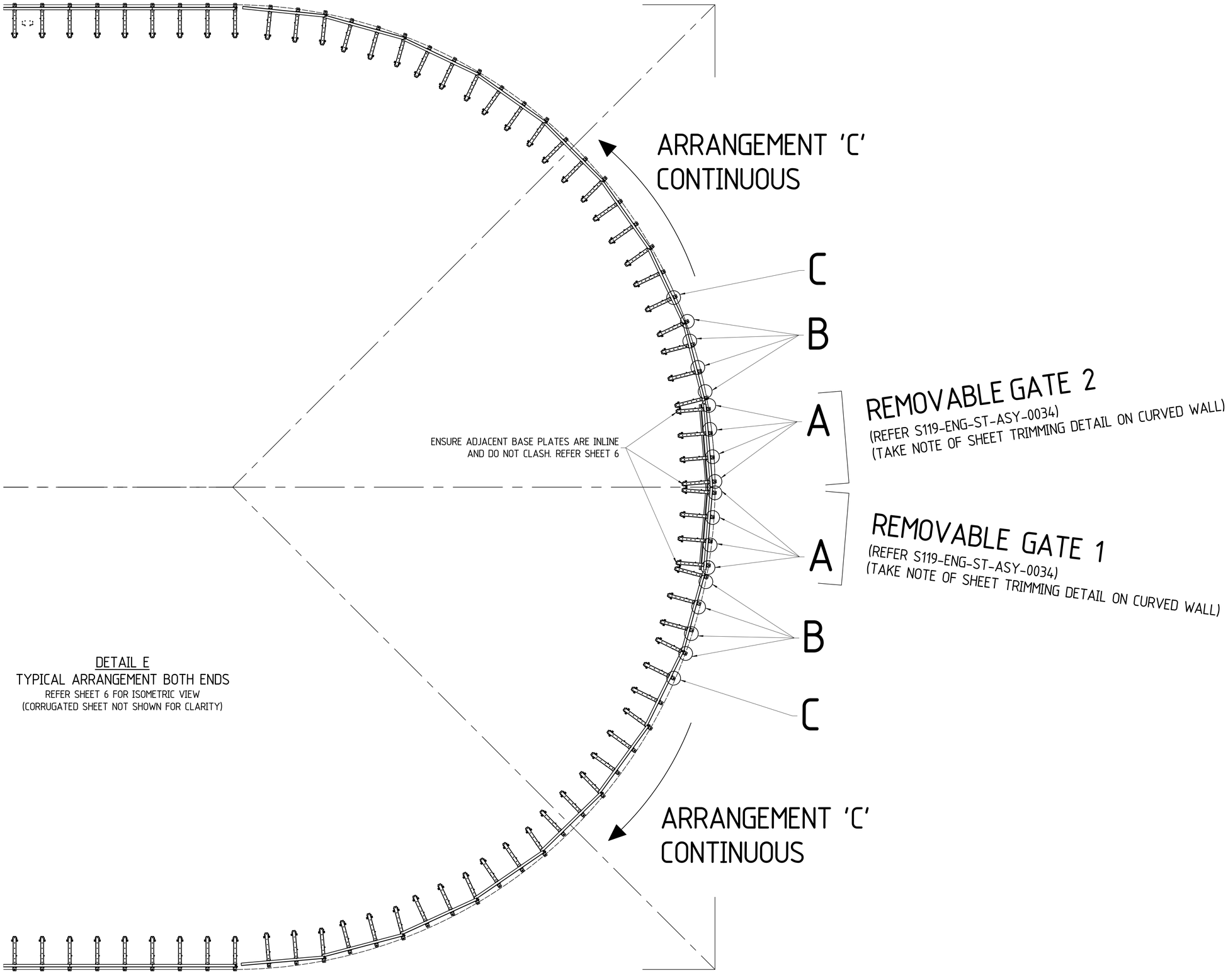
DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE	REV	DATE	REVISIONS	BY	CHK	APP
		0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
TYPICAL WALL ASSEMBLY

SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 4 OF 9
REV.: 0



DETAIL E
TYPICAL ARRANGEMENT BOTH ENDS
REFER SHEET 6 FOR ISOMETRIC VIEW
(CORRUGATED SHEET NOT SHOWN FOR CLARITY)

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
TYPICAL CURVED END WALL LAYOUT

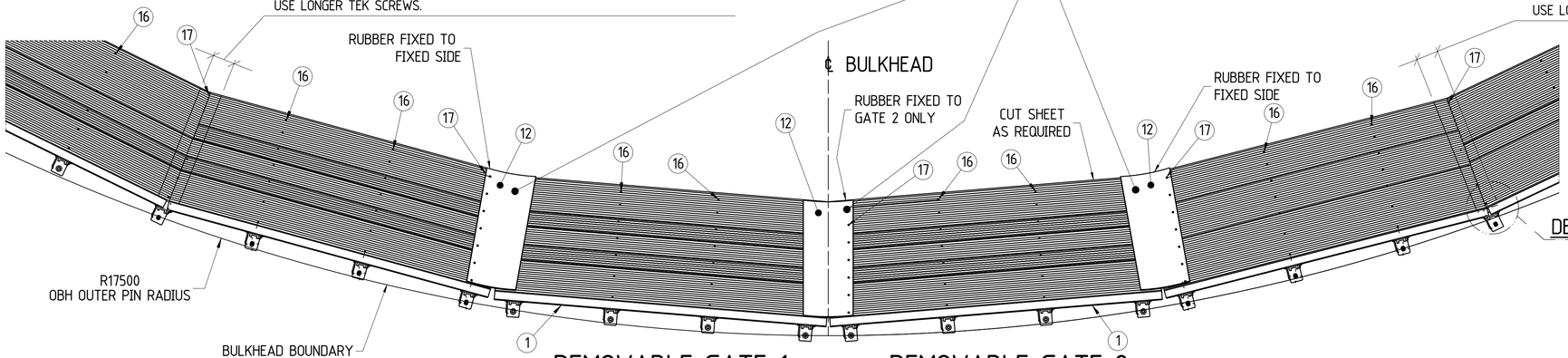
SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 5 OF 9
REV.: 0

TYPICAL RUBBER FIXINGS, BOTH ENDS

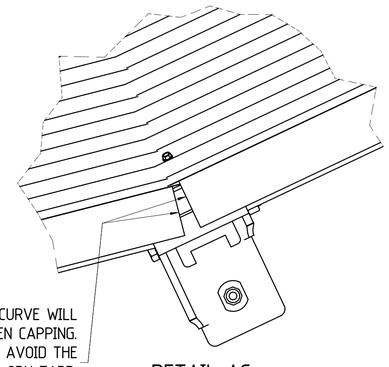
- ATTACH CONVEYOR BELT OVER JOINTS (SEE BOM FOR BELT DETAILS)
- FIX RUBBER USING 45MM LONG TEK SCREWS, USING 7 TEK SCREWS PER RUBBER STRIP

■ 200 CLADDING OVERLAP, CENTERED OVER THE CENTRELINE OF THE STRUT TYPICAL ALL CLADDING, EXCEPT OBH GATE/DOOR JOINS
■ ON CURVED ENDS, WHERE CLADDING OVERLAPS, USE LONGER TEK SCREWS.

■ 200 CLADDING OVERLAP, CENTERED OVER THE CENTRELINE OF THE STRUT TYPICAL ALL CLADDING, EXCEPT OBH GATE/DOOR JOINS
■ ON CURVED ENDS, WHERE CLADDING OVERLAPS, USE LONGER TEK SCREWS.



DETAIL AC



FITTING THE Z-CAPPING TO A CURVE WILL CREATE A GAP BETWEEN CAPPING. MINIMISE GAP AS MUCH AS POSSIBLE TO AVOID THE SHARP EDGES RIPPING THE OBH TARP. VERTICAL AND HORIZONRAL MISALIGNMENT SHOULD BE A MAXIMUM OF 2MM.

DETAIL AC

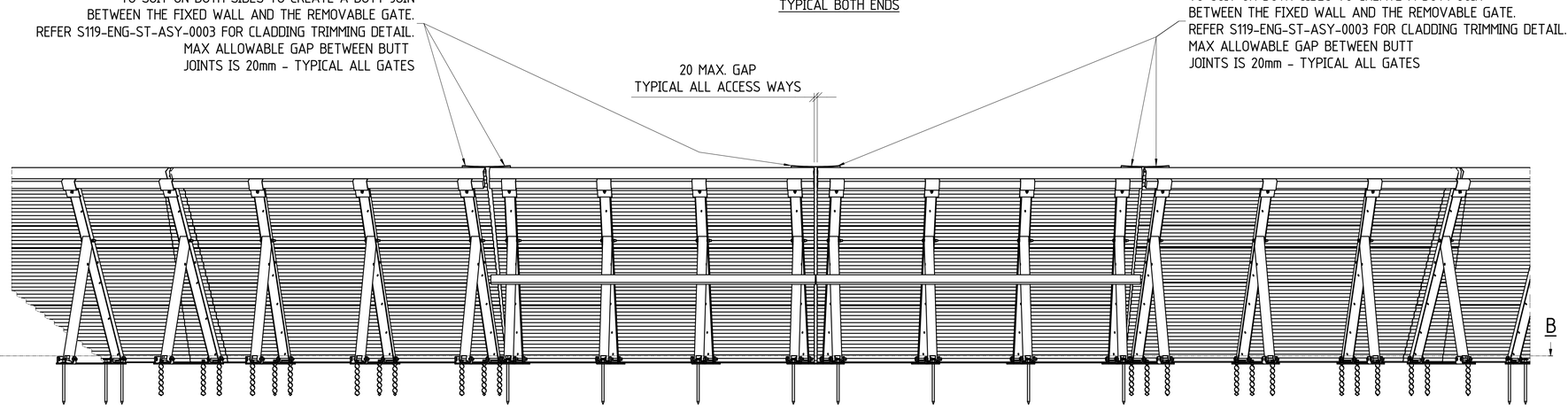
DETAIL A

FRONT END LOADER ACCESS GATES IN CURVED WALL
TYPICAL BOTH ENDS

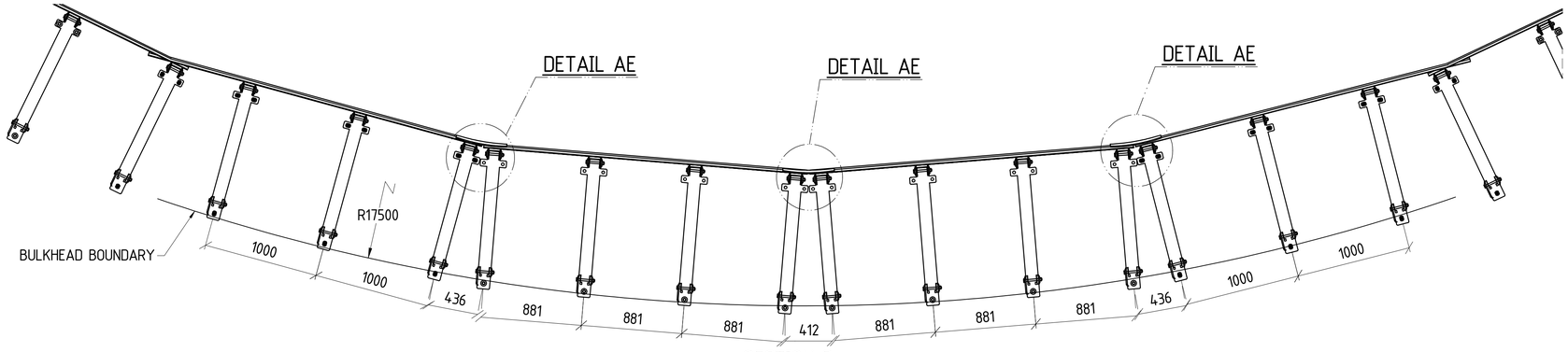
CLADDING, Z-CAPPING AND WOOD, ALL TRIMMED TO SUIT ON BOTH SIDES TO CREATE A BUTT JOIN BETWEEN THE FIXED WALL AND THE REMOVABLE GATE. REFER S119-ENG-ST-ASY-0003 FOR CLADDING TRIMMING DETAIL. MAX ALLOWABLE GAP BETWEEN BUTT JOINTS IS 20mm - TYPICAL ALL GATES

20 MAX. GAP
TYPICAL ALL ACCESS WAYS

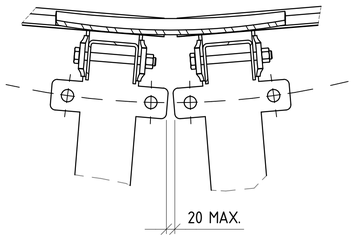
CLADDING, Z-CAPPING AND WOOD, ALL TRIMMED TO SUIT ON BOTH SIDES TO CREATE A BUTT JOIN BETWEEN THE FIXED WALL AND THE REMOVABLE GATE. REFER S119-ENG-ST-ASY-0003 FOR CLADDING TRIMMING DETAIL. MAX ALLOWABLE GAP BETWEEN BUTT JOINTS IS 20mm - TYPICAL ALL GATES



ELEVATION



SECTION B
FRAMES FOOT PRINT



DETAIL AE

TYPICAL STRUT FOOT ALIGNMENT
AT GATE JOINS
(PINS NOT SHOWN FOR CLARITY)

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

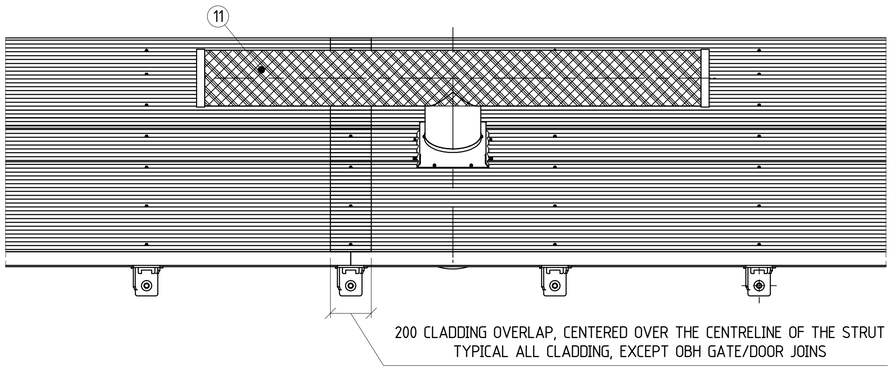
DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE	REV	DATE	REVISIONS	BY	CHK	APP
		0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

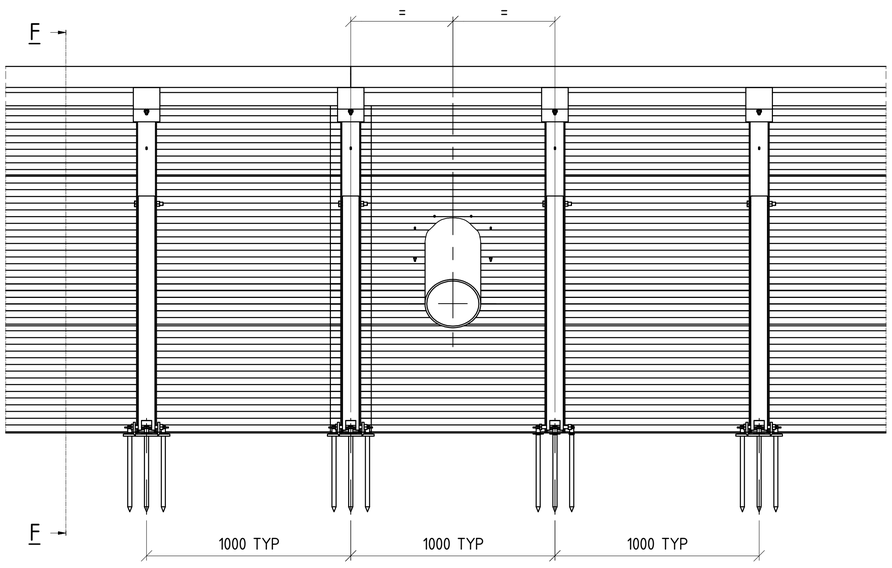
DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
CURVED OBH OPENING DETAIL

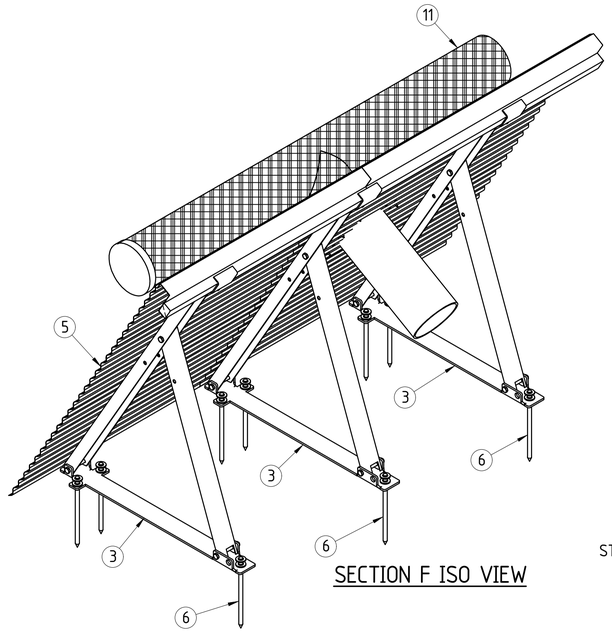
SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 6 OF 9
REV.: 0



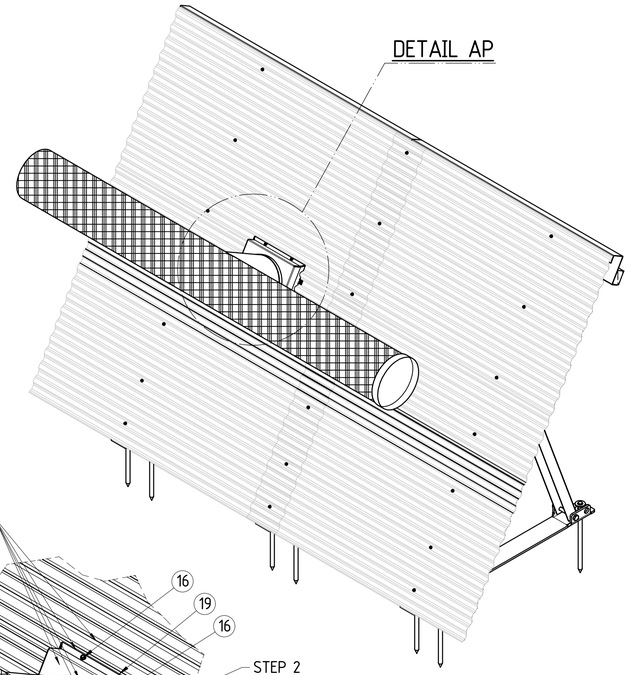
DETAIL B
'T' PIECE INSTALLATION DETAIL

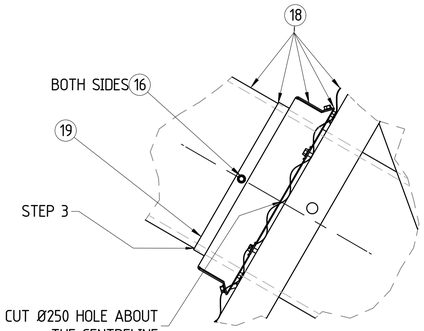


ELEVAION

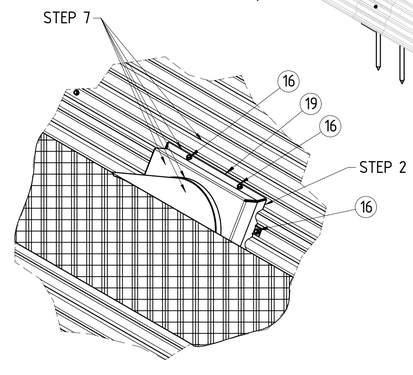


SECTION F ISO VIEW

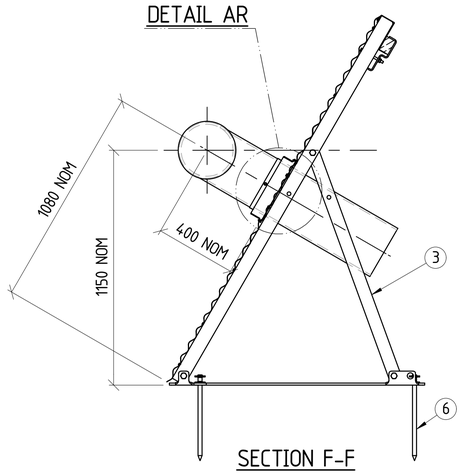




DETAIL AR



DETAIL AP



SECTION F-F

BACKGROUND:

- THE 'T' PIECE IS USED TO PUMP HAZARDOUS FUMIGANT INTO THE STORAGE AFTER IT IS FULLY SEALED. CARE MUST BE TAKEN WHEN INSTALLING THE 'T' PIECE AND APPLYING THE SEALANTS TO ENSURE THE SEAL IS APPLIED TO A HIGH QUALITY.

USE THE FOLLOWING QUANTITY'S PER 1 'T'PIECE

- 1 X 600ML SAUSAGE OF BOSTIK SEAL AND FLEX 1
- 1L OF NOVALAST LTM 151

PROCEDURE:

- STEP 1: PREPARE AND CLEAN SURFACES WHERE SEALANTS ARE TO BE APPLIED AS PER MANUFACTURERS SPECIFICATIONS.
- STEP 2: INITIAL COLLAR INSTALL; APPLY A THICK (5-10MM) BEAD OF 'BOSTIK SEAL N FLEX 1' TO ALL EDGES OF THE T-PIECE MOUNTING COLLAR WHICH WILL CONTACT THE CORRUGATED CLADDING. TEK SCREW T-PIECE MOUNT (WITH BOSTIC SEALANT APPLIED) TO THE CLADDING USING 8 TEK SCREWS, EVENLY SPACED AROUND THE T-PIECE MOUNTING COLLAR.
- STEP 3: INSERT T-PIECE INTO THE T-PIECE MOUNTING COLLAR. SECURE THE T-PIECE AT THE LOCATION SHOWN, USING 2 X TEK SCREWS, THROUGH THE MOUNTING COLLAR RING. APPLY A THICK (5-10MM) BEAD OF 'BOSTIK SEAL N FLEX 1' AROUND THE JOIN AND AROUND ANY GAPS, INCLUDING AROUND THE TEK SCREWS. ALSO APPLY A THICK BEAD TO FILL THE GAP BETWEEN THE CLADDING AND THE T-PIECE, ON THE OUTSIDE OF THE BULKHEAD.
- STEP 4: LET SEALANT DRY AS PER MANUFACTURER'S DIRECTIONS.
- STEP 5: APPLY A SECOND THICK (5-10MM) BEAD OF 'BOSTIC SEAL N FLEX 1' AROUND ALL JOINS BETWEEN THE T-PIECE MOUNTING COLLAR, THE T-PIECE AND THE CLADDING.
- STEP 6: LET SEALANT DRY AS PER MANUFACTURER'S DIRECTIONS.
- STEP 7: PAINT THE ENTIRE T-PIECE MOUNTING COLLAR AND 150MM OF CLADDING AROUND THE COLLAR. ALSO PAINT 150MM OF THE T-PIECE, PAST THE COLLAR RING JOIN. PAINT WITH 'NOVALAST 151 LTM'
- STEP 8: LET SEALANT DRY AS PER MANUFACTURER'S DIRECTIONS.

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

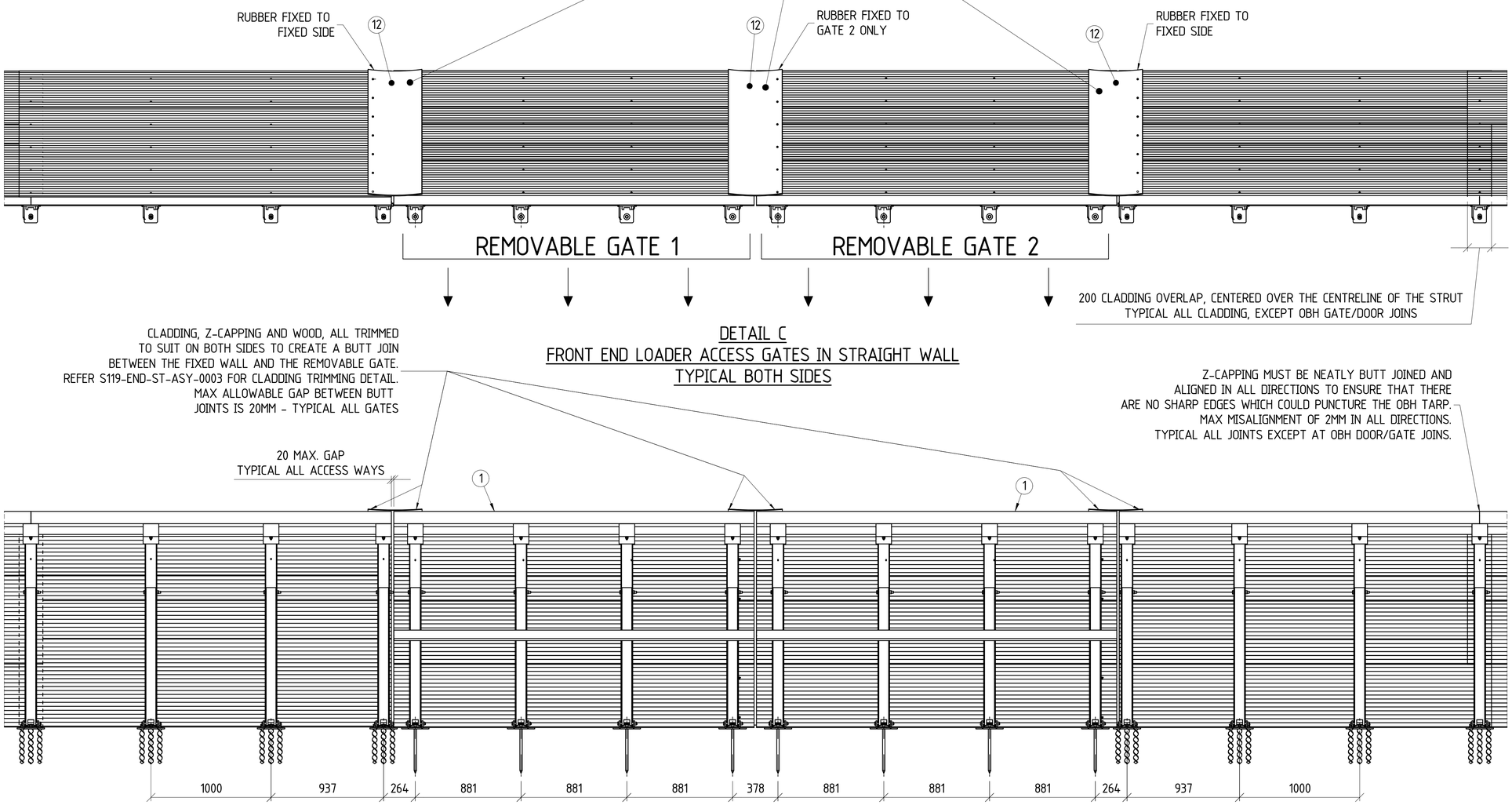
DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
'T' PIECE DETAIL

SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 7 OF 9
REV: 0

TYPICAL RUBBER FIXINGS, BOTH ENDS

- ATTACH CONVEYOR BELT OVER JOINTS (SEE BOM FOR BELT DETAILS)
- FIX RUBBER USING 45MM LONG TEK SCREWS, USING 7 TEK SCREWS PER RUBBER STRIP



DETAIL C
FRONT END LOADER ACCESS GATES IN STRAIGHT WALL
TYPICAL BOTH SIDES

ELEVATION

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

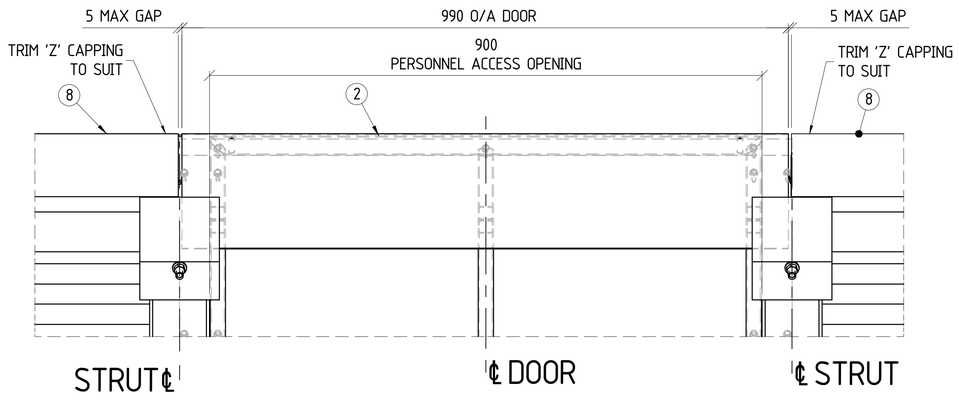
REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

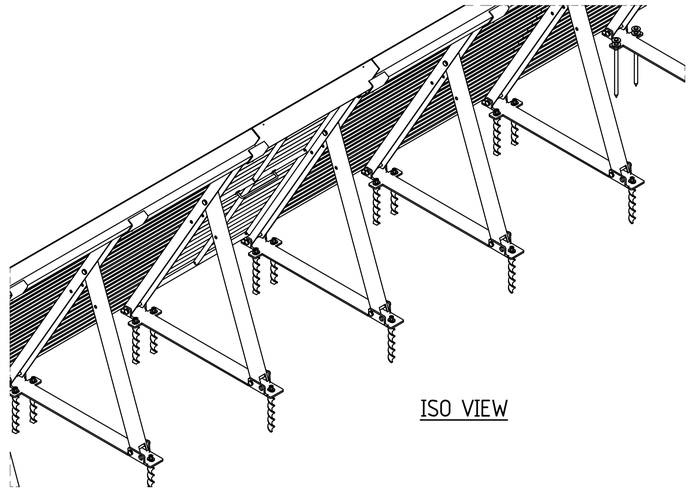
DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
STRAIGHT OBH OPENING DETAIL

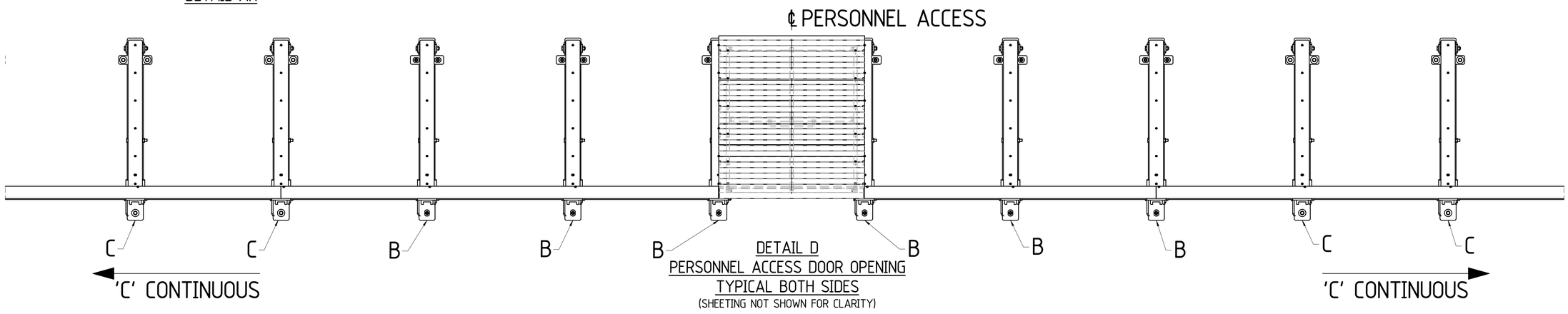
SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 8 OF 9
REV: 0



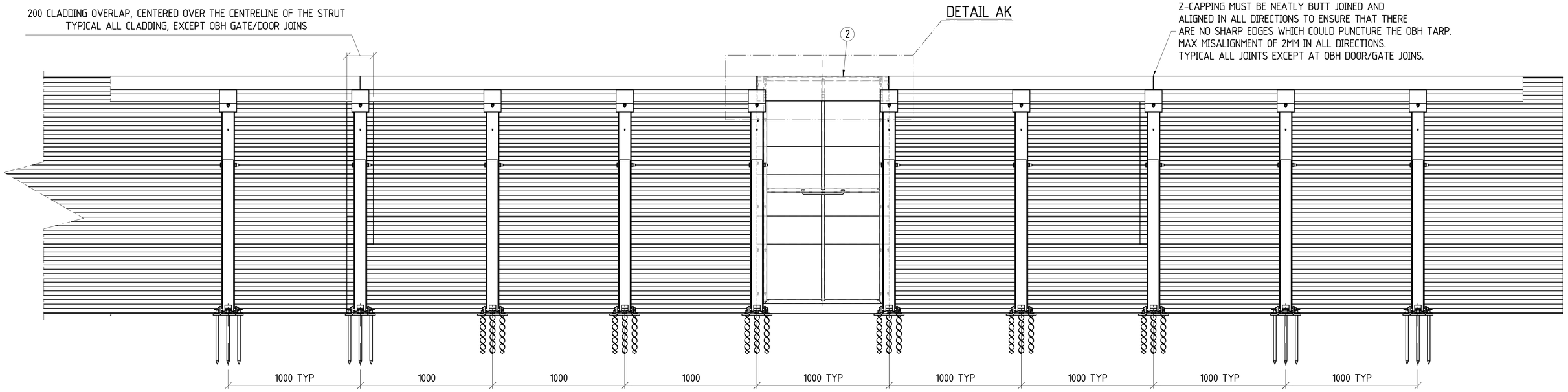
DETAIL AK



ISO VIEW



DETAIL D
PERSONNEL ACCESS DOOR OPENING
TYPICAL BOTH SIDES
(SHEETING NOT SHOWN FOR CLARITY)



ELEVATION

CBH GROUP HEAD OFFICE
LEVEL 6, 240 ST GEORGES TERRACE,
PERTH W.A 6000
PH (08) 9237 9600 FAX (08) 9322 3942

DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	BY	CHK	APP
0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION	SCR	LS	NH

DRAWN	SCR	10/06/2020
CHECKED	LS	10/06/2020
ENGINEER	BC	11/06/2020
APPROVED	NH	11/06/2020

DRAWING TITLE
1.8m OPEN BULK HEAD
GENERAL ARRANGEMENT
PERSONELL ACCESS DOOR DETAIL

SITE: VARIOUS
SIZE: A1
PROJECT: STANDARD
DRAWING No: S119-ENG-ST-DGA-0003
SHEET: 9 OF 9
REV.: 0

MEMORANDUM

Project:	Pingrup Emergency OBH (R-0432/Albany)			Project No:	RP21142.001
To:	Copy:	Name:	Organisation:	email:	
☒	☐	MICHAEL MUNDAY	CBH Group	Michael.Munday@cbh.com.au	
☐	☐				
☐	☐				
From:	BG&E Resources		Date: 23 September 2022	Total Pages:	10
Subject:	Pingrup OBH Drainage Design Memo				

If you do not receive all pages, or some are unclear, please advise immediately

1 BACKGROUND

To cater for the increase harvest demand, CBH are proposing to expand their grain storage by constructing additional open bulkheads (OBH) at their Pingrup facility, referred to herein as "the site".

The site is located south of Pingrup town centre, approximately 360km to the south-east of Perth. The existing site currently has capacity for 279,300 t of grain storage, utilising a combination of 'A' type, and 'L' type storage, and steel frame open bulkheads. It contains infrastructure for marshalling, sampling, weighing, and accommodation and is part of the FORM Public Silo Trail.

The proposed emergency storage will be in an open field to the south of existing bulkheads and is envisaged to include the following.

- One new temporary OBH (08) contributing an additional 55,020 t of storage
- Access roads and associated earthworks/civil works for RAV07 truck configurations
- Stormwater infrastructure (i.e., open drains and culverts)

The objective of this memo is to provide details on the stormwater management strategy and drainage design for the site.

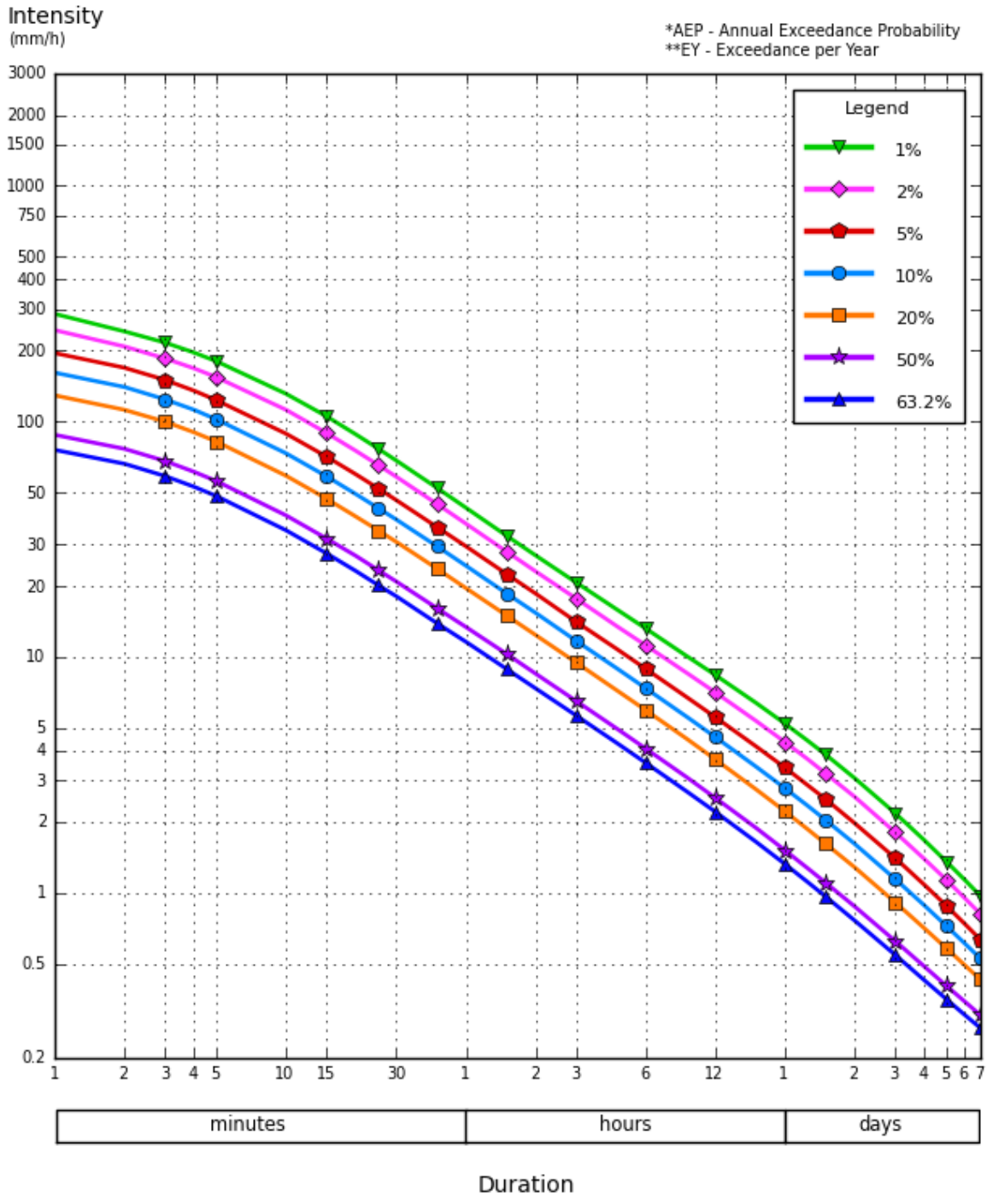
2 STORMWATER MANAGEMENT STRATEGY

The stormwater management strategy is to cater for all surface runoff within the site, managing it to minimise flooding and damage to critical infrastructure. It will be based on the following philosophy:

- Surface water runoff for the 20% AEP (5-year ARI) event to be directed to an open drainage system.
- Surface water to be retained on-site up to the 20% AEP event with a controlled outflow limited to the 20% AEP pre-development flow rates.
- Culverts and open drains associated with existing permanent structures to be designed for the 5% AEP (20-year ARI).
- Compliance with the CBH Emergency Build Specification, Design Specification for Civil Earthworks, Roads, and Drainage (TS10A) and Australian Rainfall & Runoff (ARR).

- Pre-development and post development hydrology analysis using the Rational Method and kinematic wave equation to estimate the time of concentration (Tc).
- Use of Intensity-Duration-Frequency (IDF) charts from Bureau of Meteorology for the location 33.5375S, 118.512E for stormwater design analysis (see Figure 1).

Figure 1 – Rainfall Intensity Chart



3 DESIGN PARAMETERS

Analysis of the stormwater and drainage was governed by the parameters and assumptions detailed in Table 1.

Table 1 - Stormwater Management Design Parameters

Parameter	Value
General parameters	
Runoff Coefficients, C_5	Vegetated Ground: 0.18 (F_Y = 0.95) Paved Areas: 0.84 (F_Y = 0.95)
Location	33.5375S, 118.512E
Design Life	2 years
Detention basin parameters	
Design ARI for On-site Detention	20% AEP
Design ARI for Pre-Development Outflow	20% AEP
Maximum depth of water	0.9 m
Freeboard to Infrastructure	0.3 m (min)
Freeboard to top of subgrade	0.15m (min)
Typical Side Slopes	1V:3H
Stormwater drain parameters	
Design ARI for Conveyance	20% AEP
Side Slopes	1V:3H
Maximum drain base width	1 m
Minimum Drain Depth	490 mm
Minimum Grade for Open Drains	0.3%
Manning's Co-efficient (earth channels), n	0.022
Manning's Co-efficient (pavement), n	0.014
Manning's Co-efficient (vegetated ground), n	0.035

4 EXISTING SURFACE HYDROLOGY

The study area slopes at an average grade of 1% towards west and 0.3% towards east from a central high point. The area of proposed OBH expansion is located within the catchments of existing eastern basin – 01 and existing western basin-02. Both basins are designed to cater for 5 % AEP events.

The existing open drain located to the south of the existing permanent bulkheads diverts most of the pre-development runoff towards existing western basin-02 as shown in Figure 2. For the post -

development analysis the study area is divided into 2 catchments as shown in Figure 2 and detailed in Table 2.

Figure 2 – Pre-development Catchment Plan

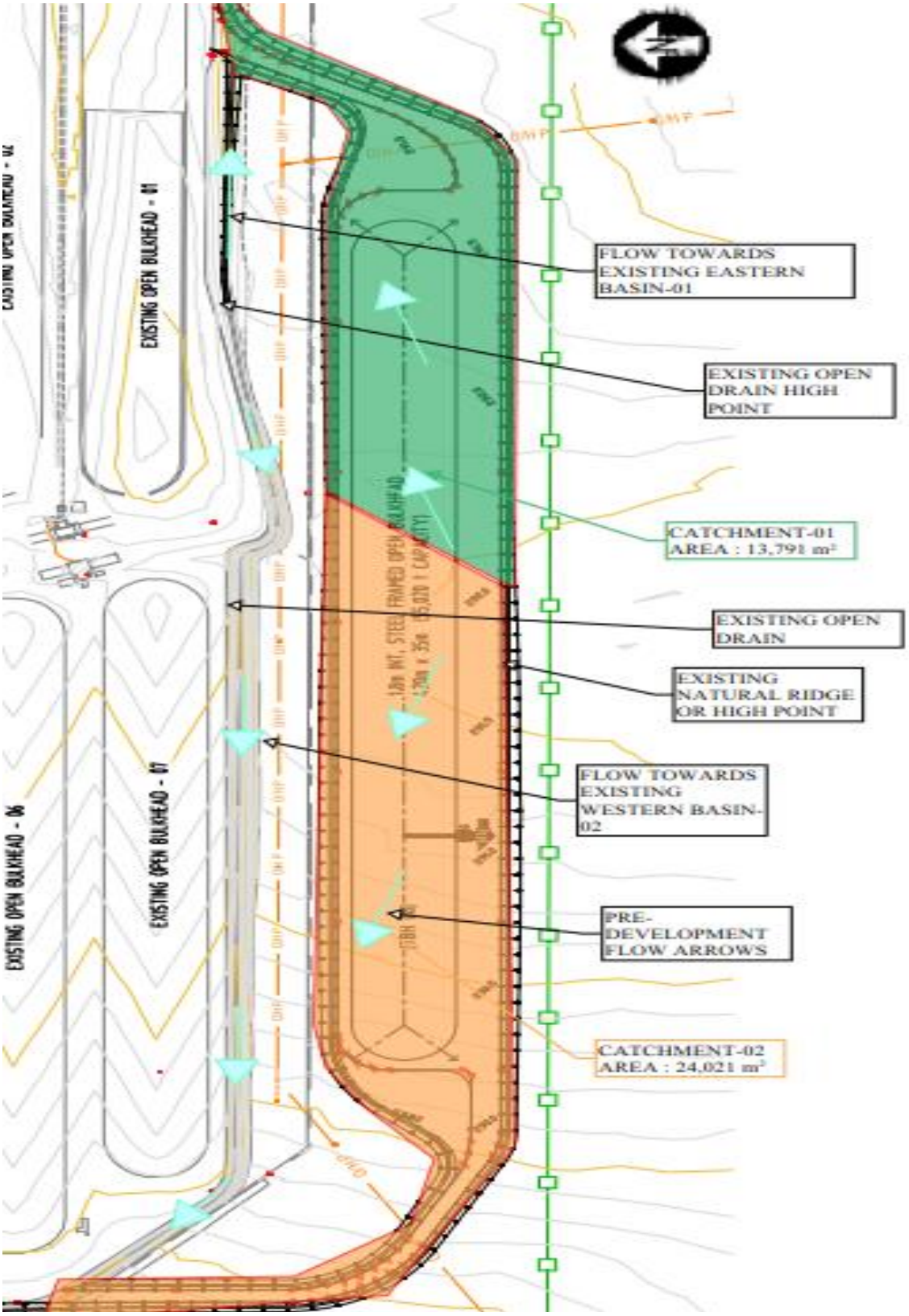


Table 2 – Pre-development Catchment Details

Catchments	Pervious area (m^2)	Impervious area (m^2)	Total (m^2)	Coefficient of runoff C_5	Peak discharge rate (m^3/s)
01	13,791	0	13,791	0.18	0.02
02	24,021	0	24,021	0.18	0.03

5 POST-DEVELOPMENT HYDROLOGY

For the post development analysis, the study area associated with the proposed OBH is divided into 2 catchments as shown in Figure 6 and detailed in Table 3.

Runoff from the proposed OBH expansion is collected via open drain along the perimeter of the OBH and is discharged to existing basins 01 and 02 (as shown in Figure 6 and detailed in section 5.1).

Table 3 - Catchment Details

Catchments	Pervious area (m^2)	Impervious area (m^2)	Total (m^2)	Coefficient of runoff C5	Details
01	0	13,488	13,488	0.84	Part of proposed OBH discharging to existing basin-01
02	0	24,324	24,324	0.84	Part of proposed OBH discharging to existing basin-02

5.1 Basin

Runoffs from the proposed OBH expansion area is discharged to existing basin-01 and basin -02 as shown in Figure 6.

As discussed in section 4, the proposed expansion area falls within the catchments of existing basin-01 (Stormwater Design Report:591-2916-CI-RPT-001, MAPL, 2022) and existing basin-02 (OBH06 & OBH07 site drainage report, OWCE, 2018). The development will increase flowrates and change the time of concentration slightly as they will be impervious rather than pervious areas. The additional volumes required to cater for catchments 01 and 02 during a 20% AEP event are reported in Table 4.

The existing basins are designed to cater for a 5% AEP event and the required volume of storage is less than 1% and 8% of total volume in basins 01 and 02 respectively. Refer Stormwater Design Report:591-2916-CI-RPT-001, MAPL, 2022 and OBH06 & OBH07 site drainage report, OWCE, 2018 for more information on the existing basins. The new emergency bulkhead will, therefore, have a limited impact on either of the existing basins.

Table 4 – Storage Requirement

Catchments	Storage Volume required (m^3)	Discharge point
01	296	Basin-01
02	150	Basin-02

5.2 Open Drain

A network of open drains are proposed around the OBH to collect runoff as shown in Figure 6. Open drains are sized to convey a 20% AEP storm event. An external catchment as shown in Figure 3 has also been considered when sizing the drain. This external catchment has been determined based on previous reports and Department of Planning, Land and Heritage 2 m contour map. Table 5 shows proposed open drain details.

Figure 3 – External Catchment Area

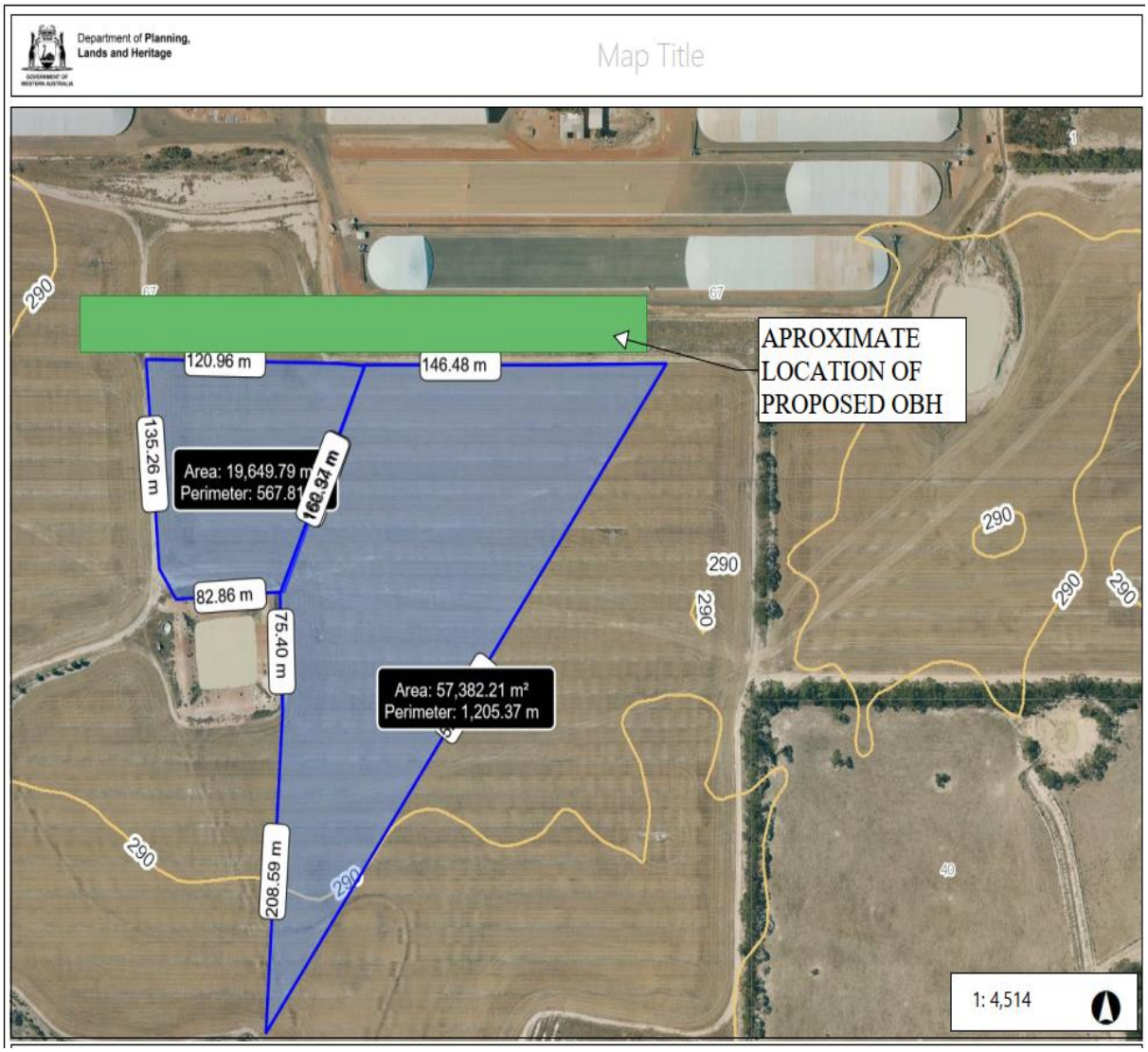


Table 5 – Proposed Open Drain Details

Drain profile	Drain-01	Drain-02
Depth	0.6 m	0.6
Freeboard	0.45 m	0.45 m
Effective depth	0.15 m	0.15 m
Side Slope:	1 in 3	1 in 3
Longitudinal grade	3%	3%
Base width	1 m	1 m
Drain capacity	0.13 m^3/s	0.13 m^3/s
Maximum inflow	0.0917 m^3/s	0.10 m^3/s

5.3 CULVERTS

Two culverts are proposed at the proposed exit road and entry road intersections as shown in Figure 6. Both culverts are sized for a 5% AEP (20-year ARI) and the catchments within the existing permanent bulkhead area as shown in Figures 4 and 5. Culvert details are given in Table 6.

Figure 4 – Area Serving Culvert-01.

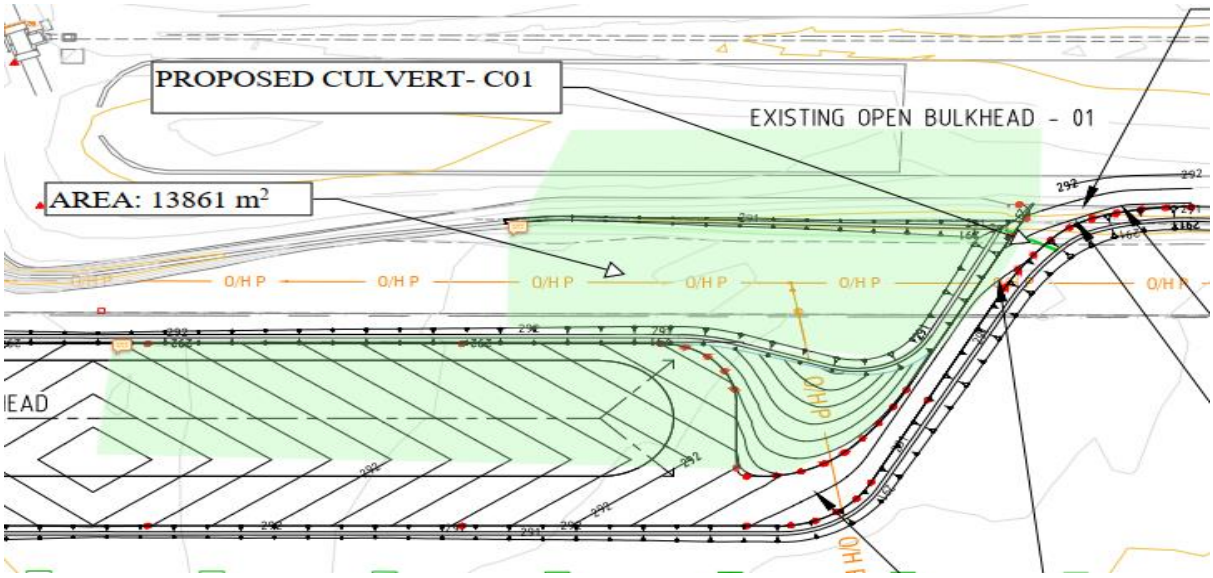


Figure 5 – Area Serving Culvert-02.

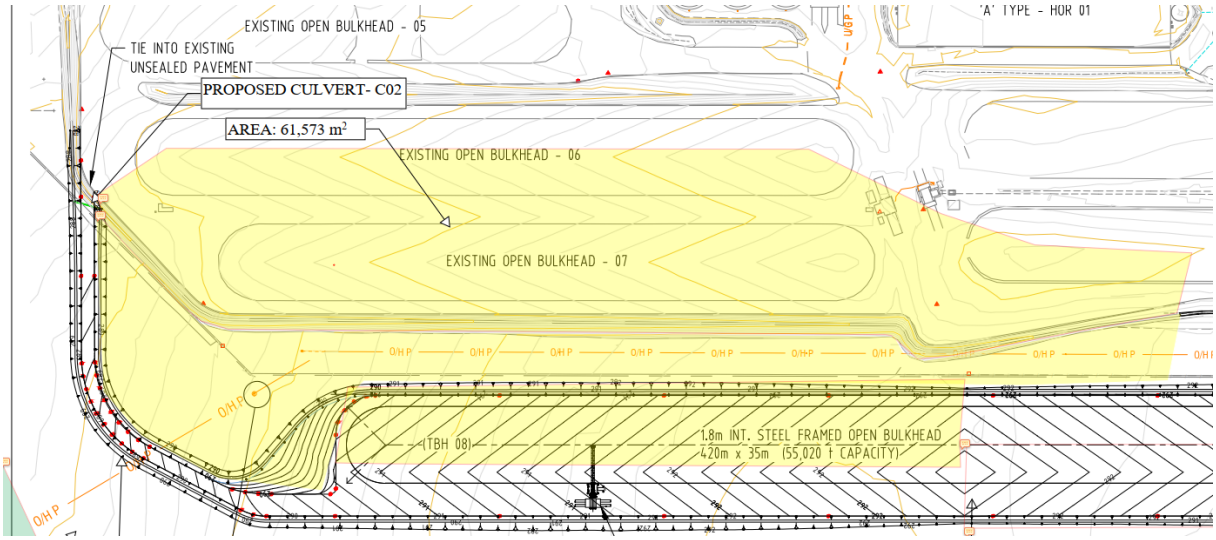


Table 6 Proposed Culvert Sizing

Culvert	Area (m^2)			Inflow (m^3/s)	Size (mm)	Grade	Culvert Capacity (m^3/s)
	Pervious	Impervious	Total				
C-01	3,164	10,697	13,861	0.19	750w x 450h	1 in 107	0.735
C-02	16,020	45,553	61,573	0.47	450 diameter	1 in 175	0.280

6 CONCLUSION

The stormwater drainage system has been designed in accordance with the requirements of CBH Emergency Build Specification, Design Specification for Civil Earthworks, Roads and Drainage (TS10A), Australian Rainfall & Runoff (ARR).

Runoff from proposed OBH storage expansion is diverted to existing eastern and western basin and will have a limited impact during a 20% AEP event.

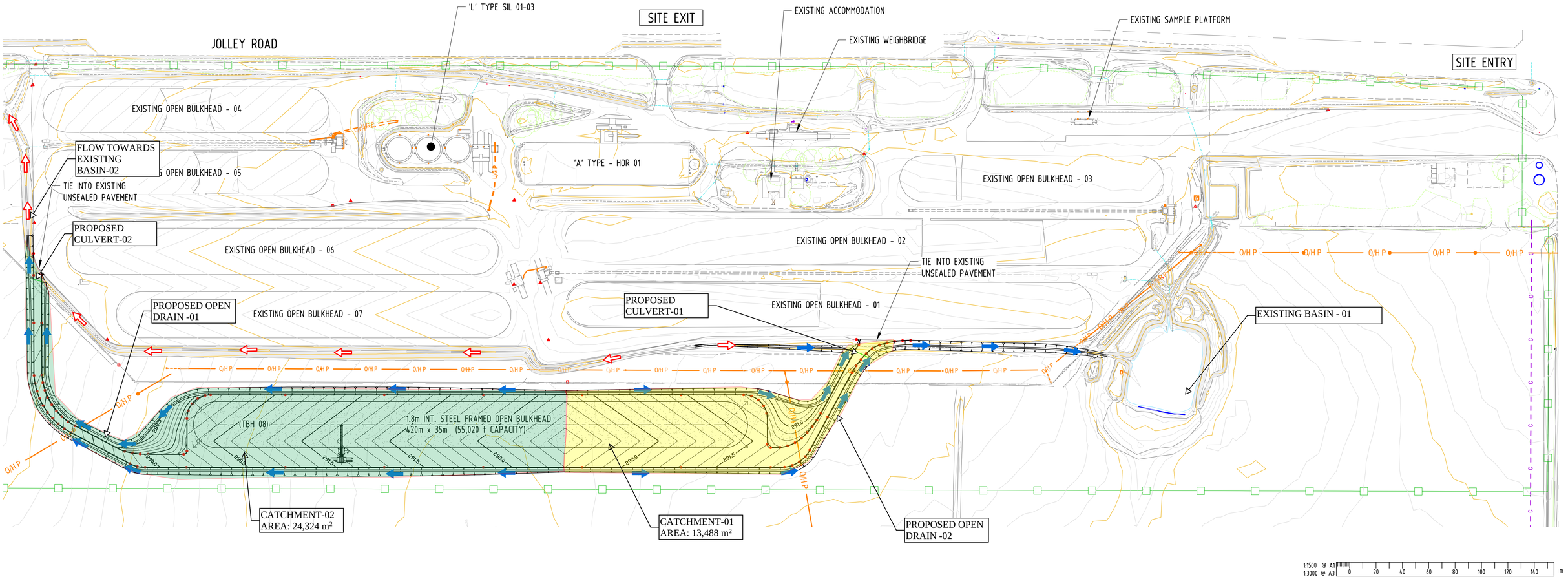
The proposed culverts are sized to cater for a 5% AEP event as these culverts will be conveying runoffs from existing permanent bulkhead areas.

FIGURE 6 – POST DEVELOPMENT CATCHMENT PLAN

CIVIL LEGEND

- CADASTRAL BOUNDARIES
- CBH BOUNDARY
- CBH RAIL LEASE BOUNDARY
- PROPOSED CBH BOUNDARY
- U/G P — UNDERGROUND POWER LINES
- U/G W — UNDERGROUND WATER PIPES
- C — UNDERGROUND COMMS CABLES
- PAVEMENT OR CHANNEL DRAINAGE
- VEGETATION
- PROPOSED STORMWATER FLOWPATH
- EXISTING STORMWATER FLOWPATH
- 312 — EXISTING SURFACE CONTOUR (0.2m INTERVAL)
- 315.00 — FINISHED SURFACE CONTOUR (0.1m INTERVAL)
- PROPOSED GUIDE POSTS
- EXISTING CULVERTS
- PROPOSED CULVERTS

U/S: 64.03 — UPSTREAM
Ø375 / 2 / 99 — DIAMETER / CLASS / GRADE
10.0 m — LENGTH
D/S: 63.88 — DOWNSTREAM



1:1500 @ A1
1:3000 @ A3
0 20 40 60 80 100 120 140 m

CBH GROUP
ABN 29 256 604 947

BG&E Resources

REF DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
591-R-0430-1-CI-RPT-001							
591-ENG-CI-DSE-0001	-	A	18.09.22	ISSUED FOR CBH REVIEW	AG	PN	VP

SCALE 1:1500
SHEET A1
PROJECT
CONTRACT No

DRAWN	A.GAUGHAN	19.09.22
CHECKED	P.NAUGHTIN	19.09.22
DESIGNED	C.BRIERLEY	19.09.22
DESIGN APPR	V.PARATHANATHIL	19.09.22
PROJECT APPR		

TITLE
PINGRUP
CATCHMENT PLAN
2022 EMERGENCY STORAGE

DRG No
SHEET 1 OF 1
REV. A

Traffic Impact Statement

PROJECT / Pingrup Grain Facility Upgrade

CLIENT / CBH DATE / September 2021

AUTHOR / Paul Druskovich

PROJECT NO / RP21142

DOC NO / RP21142_Pingrup-RPT-TM-0001_A

REVISION / A

Document *Control*

Revision	Date	Description	Prepared	Reviewed	Approved
A		Issued for Client review	PD		

CONTENTS

1 INTRODUCTION

1.1. Background

CBH Group are proposing an expansion of the grain storage facility located in Pingrup, approximately 300km south east of Perth, WA. Existing storage at the site is 279,300 tonnes with low steel frame open bulkheads, internal steel frame open bulkheads as well as 'A' and 'L' type storage on site. The proposed expansion will include one additional low steel framed open bulkhead to the south of the facility and will add 26,910 tonnes of storage to the facility's existing storage capacity.

The existing grain storage facility is located to the south west side of Pingrup town, approximately 850m away of the town centre. Entrance to the existing grain storage facility is off Trawter Rd with exit off Jolly Rd. Grain loadout will be achieved via truck in the absence of a rail network.

The emergency storage increase will result in a potential increase in volume of truck receivals coming in during the peak period of an expected high yielding harvest season. However, the volume of out-loading trucks will be reduced during peak periods, as the greater emergency storage capacity will allow a greater volume of grain to be stored on site, and out-loaded during non-peak times. This will minimise the number of out-loading trucks during the peak season and allow a more managed, constant traffic flow during non-peak times.

Figure 1 - Arial image of exsiting CBH site

1.2. Abbreviations and definitions

Abbreviation	Definition
AADT	Annual Average Daily Traffic
AGRD	Austroads Guide to Road Design
BGER	BG&E Resources
ESD	Entering Site Distance
NPR	Newdegate-Pingrup Road
PLGR	Pingrup-Lake Grace Road
RAV	Restricted Access Vehicles
SISD	Safe Intersection Site Distance
TR	Trawter Road
VPD	Vehicle Per Day

Table 1 – Abbreviations and definitions

2 EXISTING SITUATION

2.1 Road network and layout

Main Roads WA road hierarchy and classification is viewable Figure 2. Pingrup-Lake Grace Road and Nyabing-Pingrup Road are classified as Primary Distributors and provide access to Pingrup town from the north and west respectively. Newdegate-Pingrup Rd services town from the east and is classified as a Regional Distributor. Trawter Rd is an access road coming from the south of town, however, the most recent aerial photography shows that Trawter Rd is unsealed except for a small section at the site entrance. As such, it will be assumed that Trawter will not accommodate CBH grain deliveries coming from the south.

Figure 2 - Local road network

2.2 Road configuration

Table 2 shows the local road networks details and configuration. Sealed pavement width dimensions were approximated using aerial photography in the absence of site visit obtained data for this study.

Road	Road type	Cross section*	Sealed pavement width*
Pingrup-Lake Grace Road	Primary Distributor	Two lane, single carriageway – 10.0m formation	7.0m
Nyabing-Pingrup Road	Primary Distributor	Two lane, single carriageway – 9.0m formation	6.0m
Newdegate-Pingrup Road	Regional Distributor	Two lane single carriageway – 8.0m formation	7.0m
Jolley Road	Local Distributor	Two lane single carriageway – 9.0m formation	7.0m
Trawter Road	Access Road	Two lane single carriageway – 9.0m formation	0.0m (unsealed road)

* Note: Formation widths and sealed pavement widths measured from Google Maps as no survey is available.

Table 2 - Road network configuration

2.3 Traffic volumes

There is one traffic count available from Main Roads WA traffic digest in the vicinity of the Pingrup grain storage facility. The traffic count location is visible in Figure 3 and full details of the traffic count can be viewed in Appendix A.

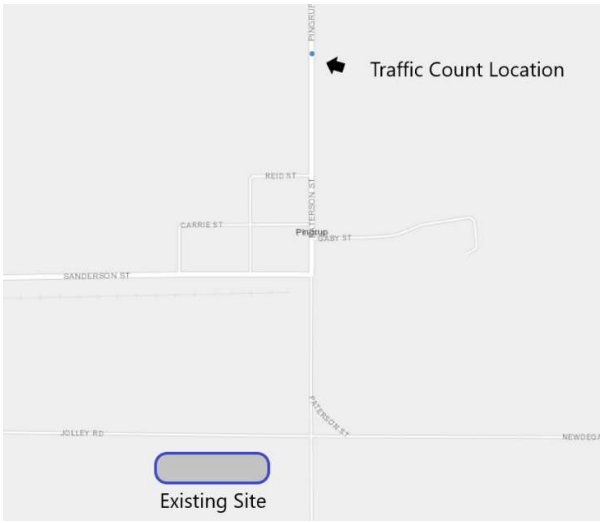


Figure 3 – Pingrup Traffic Count Locations

Road	Location	Daily volume (Mon-Fri)	Percentage heavy % (Mon-Fri)	Data source
Pingrup-Lake Grace Road	South of Holmes Rd	197	20.8	MRWA 2018/2019 Site No: 15563

Table 3 - Traffic count data

Table 3 shows that the volumes from the traffic count is significantly lower than the volumes required for a road to be classified as a Primary Distributor. These low counts suggest an initial assessment that the impact of daily traffic increase owing the emergency storage will be negligible and no changes, or new road infrastructure, will be required.

2.4 RAV status

The road vehicle size allowance on the key roads within the network has been obtained from Main Roads WA RAV mapping tool and is summarised in Table 4

Figure 4 - MRWA RAV Local Network

Road	Largest vehicle
Pingrup-Lake Grace Road	Tandem drive network 7 (RAV7)
Nyabing-Pingrup Road	Tandem drive network 7 (RAV7)
Newdegate-Pingrup Road	Tandem drive network 7 (RAV7)
Jolley Road	Tandem drive network 7 (RAV7)
Trawter Road	Tandem drive network 7 (RAV7)

Table 4 - RAV status summary table

Figure 4 shows the RAV network surrounding the Pingrup grain storage facility, revealing a consistent RAV7 limit. It is not anticipated that anything larger than RAV 7 will be required to service the CBH grain storage facility based on existing logistical operations in the grain industry. Figure 5 shows RAV classification table.

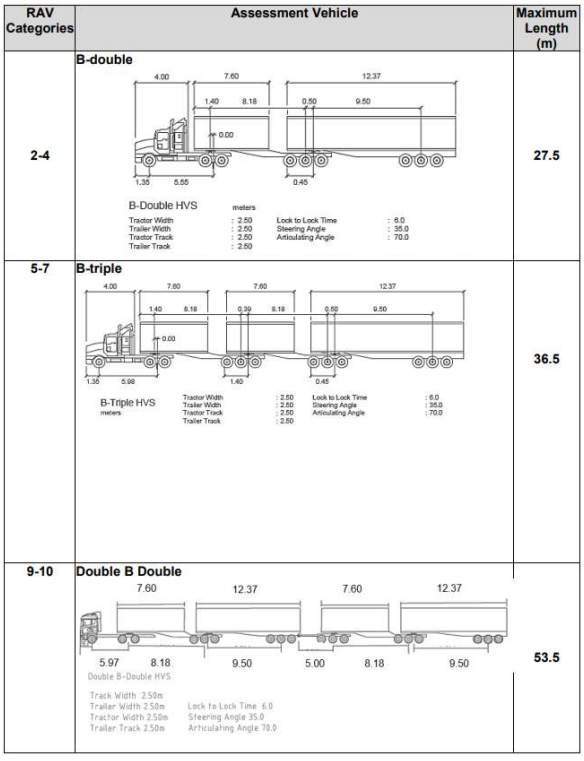


Figure 5 - RAV Classification Table

2.5 Speed limit

MRWA speed limits are shown in Figure 6. Investigation has confirmed that the speed limit network in Figure 6 is accurate based on observable speed signage on google street view.

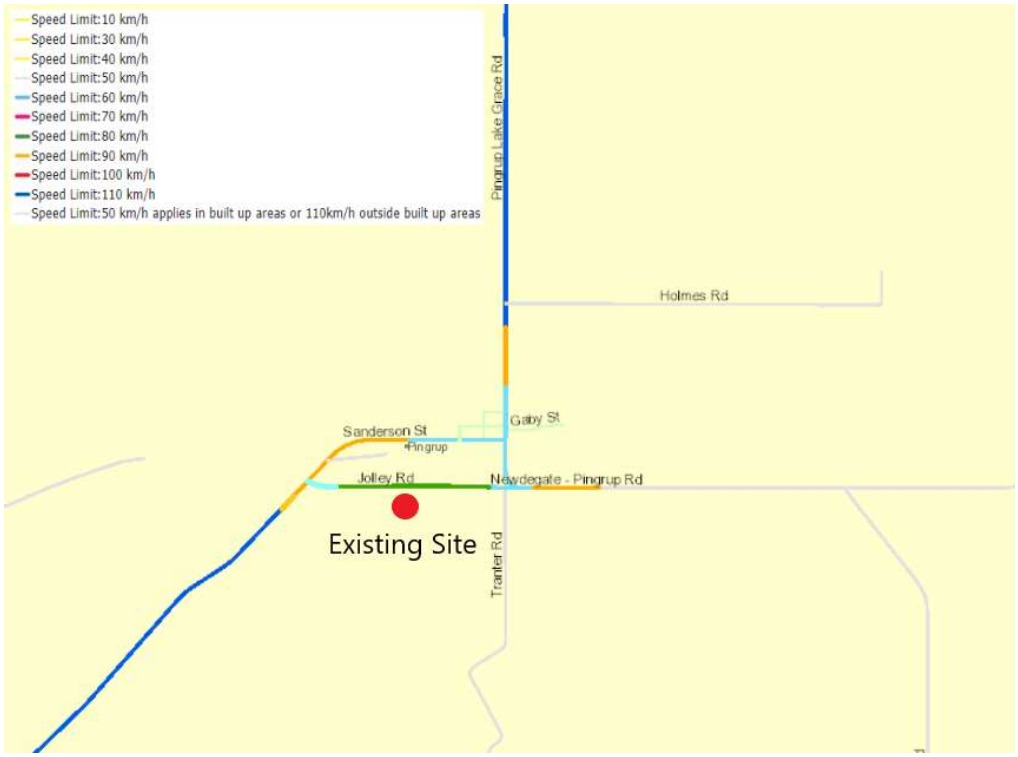


Figure 6 - Speed Limit Network

2.6 Crash history

Main Roads WA's publicly available crash information shows one incident has occurred in the immediate vicinity of the CBH grain storage facility within the last 5 years. The incident occurred on Nyabing-Pingrup Road.

The incident involved was classified as a side swipe involving two light vehicles. Full details of the incident can be viewed in Appendix A.

3 TRANSPORT LOGISTICS

3.1 Proposed development

The proposed new site development plan for emergency storage is shown in Figure 7. One new emergency open bulkhead is proposed, shown in grey shaded area. The site has one access point off Trawter Road and the egress point exits onto Jolley Road. Grain loadout is expected to be accomplished using tucks as no rail infrastructure is in place.

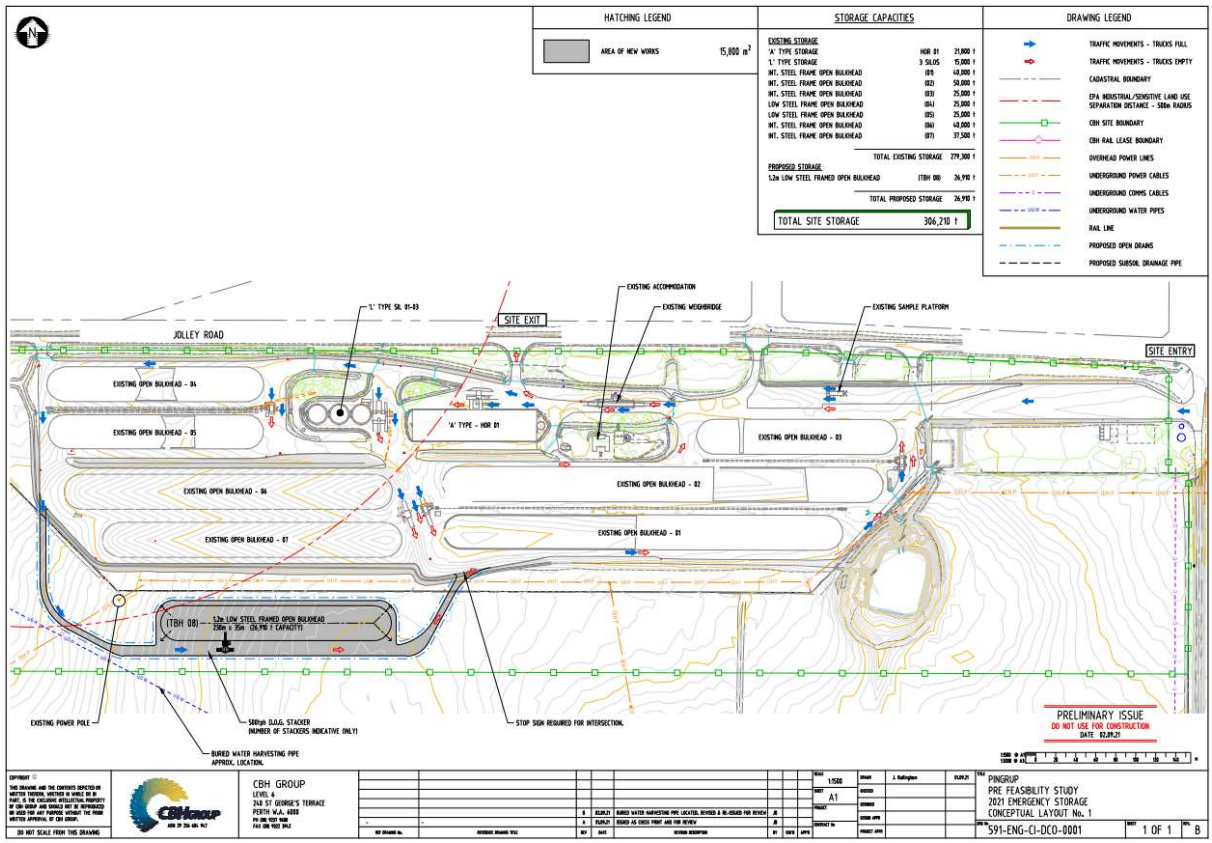


Figure 7 - Site plan with proposed development

3.2 Haulage route

The estimated proportion of receivals coming from paddocks to the north, south, east, and west of the facility are shown in Table 5.

Truck directional origin	Percentage of receivals
North	20%
South	12%
East	58%
West	10%

Table 5 - Receival origin breakdown

Figure 8 shows the distribution of deliveries based on the CBH provided data. The entrance to the facility is via Trawter Rd but trucks must access the site entrance from the north of Trawter Road via either Newdegate-Pingrup Rd, Pingrup-Lake Grace Rd or Jolley Rd. Following on from this, it has been assumed that the trucks delivering from the south will be split up evenly between east and west as Trawter Rd to the south is unsealed and not suitable for RAV 7 truck usage.

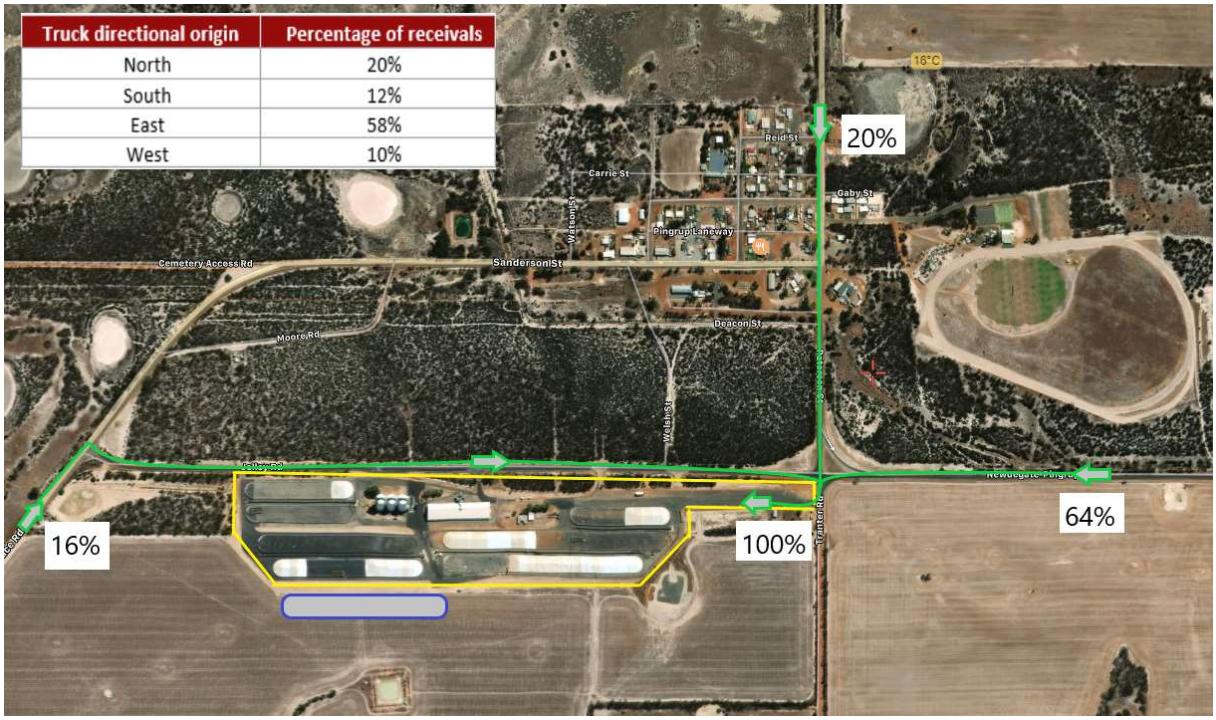


Figure 8 - Delivery Entry Breakdown

3.3 Operating hours

CBH intends to operate the site for 12 hours a day, Monday to Sunday with potential for minor variations.

3.4 Proposed haulage vehicle

RAV 7 trucks are proposed as the typical vehicle used for haulage of grains. Truck movements to and from the site are required to adhere to the existing RAV network restrictions. Main Roads WA's Standard Restricted Access Vehicle (RAV) Route Assessment Guidelines (Figure 5) shows that RAV categories 5-7 are grouped together with a common design vehicle of B-triple, with a maximum length of 36.5m for the purpose of road design. As the key roads accessing the CBH facility are restricted to RAV 6 or RAV 7 (refer Section 2.4), the intended RAV 7 haulage vehicle complies with Main Roads WA requirements.

Figure 9 - Rav 7 Haulage Vehicle

3.5 Peak period assessment

Client feedback has suggested a typical harvest period usually lasts 4 months. During this harvest period, it has also been proposed that 80% of the full season yield is typically harvested over a one month (30 day) peak period.

3.6 Existing and projected traffic generation

Client provided site data informs that the 1-year average receivals tonnage to the CBH Pingrup grain storage facility is 187,837 tonnes. This equates to 3,757 deliveries received on average, each year within the harvest period. Based on the typical harvest period, and one month of peak receivals, the number of average daily truck deliveries during the peak period is 101 VPD for the existing site capacity. CBH expects the emergency storage expansion will result in an additional 14.3% in yearly receivals, increasing the traffic volume by an additional 15 trucks per day.

Daily traffic in the area peaks between the hours of 8:00am and 9:00am as per the local traffic count data. The timing of grain receivals are sporadic and random so it has been assumed that 10% of daily receivals during peak harvest period will come during peak hour traffic. This information is summarised in Table 6.

Emergency storage traffic impact	
Average receivals per year (no. of trucks)	3,757
Harvest period	120 days
Peak period 30-day weighting	80%
Existing average daily truck deliveries during peak period	101
Emergency storage Increase in capacity	14.3%
Projected increase in daily deliveries during peak harvest period	15
Projected total daily receival traffic during peak harvest period	116
Projected increase in hourly traffic during peak harvest period due to CBH generated traffic	2 trucks added to peak hour traffic

Table 6 - Existing and projected truck delivery

4 METHODOLOGY AND INPUTS

4.1 Assessment methodology

Assessments were carried out using the following guidelines and documents:

- Austroads Guide to Road Design (AGRD) parts 3,4, 4A
- Main Roads WA Standard Restricted Access Vehicle Guidelines

Site access points have been assessed for:

- Safe Intersection Sight Distance (SISD);
- Entering Sight Distance (ESD);
- Auxiliary Lanes;
- Acceleration Lanes; and
- Safe Road-Rail interaction.

5 TRAFFIC IMPACT ASSESSMENT

5.1 Assessment years

This assessment is based on the impact of the proposed emergency storage upgrade for one harvest season of above average grain yield. CBH communications and data have indicated that growth in grain receivals in upcoming years is not expected and can be assumed as being relatively constant. It has therefore been proposed by CBH that the emergency storage open bulkheads will only be in use for just one year, after which yearly harvest yields will likely trend back towards average.

The public traffic around the site as well as industrial traffic may grow and fluctuate. CBH should be cognisant of any significant changes or industrial trends which may happen during the lifespan of the new emergency open bulkheads and may need to reassess and revise traffic conditions if changes occur.

5.2 Road minimum widths

The roads surrounding the CBH grain facility are required to comply with minimum sealed width requirements as per Main Roads WA RAV assessment guideline, Appendix A. The minimum width assessment is summarised in Table 7, Existing AADT comes from traffic count data and proposed AADT adds on the CBH generated traffic multiplied by the proportion of site traffic using the corresponding route into site based on Figure 8 - Delivery Entry Breakdown. The speed is conservatively assumed to be 100km/h. All assessed roads in the vicinity of the site exceed the required minimum seal width. Since only one traffic count is available in the vicinity, three other key road have been assessed based on the assumption that they have an AADT of between 150 and 500.

Road	Existing AADT - Peak	Proposed AADT – Peak	Speed (RAV – km/h)	RAV Status	Required Minimum Seal (m)	Existing width* (m)
Pingrup-Lake Grace Road	197	221	100	RAV 7	6.0	7.0
Nyabing-Pingrup Road	NA	150-500	100	RAV 7	6.0	6.0
Newdegate-Pingrup Road	NA	150-500	100	RAV 7	6.0	7.0
Jolley Road	NA	150-500	100	RAV 7	6.0	7.0

* Note: Existing widths have been measured from Google Maps since no survey is available

Table 7 - Minimum width assessment

5.3 Safe Intersection Sight Distance (SISD)

Safe Intersection Sight Distance (SISD) is the minimum distance required for the driver on a primary road to observe a vehicle entering from a secondary road and safely stop and avoid a collision if necessary. SISD is calculated using Equation 1 below from AGRD Part 4A.

$$SISD = \frac{D_T \times V}{3.6} + \frac{V^2}{254 \times (d + 0.01 \times a)}$$

where

SISD = safe intersection sight distance (m)

D_T = decision time (sec) = observation time (3 sec) + reaction time (sec) – refer to *AGRD Part 3* (Austroads 2016b) for a guide to values

V = operating (85th percentile) speed (km/h)

d = coefficient of deceleration – refer to Table 3.3 and *AGRD Part 3* for a guide to values

a = longitudinal grade in % (in direction of travel: positive for uphill grade, negative for downhill grade)

Equation 1 - SISD from AGRD Part 4A

Car speed (km/h)	40	50	60	70	80	90	100	110
Truck speed (km/h)	34	43	52	60	70	80	90	100

Note: On high speed rural roads and freeways, truck speeds equal car operating speeds.

Table 8 - Car/Truck Speed Relationship AGRD Part 3 Table 3.5

SISD is measured from driver's eye height to the top of an oncoming vehicle. The following parameters and assumptions have been adopted for SISD based on AGRD part 3:

- Reaction time of 2.5 seconds (AGRD3 Table 5.2);
- Driver eye height for trucks of 2.4m (AGRD3 Table 5.1);
- Coefficient of deceleration for trucks of 0.28 (AGRD3 Table 5.3);
- Design speed for a car assumed to be 10km/h above posted speed when the posted speed is less than 80km/h, if posted speed limit is above or equal to 80km/h then design speed equal to posted speed; and
- Design speed for a truck to relate to car speed as per Table 8 when car design speed is less than 80km/h, when car design speed is above or equal to 80km/h then truck design speed equal to car design speed.

Two intersections have been identified as being of critical consideration for SISD, these being Newdegate-Pingrup Rd - Jolley Rd and Nyabing-Pingrup Rd – Jolley Rd intersections.

SISD at the Newdegate-Pingrup Rd - Jolley Rd intersection is compliant and can be observed in Figure 10 and Table 9.

SISD appears to be non-compliant at the Nyabing-Pingrup Rd – Jolley Rd intersection. The design speed was decided as the posted speed plus 10 km/h on Jolley Rd approaching Nyabing-Pingrup Rd, as per Austroads Guide to Road Design Part 3 section 3.1. These conditions require 131m of sight distance for cars and 142m of sight distance for trucks which are greater than the available sight distance of 120m. An option to improve the safety at this intersection is to remove the trees and vegetation outlined in red in Figure 11. Full details of the SISD assessment can be viewed in Figure 11 and Table 10.

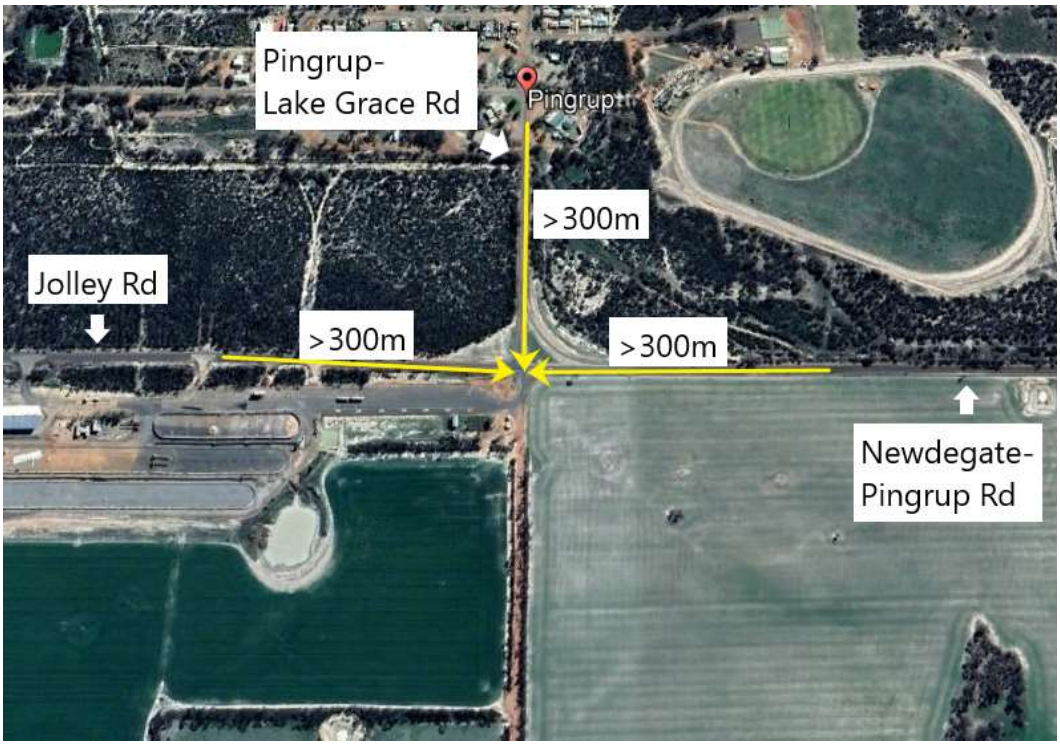


Figure 10 - Estimated SISD, Newdegate-Pingrup Rd – Jolley Rd

Location	Vehicle	Design Speed (km/h)	Decision Time (sec)	Deceleration Coefficient	Longitudinal Grade (%)	Required SISD (m)	Estimated Available SISD (m)
Newdegate-Pingrup Rd	Truck	90	3.0 + 2.5	0.28	0	251	>300
	Car	90	3.0 + 2.5	0.36	0	226	>300
Pingrup-Lake Grace Rd	Truck	60	3.0 + 2.5	0.28	-1	144	>300
	Car	70	3.0 + 2.5	0.36	-1	162	>300
Jolley Rd	Truck	80	3.0 + 2.5	0.28	0	212	>300
	Car	80	3.0 + 2.5	0.36	0	181	>300

Table 9 - SISD Summary Table, Newdegate-Pingrup Rd – Jolley Rd

Figure 11- Estimated SISD, Nyabing-Pingrup Rd – Jolley Rd

Location	Vehicle	Design Speed (km/h)	Decision Time (sec)	Deceleration Coefficient	Longitudinal Grade (%)	Required SISD (m)	Estimated Available SISD (m)
Nyabing-Pingrup Rd North	Truck	90	3.0 + 2.5	0.28	0	251	>300
	Car	90	3.0 + 2.5	0.36	0	226	>300
Nyabing-Pingrup Rd South	Truck	90	3.0 + 2.5	0.28	0	251	>300
	Car	90	3.0 + 2.5	0.36	0	226	>300
Jolley Rd	Truck	60	3.0 + 2.5	0.28	0	142	120
	Car	70	3.0 + 2.5	0.36	0	161	120

Table 10- SISD Summary Table, Nyabing-Pingrup Rd – Jolley Rd

5.4 Entering Sight Distance (ESD)

Entering sight distance is the minimum distance required for a vehicle, in this case the RAV 7 haulage vehicle with a long length and low acceleration speed, to observe a sufficient gap in traffic and safely enter a road. Entering sight distance is calculated similarly to SISD, however, the following parameters have been used:

- Reaction time of 4.0 seconds;
- Driver eye height for trucks of 2.4m (AGRD3 Table 5.1);
- Coefficient of deceleration for trucks of 0.29 (AGRD3 Table 5.3); and
- The same design speed assumptions are implemented as in section 5.3.

Entering sight distance has been assessed at the Site exit onto Jolley Rd.

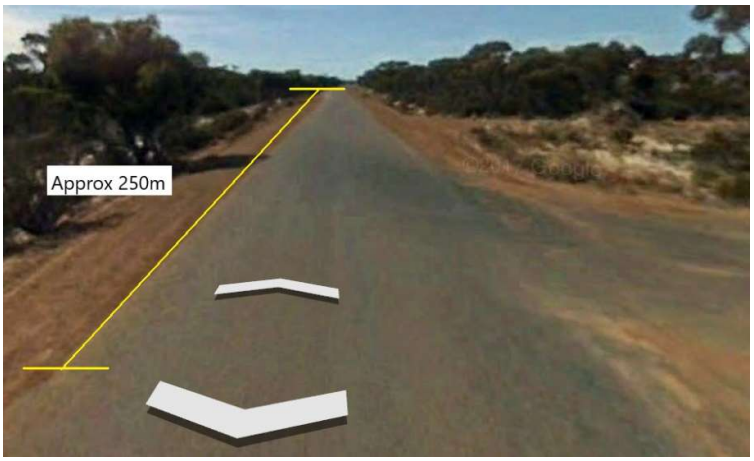


Figure 12 - ESD looking east onto Jolley Rd

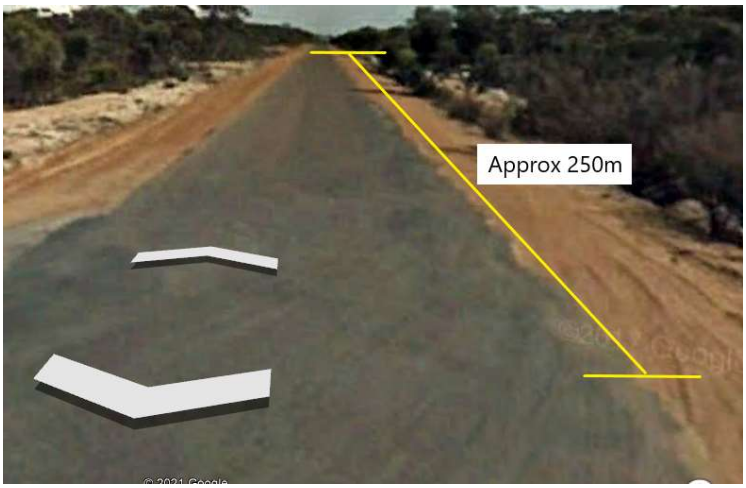


Figure 13 - ESD looking west onto Jolley Rd

Location	Vehicle	Design Speed (km/h)	Deceleration Coefficient	Longitudinal Grade (%)	Required SISD (m)	Available SISD (m)
Jolley Rd looking east	Truck	60	0.29	0	132	>250
	Car	70	0.36	0	151	>250
Jolley Rd looking west	Truck	60	0.29	0	132	>250
	Car	70	0.36	0	151	>250

Table 11 - ESD Summary Table

5.5 Auxiliary lanes

Detailed assessment of auxiliary lanes is not recommended or practical for this TIS in the absence of a site visit and based on site conditions.

Due to low traffic counts and limited expected from CBH traffic on current conditions, BGER do not consider that any new Auxiliary lanes are required

5.6 Acceleration lanes

There are no existing acceleration lanes in the vicinity. Based on the existing traffic volumes and anticipated minor increase in traffic volumes at these intersections, acceleration lanes are not considered necessary.

5.7 Road safety

As per Section 2.6, two traffic incidents have been recorded within the last five years close to site. The additional traffic generated from the new emergency storage capacity on site is not expected to have significant impact on road safety. The non-compliant SISD uncovered in Section 5.3 is the only area of concern uncovered by this Traffic Impact Statement.

6 CONCLUSIONS

6.1 Summary of findings

The following conclusions can be drawn from this Traffic Impact Statement:

- Existing road conditions are sufficient to accommodate traffic generated from CBH emergency storage upgrade;
- The increase in traffic volumes generated from the additional CBH storage capacity will have little impact on road safety;
- Safe Intersection Sight Distance is achieved at Newdegate-Pingrup Rd - Jolley Rd intersection;
- Safe Intersection Sight Distance not achieved at Nyabing-Pingrup Rd – Jolley Rd intersection;
- Entering sight distance is achieved at site exit onto Jolley Rd;
- No new Auxiliary or Acceleration Lanes are required;

Possible ways to improve site safety include:

- Remove trees on Jolley Rd to improve sight distance on westbound approach to Nyabing-Pingrup Rd (refer Figure 11).

APPENDIX A TRAFFIC COUNTS AND CRASH INFORMATION

Traffic Digest

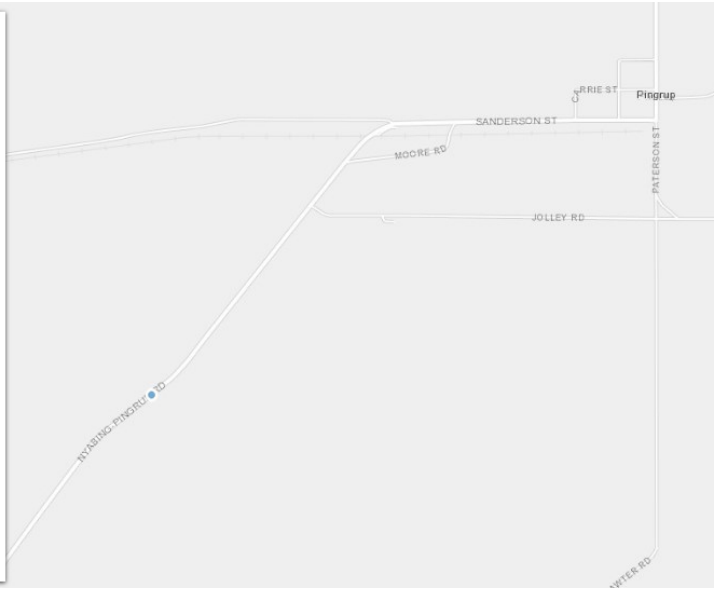
OBJECTID	2391780
Site Number	15563
Road Name	Pingrup Lake Grace Rd
Location Decription	South of Holmes Rd
Traffic Year	2018/19
Collection Type	Class
Average Mon -Sun	193
Average Mon-Fri	197
Percent Heavy (Mon-Sun)	18.7
Percent Heavy (Mon- Fri)	20.8
Network Performance Site	No
Local Government No.	309
Local Government Name	Kent
Main Roads Responsibility Area No.	1
Main Roads Responsibility Area Name	Great Southern
GEOLOC	

Zoom to

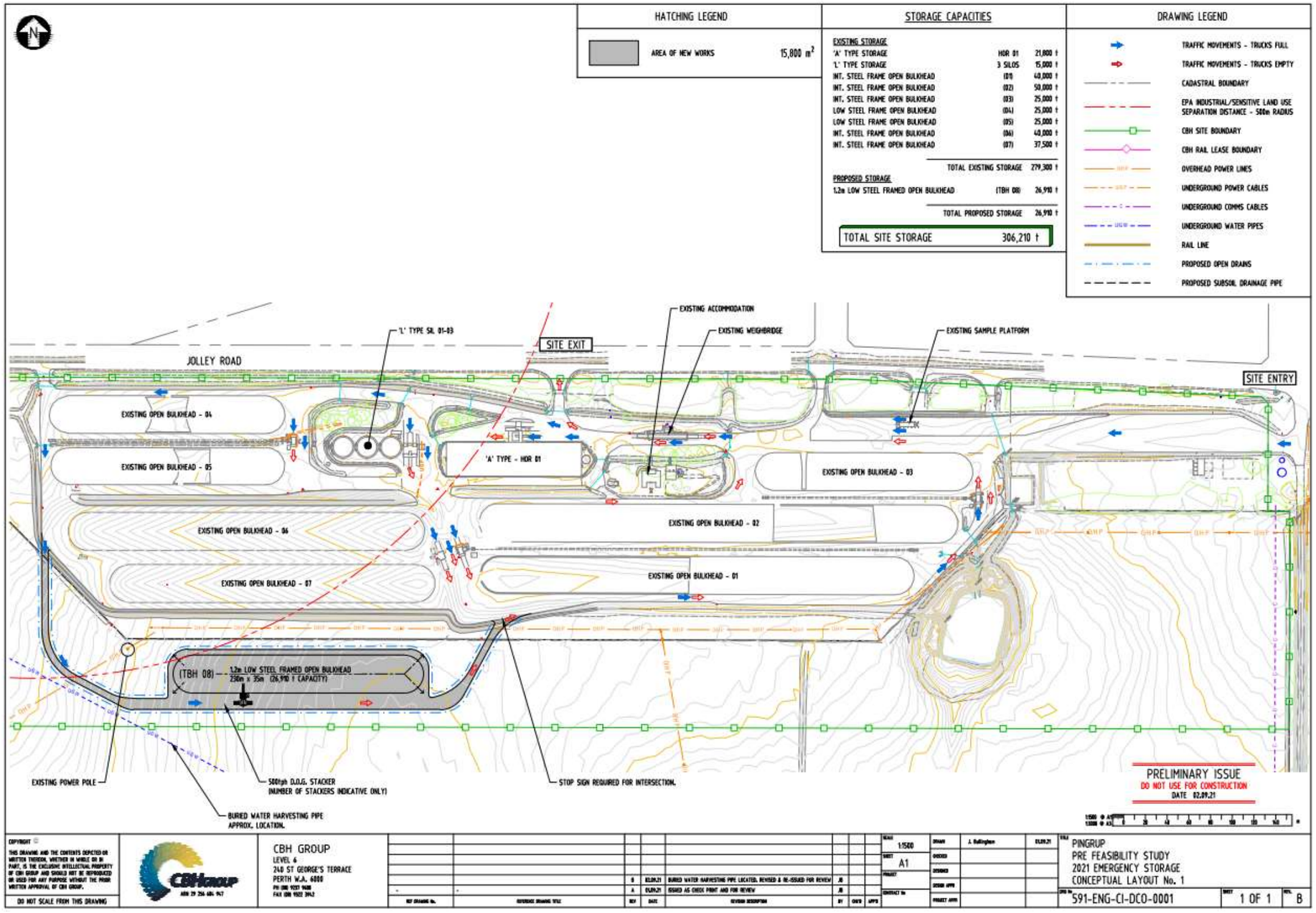
Crash Information (Last 5 Years)

COMMON_ROAD_NAME	Nyabing Pingrup Rd
CWAY	S
SLK	177.20
INTERSECTION_NO	
INTERSECTION_DESC	
LONGITUDE	118.49042
LATITUDE	-33.544942
CRASH_DATE	27/03/2020
CRASH_TIME	1205
ACCIDENT_TYPE	Midblock
SEVERITY	PDO Major
EVENT_NATURE	Sideswipe Same Dirn
EVENT_TYPE	
TOTAL_BIKE_INVOLVED	0
TOTAL_TRUCK_INVOLVED	0
TOTAL_HEAVY_TRUCK_INVOLVED	0
TOTAL_MOTOR_CYCLE_INVOLV	0

Zoom to



APPENDIX B SITE CONCEPT PLAN



Technical Note

Subject: Pingrup Retention and Reutilisation of the Emergency Storage – Traffic Technical Note	
Date: 11th July 2023 (Rev 0)	
Author: L. De Leon	Reviewer: R. Needham
Client: CBH	

1. Introduction

1.1. Background

CBH are proposing to retain the existing emergency 55,020t storage (OBH 08) built at their Pingrup grain receival site in FY23 to assist with receiving future above average seasons as experienced in 2023.

Shawmac has been engaged by CBH to prepare a Traffic Technical Note summarising the traffic impacts of this proposal.

The scope of works includes:

i. Review of the previous Traffic Impact Statement prepared to support the construction of the emergency storage.

ii. Review of the existing road and traffic situation surrounding the site.

iii. Estimation of the traffic volumes associated the proposed emergency storage.

iv. Preparation of this technical note summarising the above and any relevant site-specific issues.

1.2. Site Location

The Pingrup site is located along Jolley Road, just to the south-east of the Pingrup town site.

The emergency storage is located along the southern boundary of this site, south of the existing permanent OBH 01 and OBH 07, as shown in **Figure 1** and in **Appendix A – Site Plan – Retaining the Existing Emergency OBH**.

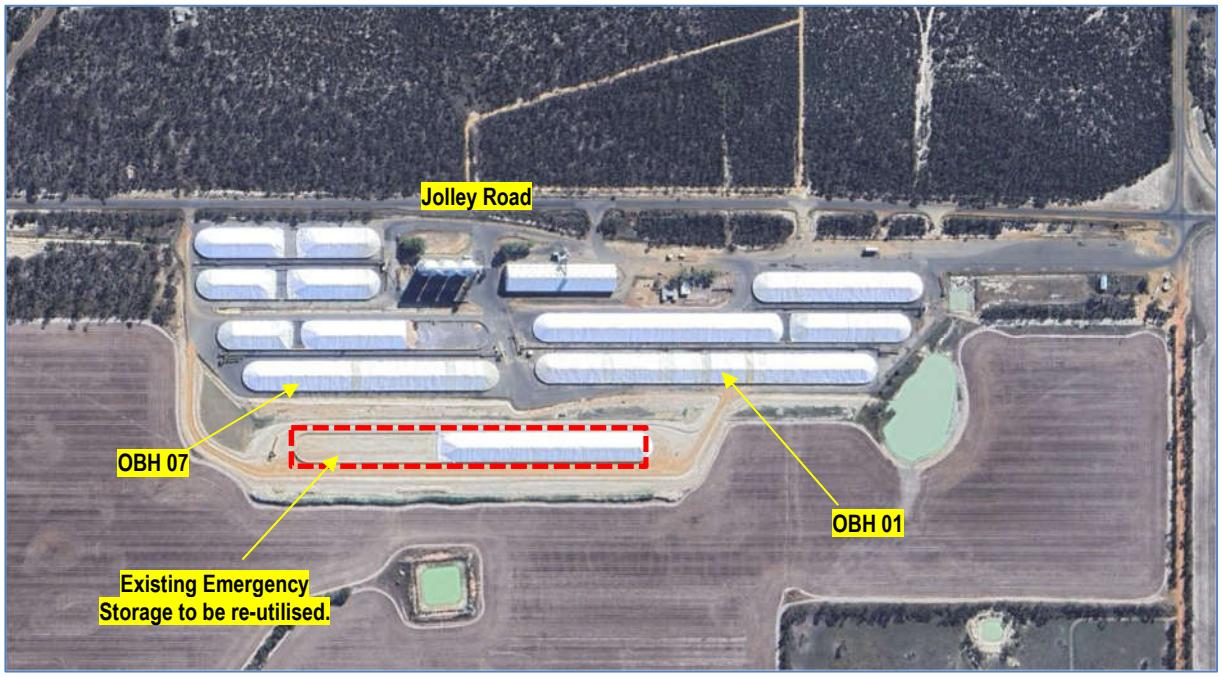


Figure 1: Site Location

1.3. Previous Assessment (BGER)

On behalf of CBH, BGER completed a Traffic Impact Statement in 2021 for the emergency storage (OBH 08) based on a 26,910t OBH additional site capacity. That report (RP21142_Pingrup-RPT-TM-0001_A) concluded the following:

- The existing road conditions are sufficient to accommodate traffic generated from CBH emergency storage upgrade.
- The increase in traffic volumes generated from the additional CBH storage capacity will have little impact on road safety.
- Safe Intersection Sight Distance (SISD) is achieved at Newdegate-Pingrup Road/Jolley Road/Paterson Street and the Nyabing-Pingrup Road/Jolley Road Intersections.

- BGER noted that SISD was not achieved on the Jolley Road approach to Nyabing-Pingrup Road intersection. However, SISD is not required in that situation, and instead Approach Sight Distance (ASD), which is a less onerous requirement should be assessed.
- Entering Sight Distance is achieved at site exit onto Jolley Road.
- No new auxiliary or acceleration lanes are required.

1.4. Purpose

As BGER have already completed a comprehensive TIS in support of the emergency bulkhead, it is not necessary to repeat that work, and this Traffic Technical Note only seeks to address elements that have changed since BGER's assessment, including:

- Review and update the trip generation calculations to reflect the 55,020t expansion that was undertaken, noting that BGER's assessment was based on a smaller 26,910t expansion.
- Revising the sight distance assessment for the Jolley Road approach to the Nyabing-Pingrup Road intersection to reflect the more appropriate ASD requirement.
- Review and update of the surrounding road network conditions to account for any recent changes.

2. Transport Logistics

2.1. Current Traffic Data

CBH have provided the following traffic data associated with the current stage of the Pingrup receival site:

- Peak season receivals – 315,712t
- Average carryover (grain remaining from previous harvest) – 10,941t
- Total site task – 326,654t
- Available Capacity – 281,100t
- Average truck payload – 55t

2.2. Proposed Development

CBH are proposing to retain the existing 55,020t gravel based OBH storage built in FY23 to maintain the sites current nameplate capacity of 336,120t.

If local production exceeds the capacity of the Pingrup receival site, CBH must out-turn grain simultaneously (Harvest Essential Moves) to continue to offer a service to growers, and by doing so, increase the traffic on surrounding roads during the peak harvest period. The proposal to retain the emergency storage will enable CBH to reduce the volume of Harvest Essential Moves (HEMs) with the intention of reducing trucks on road during the harvest, and instead holding the grain on site to out-turn over the remaining 9 months of the year when the road network is less busy.

Table 1 provides a comparison between the record harvest peak truck movements which would be required with, and without the retention of the emergency storage as provided by CBH. As shown, if the emergency storage is decommissioned, then an additional 828 truck movements would be required during the harvest period.

Table 1: Historical Record Harvest Truck Movements

	Decommission OBH	Retain OBH
Record Site Task[1]	326,654t	326,654t
Available Site Capacity	281,100t	336,120t
Harvest Essential Moves (HEMs)	45,554t	-
HEMs per Harvest	828	-
HEMs per Day	9	-

[1] For the purposes of this assessment the record site task has been adopted and therefore should not be interpreted as the average.

[2] Figures may not sum due to rounding.

2.3. Proposed Haulage Vehicle

Consistent with BGER's TIS (RP21142_Pingrup-RPT-TM-0001_A), It is proposed to use RAV 7 trucks up to 36.5m long. Refer to **Figure 2** for a typical configuration of the RAV 7 vehicle. In addition, CBH also noted that while this site is rated for RAV7, smaller RAV vehicles are also used.

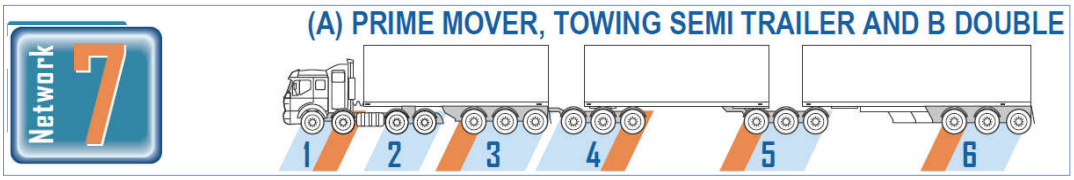


Figure 2: Typical Tandem Drive RAV 7 Trucks

2.4. Receival Period and Operating Time

CBH have indicated that on average the harvest receival period will last approximate three months generally October through to December. During this period, it is known that delivery patterns peak for around 45 days with 80% of the crops delivered in this time. Generally, receival sites will operate 7 days a week for 12 hours a day during the harvest.

3. Changes to Surrounding Road Network

BGER (RP21142_Pingrup-RPT-TM-0001_A) has reviewed the relevant background information for the Pingrup site and the surrounding road network.

BGER's TIS was completed in 2021 and the following items remain consistent with their report:

- Road Layout and Hierarchy
- Carriageway Width and Cross Section
- Traffic Volumes
- Site Access

3.1. Speed Limits

The speed limit of the existing local road network according to the Main Roads WA *Road Information Mapping System* has been updated to reflect the 2023 speed limit which are shown in **Figure 3**.

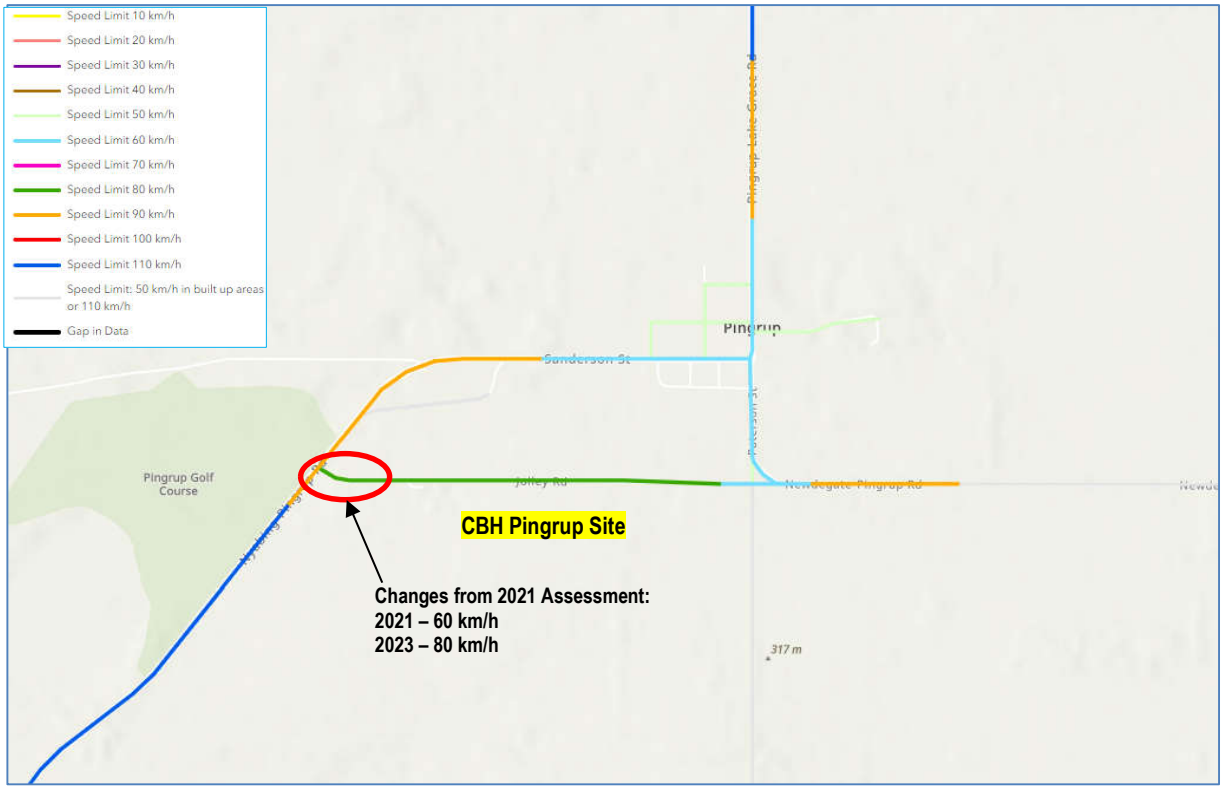


Figure 3: Speed Limits

As shown, BGER TIS (2021) has indicated that the western portion of Jolley Road operated at a 60km/h limit. The 2023 data shows it is now operating at an 80km/h speed limit. However, the operating speed through this section

is likely to be less than 60km/h as the bend on approach to the Nyabing-Pingrup Road has an approximately 90m radius which would not permit safe travel speeds higher than about 50km/h.

3.2. RAV Status

The RAV network of the surround road network is sourced from MRWA's HVS network mapping tool.

Whilst consistent with BGER's TIS (RP21142_Pingrup-RPT-TM-0001_A, **Figure 4** and **Figure 5** shows the 2023 RAV categories for the surrounding road network highlighting the concessional level and any conditions.

Figure 4: Tandem Drive 7.3 RAV Network

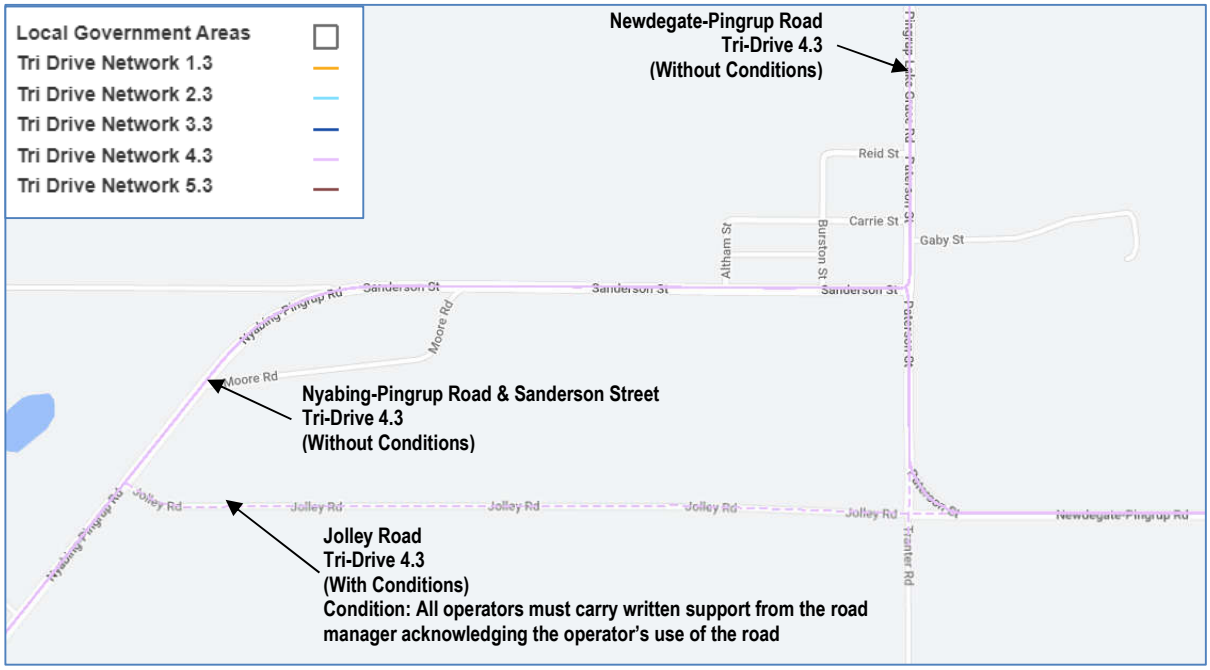


Figure 5: Tri-Drive 4.3 Concessional Network

3.3. Crash History

The crash history of the surrounding vicinity of the CBH entry and exit was obtained from the MRWA Crash Analysis Reporting System for the 5-year period ending in 31/12/2022.

Figure 6: MRWA Crash Information

As shown, BGER's TIS (RP21142_Pingrup-RPT-TM-0001_A) has only assessed the surrounding road network up to 2021. Based on the updated data from MRWA Crash Analysis Reporting System, an additional incident is reported in 2022. A review of the detailed crash history indicated that the 2022 crash resulted in property damage only.

4. Sight Distance

BGER noted that SISD was not achieved on the Jolley Road approach to Nyabing-Pingrup Road intersection, however SISD is not required in that situation, and instead Approach Sight Distance (ASD), which is a less onerous requirement should be assessed.

The Approach Sight Distance (ASD) is required to ensure that the drivers of trucks and light vehicles approaching Nyabing-Pingrup Road from Jolley Road at the 85% percentile operating speed can see the intersection and stop at the holding line.

The ASD is assessed based on the following parameters:

- A reaction time of 2.5seconds.
- Declaration coefficients for the purpose of ASD calculations are 0.36 for light vehicles and 0.28 for heavy vehicles. (road trains)
- Driver eye height is 2.4m for trucks and 1.1m for cars.
- Object height at 0m to holding line.
- Design Speed for cars 60km/h and 50km/h for trucks (limited by 90m radius bend on approach).

The approach sight line is shown in **Figure 7**.

The ASD requirements and available ASD at the intersection has been determined from Austroads Part 4a Equation 2 as summarised in **Table 2**.

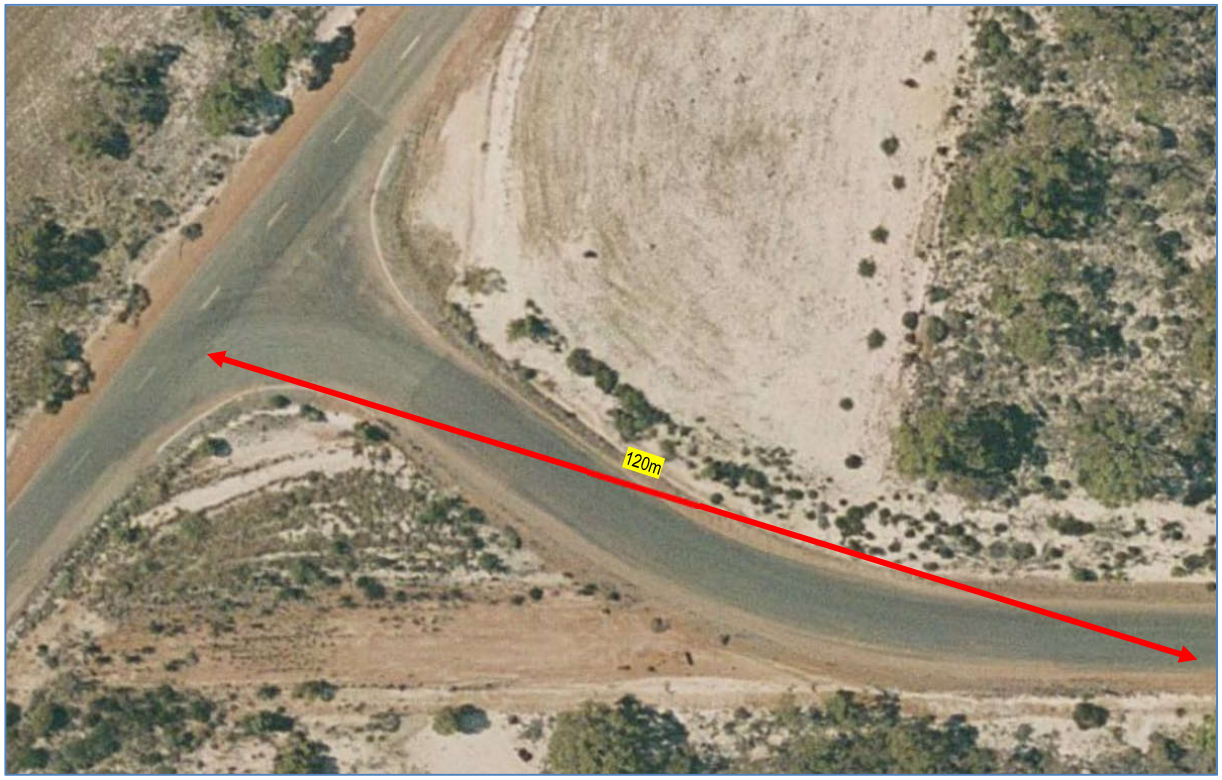


Figure 7: Available ASD At Nyabing-Pingrup Road and Jolley Road Intersection

Table 2: ASD At Nyabing-Pingrup Road towards Jolley Road Intersection

Vehicle Type	Operating Speed (km/h)	Coefficient of Deceleration	Reaction Time (s)	Longitudinal Grade*	Required ASD (m)	Available ASD (m)
Trucks	50	0.28 (sealed)	2.5	0%	70	120
Cars	60	0.36 (sealed)	2.5	0%	81	120

As shown, the available ASD satisfies the minimum requirements.

5. Site Specific Issues

Shawmac has reviewed relevant background information for the Pingrup site and the surrounding road network including:

- Road hierarchy.
- Speed zoning.
- Crash history.
- Traffic Volumes.
- RAV network approvals; and
- Existing road cross sections and geometry.

With consideration that the site will operate in the same manner that it does currently, and the emergency storage results in a net benefit to traffic movements, there are no particular site-specific issues that would be materially worsened by the emergency storage construction and operation

6. Conclusions

This traffic assessment has concluded the following:

- CBH expect that future above average harvests will result in a large demand for grain storage at the Pingrup site. Accordingly, CBH propose to retain the existing emergency 55,020t OBH that was built for the previous harvest to accommodate the storage demand and remove the need for out-loading truck movements to occur to restore capacity during the busy harvest period.
- The retention of the emergency bulkhead will result in approximately 828 fewer truck movements on the surrounding road network during a peak harvest period (compared with a situation where the emergency bulkhead is not retained).
- The available approach sight distance at the Nyabing-Pingrup Road and Jolley Road intersection is considered acceptable.
- There are no particular site-specific issues on the surrounding road network that would be materially worsened by the retention of the emergency storage.

Appendix A – Site Plan – Retaining the Existing Emergency OBH

HATCHING LEGEND

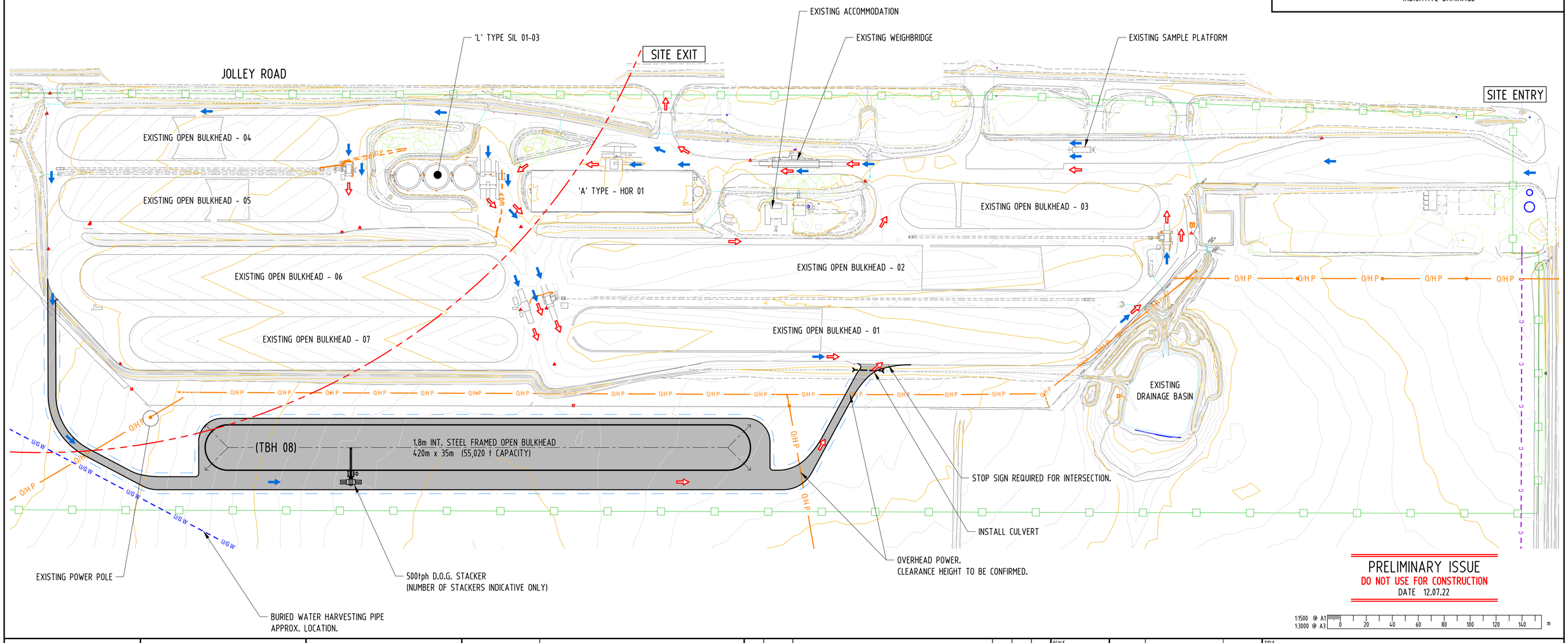
	AREA OF NEW WORKS	26,800 m^2

STORAGE CAPACITIES

EXISTING STORAGE		
'A' TYPE STORAGE	HOR 01	21,800 t
'L' TYPE STORAGE	3 SILOS	15,000 t
INT. STEEL FRAME OPEN BULKHEAD	(01)	40,000 t
INT. STEEL FRAME OPEN BULKHEAD	(02)	50,000 t
INT. STEEL FRAME OPEN BULKHEAD	(03)	25,000 t
LOW STEEL FRAME OPEN BULKHEAD	(04)	25,000 t
LOW STEEL FRAME OPEN BULKHEAD	(05)	25,000 t
INT. STEEL FRAME OPEN BULKHEAD	(06)	40,000 t
INT. STEEL FRAME OPEN BULKHEAD	(07)	39,300 t
TOTAL EXISTING STORAGE		281,100 t
PROPOSED STORAGE		
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 08)	55,020 t
TOTAL PROPOSED STORAGE		55,020 t
TOTAL SITE STORAGE		**336,120 t**

DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- LOT BOUNDARIES
- EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500m RADIUS
- CBH SITE BOUNDARY
- CBH RAIL LEASE BOUNDARY
- PROPOSED SITE BOUNDARY
- O/H P — OVERHEAD POWER LINES
- U/G P — UNDERGROUND POWER CABLES
- C — UNDERGROUND COMMS CABLES
- U/G W — UNDERGROUND WATER PIPES
- UNDERGROUND STORMWATER PIPES
- RAIL LINE
- INDICATIVE DRAINAGE



PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 12.07.22

1:1500 @ A1
1:3000 @ A3
0 20 40 60 80 100 120 140 m

CBH GROUP
ABN 29 256 604 947

CBH GROUP
LEVEL 6
240 ST GEORGE'S TERRACE
PERTH W.A. 6000
PH (08) 9237 9600
FAX (08) 9322 3942

REF DRAWING No.	REFERENCE DRAWING TITLE	REV	DATE	REVISION DESCRIPTION	BY	CHK'D	APP'D
-	-	A	12.07.22	ISSUED AS CHECK PRINT AND FOR REVIEW	JB		

SCALE 1:1500
SHEET A1
PROJECT
CONTRACT No

DRAWN	J. Bullingham	12.07.22
CHECKED		
DESIGNED		
DESIGN APPR		
PROJECT APPR		

TITLE
PINGRUP
PRE FEASIBILITY STUDY
2022 EMERGENCY STORAGE
CONCEPTUAL LAYOUT No. 1

DRG No 591-ENG-CI-DCO-0002 | SHEET 1 OF 1 | REV. A