

**SHIRE OF KENT
LOCAL PLANNING SCHEME NO.3**



NOTICE OF PUBLIC ADVERTISEMENT OF PLANNING PROPOSAL

*Planning and Development Act 2005
Shire of Kent*

The local government has received an application to use and/or develop land for the following purpose and public comments are invited.

Property Address: Lot 100 on Deposited Plan 420337 Bin Road (corner Kukerin Road), Nyabing.

Proposal: Construction and use of two (2) new steel framed grain storage bulkheads on the abovementioned property comprising an additional total combined storage capacity of 56,330 tonnes including various associated improvements to support its continued use by Cooperative Bulk Handling Limited for grain handling and storage purposes.

Details of the proposal are attached.

Comments on the proposal are now invited and can be emailed to ceo@kent.wa.gov.au or posted to the Shire's Chief Executive Officer at PO Box 15 NYABING WA 6341 by no later than **Wednesday 4 November 2026**. All submissions must include the following information:

- Your name, address and contact telephone number;
- How your interests are affected, whether as a private citizen, on behalf of a company or other organisation, or as an owner or occupier of property;
- Address of property affected (if applicable); and
- Whether your submission supports or objects to the proposal and reasons why.

All submissions received may be made public at a Council meeting and included in a Council Agenda, which will be available on the Shire's website, unless a submission specifically requests otherwise.

David Bentley
Acting Chief Executive Officer
Shire of Kent

30 September 2026



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

23 July 2026

Christie Smith
Chief Executive Officer
Shire of Kent
Via email: ceo@kent.wa.gov.au

Dear Christie,

LOT 100 ON DEPOSITED PLAN 420337 – ADDITIONS TO EXISTING GRAIN HANDLING FACILITY.

CBH is seeking development approval from the Shire of Kent for two open storage bulkheads at its existing grain processing facility located at Lot 100 on Deposited Plan 420337, Nyabing.

As you would be aware, CBH received a record harvest in FY25/26 and the existing network at the time was not able to cope with the increased storage demand. To accommodate this storage shortfall CBH added ~1.7 million tonnes of low specification storage to the network. CBH intends to convert this temporary low specification storage to permanent through the development application process.

At a Special Meeting of Council on 14th October 2025, the Shire of Kent approved a request by CBH for a temporary works exemption for two open storage bulkheads and associated vehicular access and drainage works at its Nyabing facility. This temporary works exemption will expire on 28th October 2026 being 12 months following construction of the bulkheads. It should be noted that only TBH09 was constructed from the approved Site Plan.

The recent FY25/26 harvest was the largest on record with 24.2 million tonnes received across the network and there was considerable feedback about the growing crop size taking into consideration the innovative practices of growers and accelerated conversion of hectares from sheep to cropping.

As such we are currently in the process of preparing for the FY26/27 harvest and preparing for larger crops sooner than originally contemplated. To address this increased demand, it is proposed to retain the open storage bulkheads (TBH09) the subject of the temporary works exemption as well as construct an additional open storage bulkhead (TBH11) that has a lower specification than permanent bulkhead storage such as a gravel or dirt basecourse serviced with Drive Over Grids (DOGs).

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. 2.

The two main items of consideration for an application of this type are traffic generation and stormwater management.

Stormwater Management

The temporary OBHs are located within the existing Catchment A, which ultimately drains into the site's existing stormwater basin. The stormwater management strategy was to maintain the runoff from the TBH areas into this existing basin. However, increased runoff was expected from the TBH area due to the increased imperviousness of the compacted pavements. The temporary bulkheads are designed to accommodate runoff from the 20% AEP event, and the existing site stormwater basin has been assessed to ensure it has adequate capacity for the 20% AEP event.

A Stormwater Management Plan has been provided in support of this application for development approval.

Traffic Management

The distribution of in-loading CBH traffic remains unchanged as the receival task is driven by local production regardless of the outcome of the development. If local production exceeds the capacity of the Nyabing 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 low specification storage and construct a new open storage bulkhead will enable CBH to reduce the volume of Harvest Essential Moves (HEMs) with the intention of reducing trucks on road during 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.

A 'no impact' Traffic Letter has been provided in support of this application for development approval.

Conclusion

The proposed retention of the open storage bulkheads (TBH09) and the construction of an additional open storage bulkhead (TBH11) is 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, one bulkheads has already been constructed with no known amenity impacts as well as its general compliance with the Shire's planning framework.

I look forward to hearing from you and if there is any further information that I can provide to assist with Council's consideration of my application, please do not hesitate to contact me on 08 9216 6061 or timothy.roberts@cbh.com.au

Yours Sincerely,



Timothy Roberts

Lead – Planning & Approvals



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

17 September 2026

Christie Smith
Chief Executive Officer
Shire of Kent
Via email: ceo@kent.wa.gov.au

Dear Christie,

LOT 100 ON DEPOSITED PLAN 420337 – ADDITIONS TO EXISTING GRAIN HANDLING FACILITY.

A development application was lodged by CBH on 23 July 2026 seeking development approval from the Shire of Kent for two open storage bulkheads at its existing grain processing facility located at Lot 100 on Deposited Plan 420337, Nyabing.

CBH received a request for further information from the Shire of Kent on 14 September 2026. This letter seeks to respond to that request and provided clarity and further information where required.

Nyabing Expansion Project 2023

Development Approval was issued by the Shire of Kent on 16 November 2022 for three permanent grain storage bulkheads and associated infrastructure at the site the subject of this development application.

Condition 6 of the development approval required CBH to upgrade the Kukerin Road/Bin Road, Katanning-Nyabing Road/Bin Road and Nyabing-Pingrup Road/Bin Road intersections within two years of the date of the development approval.

Condition 7 of the development approval required CBH to monitor the use of the Kuringup Road/Bin Road intersections for 12 months to determine and confirm the need for any upgrade works to the intersection with all works, if any, to be undertaken within two years of the date of the development approval.

This development approval was amended by the Shire on 27 February 2024 to amend Conditions 6 and 7 with respect to completing the intersection improvements within four years of the date of the approval. CBH has until 27 February 2028 to complete the intersection upgrades.

A summary of the status of these intersection upgrades and the constraints CBH has faced has been provided later within this document.

Condition 8 of the development approval required CBH to provide confirmation to the Shire of Kent to retain a \$50,000 bank guarantee bond in respect of any new damage that may occur on Bin Road and the Kukerin Road/Bin Road intersection until the intersections are upgraded. It is understood the Shire of Kent have requested CBH increase the bank guarantee bond given the increased risk of damage to the road network due to the increased number of heavy vehicle movements that will be generated annually.

CBH is not prepared to increase its bank guarantee bond as there is no intensification of heavy vehicle movements caused by this development as suggested. If local production exceeds the capacity of the Nyabing 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 retention of the low specification storage allows CBH to eliminate 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.

The distribution of CBH traffic is unchanged as the receival task is driven by local production regardless of the outcome of the site development. Further CBH is not responsible for any damage caused by grower trucks accessing the facility which accounts for ~50% of all truck movements to and from the facility. The recovery of expenses for road damage and repairs caused by heavy traffic is governed by the Road Traffic (Administration) Act 2008 which is independent of the development application process.

Condition 9 and 10 of the development approval required CBH to arrange for the installation and display of road signage at locations to alert motorists to the temporary closure of Bin Road and of the traffic safety risk until all road upgrade works have been completed.

MRWA have advised CBH that they don't support VMS on their roads during harvest which is why we have not placed VMS as conditioned. MRWA only use VMS for Traffic Management and Incident Management reasons which harvest does not qualify under.

Condition 11 of the development approval required CBH to install and display suitable directional signage on the subject land prior to its use and occupation to provide for the safe and convenient movement of all vehicles attending the facility.

A signage plan has been provided in support of this development application. These signs were installed onsite back in 2025.

Condition 13 of the development approval required CBH prepare a report by a suitably qualified consultant confirming all measures proposed in the approved Stormwater Management Plan have been implemented.

It is CBH's position that Condition 13 is not a valid condition of development approval. The approved Stormwater Management Plan already fully addressed extreme storm events and asking a consultant to speculate on new unapproved infrastructure creates uncertainty. The condition introduces a lack of finality, precision, and certainty. It binds CBH into building and paying for unknown future works that have not yet been designed, budgeted, or formally assessed.

If there is evidence that CBH has not installed stormwater infrastructure in accordance with its development approval or that stormwater is not suitably retained and disposed of onsite, CBH is happy to rectify these works. Compliance is covered by Condition 12 of the development approval should any noncompliance be identified.

Condition 14 of the development approval required CBH submit a Mosquito Management Plan for endorsement by the Shire of Kent.

Mosquito Management was addressed under Clause 3.4 of the approved Stormwater Management Plan. Notwithstanding, a Mosquito Management Plan has been provided in support of this development application.

Environmental Clearing Permit Constraints

To support the construction of the intersection upgrades, a significant amount of clearing of native vegetation needs to be undertaken. Several significant challenges have emerged since our last correspondence.

As previously advised, CBH has been progressing both State and Commonwealth environmental approval requirements, including a Native Vegetation Clearing Permit (NVCP) application with the Department of Water and Environmental Regulation (DWER) and approvals under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The project continues to involve impacts to Matters of National Environmental Significance (MNES), including the Critically Endangered Eucalypt Woodlands of the Western Australian Wheatbelt Threatened Ecological Community (TEC) and habitat associated with Carnaby's Black Cockatoo.

Since our previous update, CBH has undertaken an extensive process to identify suitable environmental offsets and minimise project impacts. This work has included:

- Desktop assessment of approximately 100 potential offset properties across the Wheatbelt.
- Physical inspections of 10 shortlisted locations.
- Detailed ecological surveys at two preferred sites that met the offset assessment criteria.
- Continued redesign and refinement of the project footprint to reduce impacts to significant vegetation and black cockatoo habitat.

A mature offset site that satisfied the ecological requirements and was considered a viable solution had progressed through negotiations to the point where survey work and offset documentation were being prepared for submission.

Unfortunately, the landholder has recently expressed some doubt, and may not want to participate further which would result in the offset opportunity being lost.

This would be the third offset site we have developed documentation for submission to both regulators. CBH is now reassessing all available options, including further engagement with State and Commonwealth regulators to explore alternative approaches that could deliver equivalent environmental outcomes while remaining aligned with the intent of the legislation and approval framework.

The "like-for-like" approach DWER have asked for means identifying offset areas capable of appropriately compensating for impacts to Carnaby's Black Cockatoo foraging and breeding habitat, together with impacts to the Eucalypt Woodlands of the Western Australian Wheatbelt TEC in an area of 30km-50km radius from the impact site. The complexity of simultaneously meeting offset requirements, maintaining compliance with Main Roads WA design and safety standards, and delivering the intended road safety improvements is creating substantial delivery risk for the project. CBH remains actively engaged with DWER, DCCEEW and specialist environmental consultants to explore all available pathways.

However, given the ongoing offset constraints and approval complexities, we expect environmental approvals to continue to influence the overall project timeline. All outstanding information on the project has been delivered to departments, with an indicative 3-month window provided once CBH deliver an offset proposal.

While no suitable solution has been secured at this stage, CBH remains committed to exploring all viable options that may support delivery of the project while meeting environmental obligations and achieving meaningful conservation outcomes.

Conclusion

The proposed retention of the open storage bulkhead (TBH09) and the construction of an additional open storage bulkhead (TBH11) is 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, one bulkhead has already been constructed with no known amenity impacts as well as its general compliance with the Shire's planning framework.

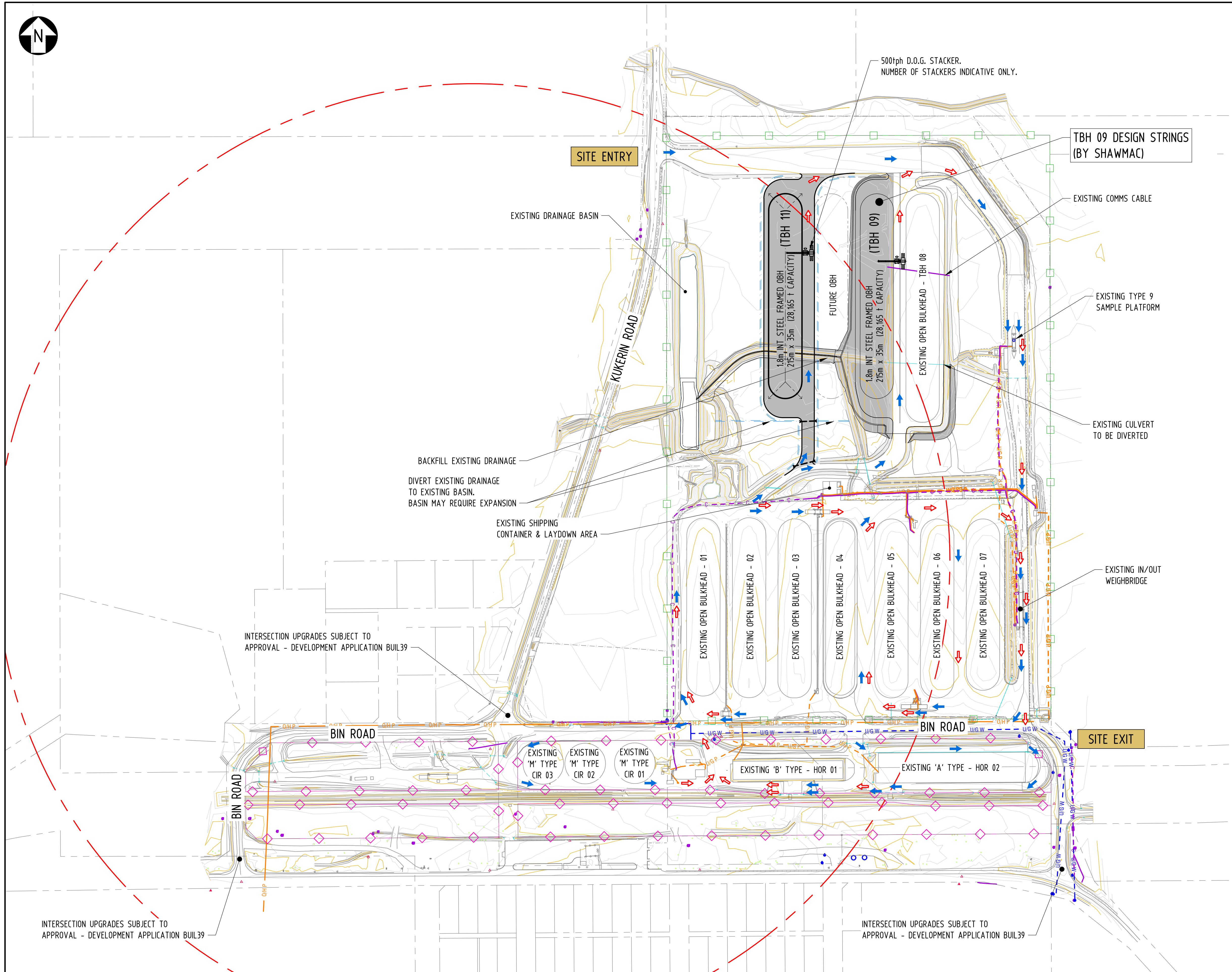
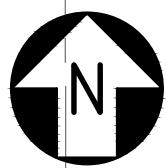
I look forward to hearing from you and if there is any further information that I can provide to assist with Council's consideration of my application, please do not hesitate to contact me on 08 9216 6061 or timothy.roberts@cbh.com.au

Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'Timothy Roberts', with a long horizontal flourish extending to the left.

Timothy Roberts

Lead – Planning & Approvals



DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- ⇄ TRAFFIC MOVEMENTS - TRUCKS EMPTY
- - - - - CADASTRAL BOUNDARY
- - - - - EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500m RADIUS
- - - - - CBH SITE BOUNDARY
- - - - - CBH RAIL LEASE BOUNDARY
- - - - - OVERHEAD POWER LINES
- - - - - UNDERGROUND POWER CABLES
- - - - - UNDERGROUND COMMS CABLES
- - - - - UNDERGROUND WATER PIPES
- - - - - RAIL LINE
- - - - - PROPOSED OPEN DRAINS

STORAGE CAPACITIES

EXISTING STORAGE			
'B' TYPE STORAGE	HOR 01	10,900 t	
'A' TYPE STORAGE	HOR 02	27,200 t	
'M' TYPE STORAGE	(3 CELLS)	21,000 t	
1.6m INT. STEEL FRAMED OPEN BULKHEAD	(01)	24,497 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(02)	24,497 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(03)	21,996 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(04)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(05)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(06)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(07)	23,580 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(TBH 08)	28,080 t	
TOTAL EXISTING STORAGE		255,241 t	
PROPOSED STORAGE			
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 09)	28,165 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 11)	28,165 t	
TOTAL PROPOSED STORAGE		56,330 t	

TOTAL SITE STORAGE 311,571 t

HATCHING LEGEND

AREA OF WORKS 27,750 m²

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 05.09.25

1:2000 @ A1 0 20 40 60 80 100 120 140 160 180 200 m
1:4000 @ A3

COPYRIGHT ©
THIS DRAWING AND THE CONTENTS DEPICTED OR WRITTEN THEREON, WHETHER IN WHOLE OR IN PART, IS THE EXCLUSIVE INTELLECTUAL PROPERTY OF CBH GROUP AND SHOULD NOT BE REPRODUCED OR USED FOR ANY PURPOSE WITHOUT THE PRIOR WRITTEN APPROVAL OF CBH GROUP.
DO NOT SCALE FROM THIS DRAWING



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	CHKD	APP'D
-	-	A	09.07.26	ISSUED AS CHECK PRINT AND FOR REVIEW	JB		

SCALE	1:2000	DRAWN	J. Butlingham	09.07.26
SHEET	A1	CHECKED		
PROJECT	LAKE GRACE94	DESIGNED		
CO-ORDINATE SYSTEM	LAKE GRACE94	DESIGN APPR		
		PROJECT APPR		

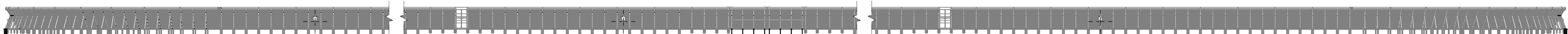
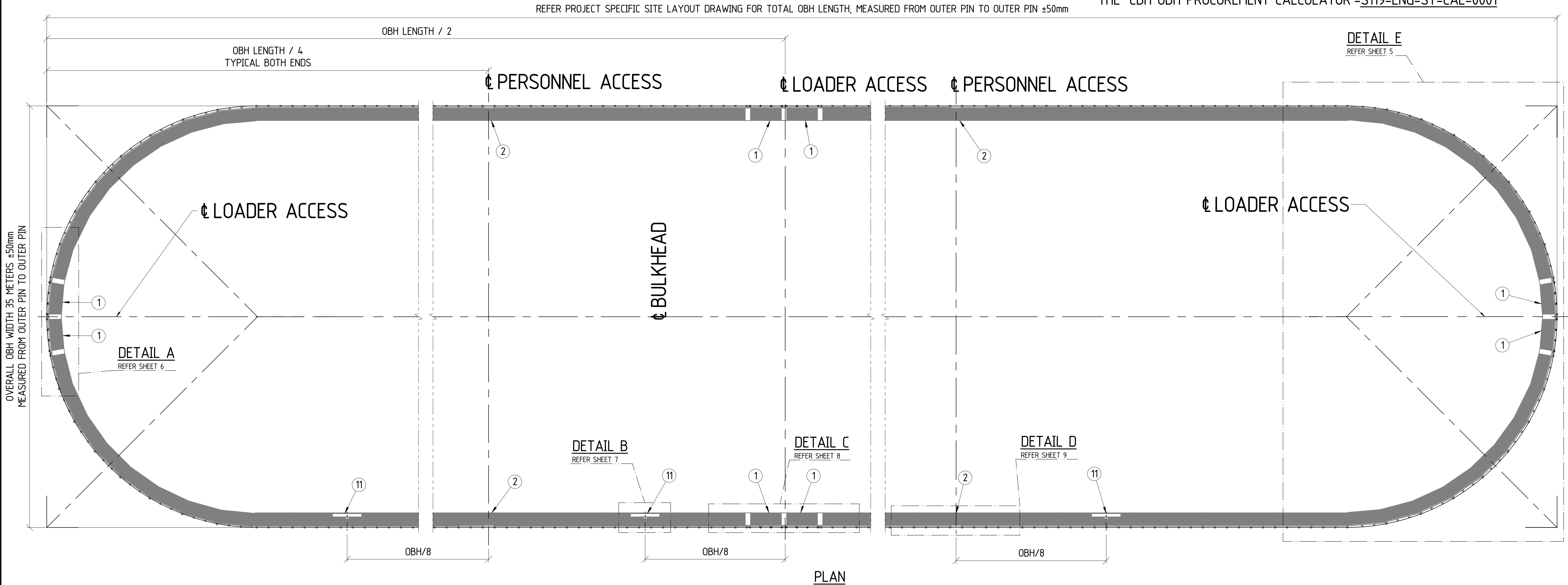
TITLE					
NYABING 2025 PEAK PLANNING PEAK PLANNING APPROVAL CONCEPTUAL LAYOUT No. 1					
DRG No.	563-ENG-CI-DCO-0027	SHEET	1 OF 1	REV.	A



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, CENTERED 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.

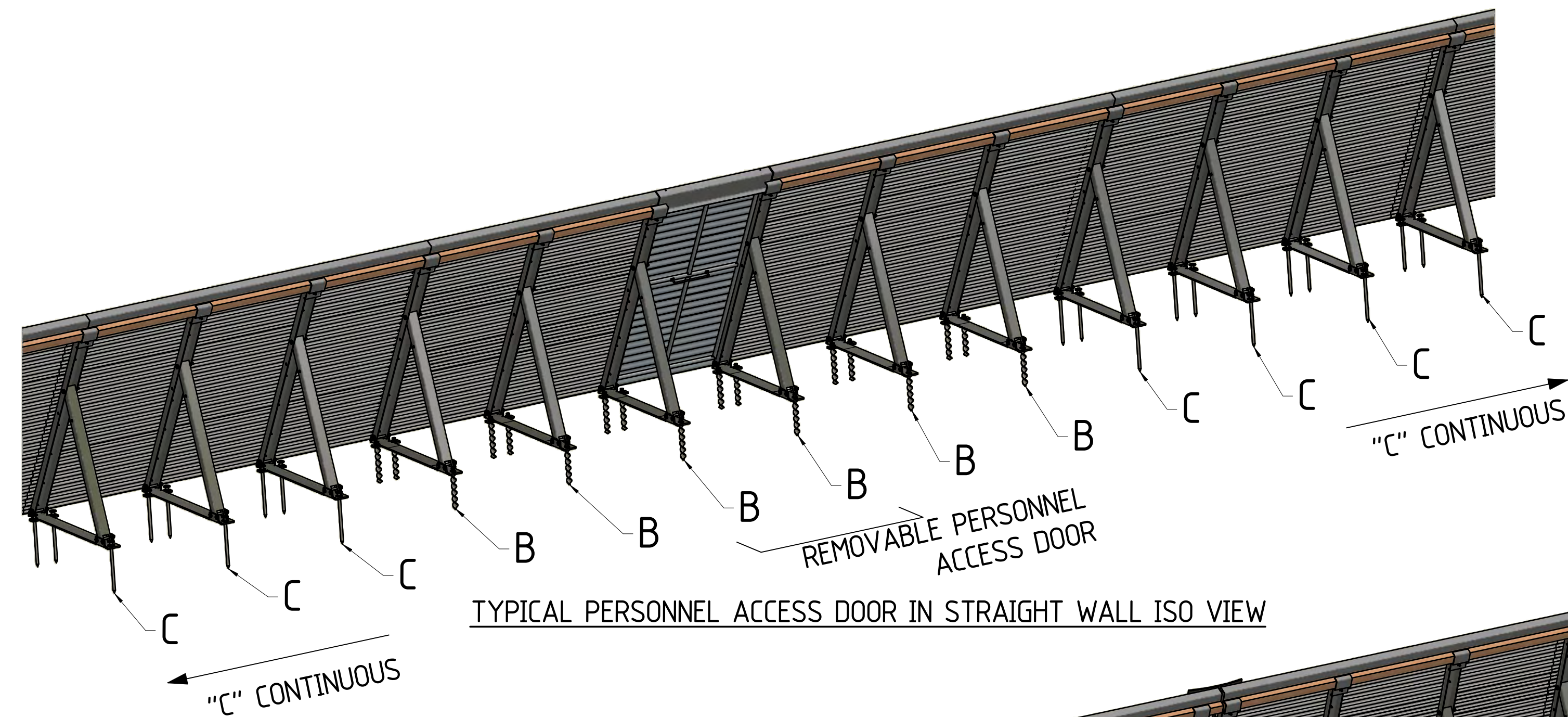
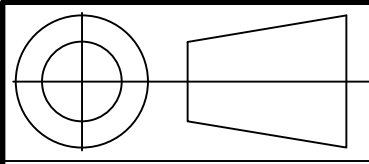
PARTS LIST (PER UNIT)									
ITEM No	DESCRIPTION	WIDTH	LENGTH	QTY	CBH OR SUPPLIER PART No	PROCESS	SAP Code	MASS Kg	TO DETAIL
1	FRONT END LOADER ACCESS GATE			REFER NOTE	S119-ENG-ST-ASY-0034	FIELD FIT	N/A	184.4	Yes
2	PERSONNEL ACCESS DOOR			REFER NOTE	S119-ENG-ST-ASY-0017	FITTING	N/A	17.1	Yes
3	STRAIGHT 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 QUANTITIES, REFER TO THE 'CBH OBH PROCUREMENT CALCULATOR'-S119-ENG-ST-CAL-0001

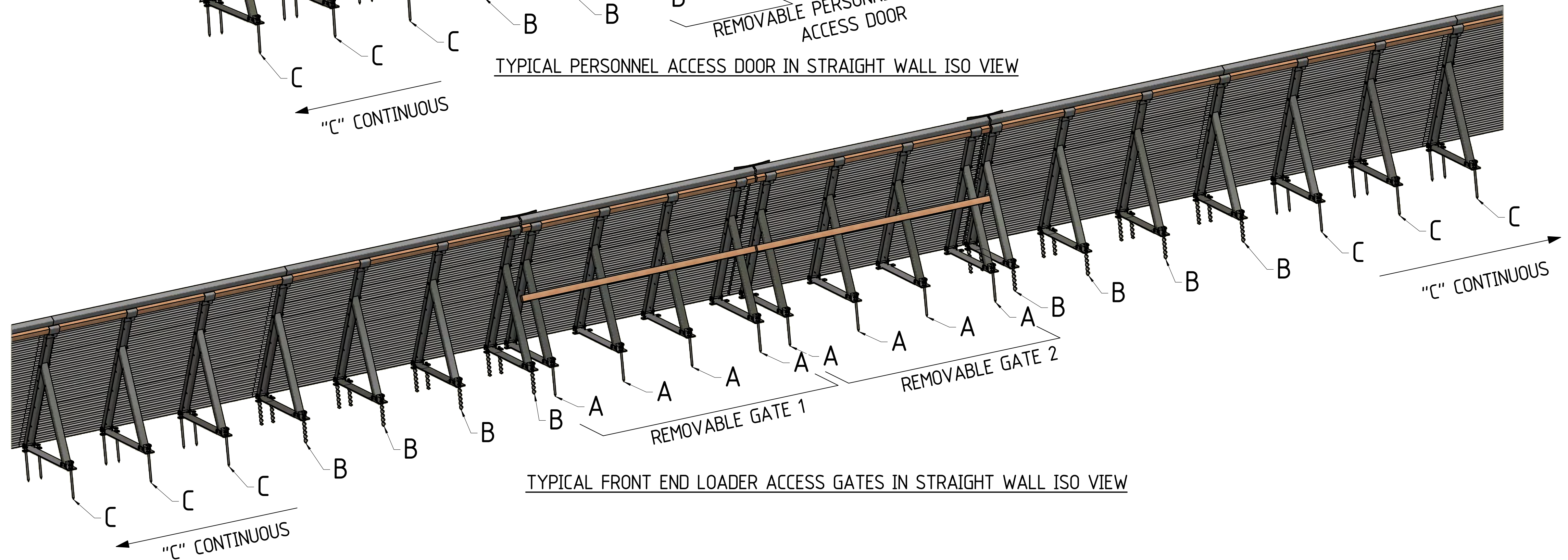


S119-ENG-ST-DGA-0003

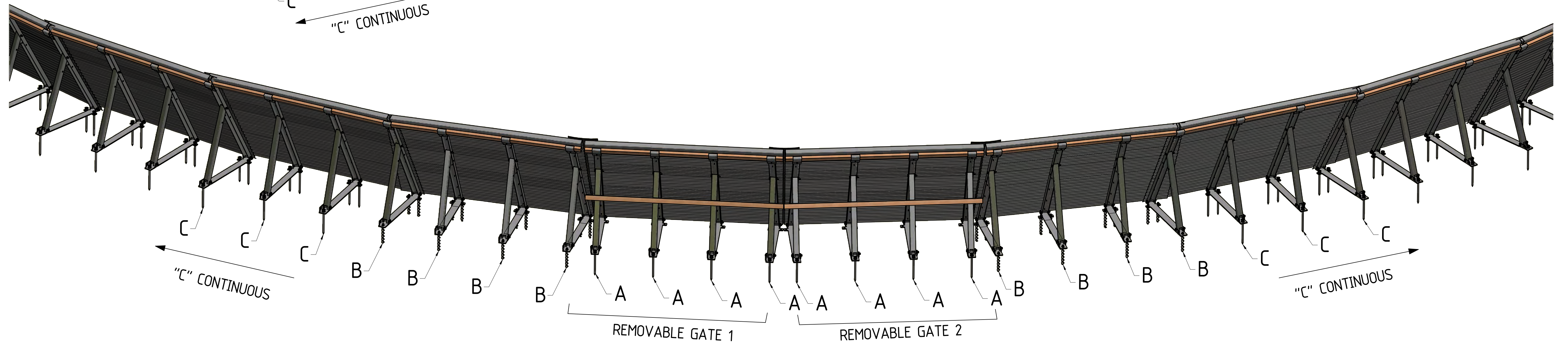
[illegible]



TYPICAL PERSONNEL ACCESS DOOR IN STRAIGHT WALL ISO VIEW

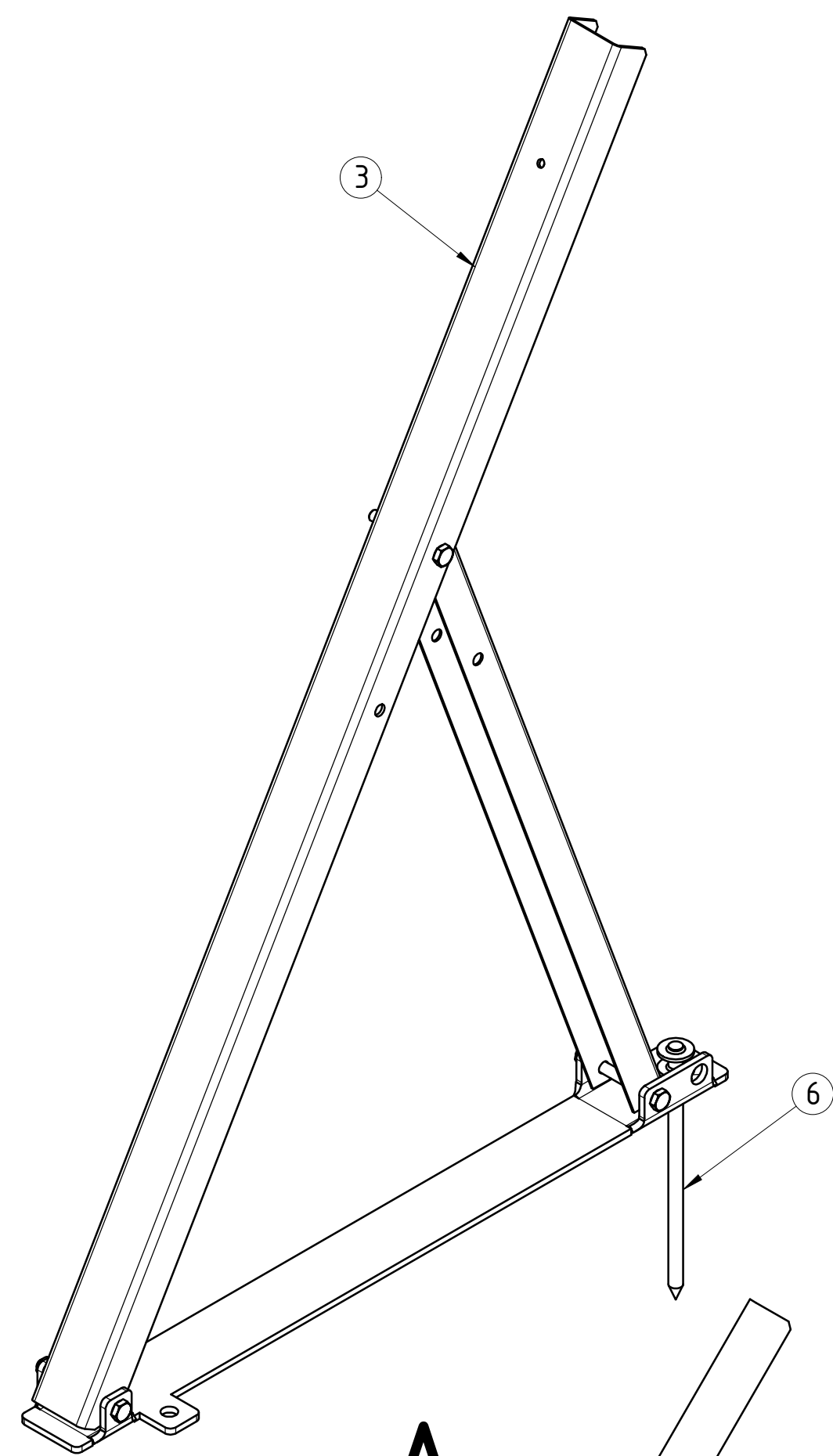


TYPICAL FRONT END LOADER ACCESS GATES IN STRAIGHT WALL ISO VIEW



TYPICAL FRONT END LOADER ACCESS GATES IN CURVED WALL ISO VIEW

COPYRIGHT: THIS DRAWING AND THE CONTENTS DEPICTED OR WRITTEN THEREON, WHETHER IN WHOLE OR IN PART, IS THE EXCLUSIVE INTELLECTUAL PROPERTY OF CBH GROUP. AND SHOULD NOT BE USED FOR ANY PURPOSE WITHOUT THE EXPRESS WRITTEN APPROVAL OF CBH GROUP. 	CBH GROUP HEAD OFFICE LEVEL 6, 240 ST GEORGES TERRACE, PERTH W.A 6000 PH (08) 9237 9600 FAX (08) 9322 3942																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
---	---	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



A

ARRANGEMENT 'A'

- PURPOSE:** ARRANGEMENT FOR FRONT END LOADING (S119-ENG-ST-ASYM)
- STRUT TYPE:** STRUT
- PIN TYPE:** STRAIGHT
- PIN ANCHOR IS TO BE USED**
- DOOR IS TO BE REVERSED**
- PIN QUANTITY:** 1

B

ARRANGEMENT

- PURPOSE: ARRANGEMENT OF TRUSSES ON EITHER SIDE OF THE GATES AND 3 STAIR ACCESS DOORS, AND REMOVED THE SUPPORTS FOR HIGHER WIND LOADS.
- STRUT TYPE: SPIRAL
- PIN TYPE: SPIRAL
- PIN QUANTITY: 3

C

ARRANGEMENT

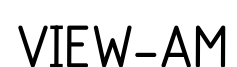
PURPOSE: ARRANGEMENT LOCATIONS, OTHER THAN 'A' AND 'B' ARE USED

- STRUT TYPE: S
- PIN TYPE: STRUT
- PIN QUANTITY:

REV.
0



Z-CAPPING TEK SCREW
SEE IMPORTANT NOTES



TOE DOWN
TOP EDGE OF THE SHEET
TO SIT ABOVE TEK SCREW

5 MIN.
10 MAX.



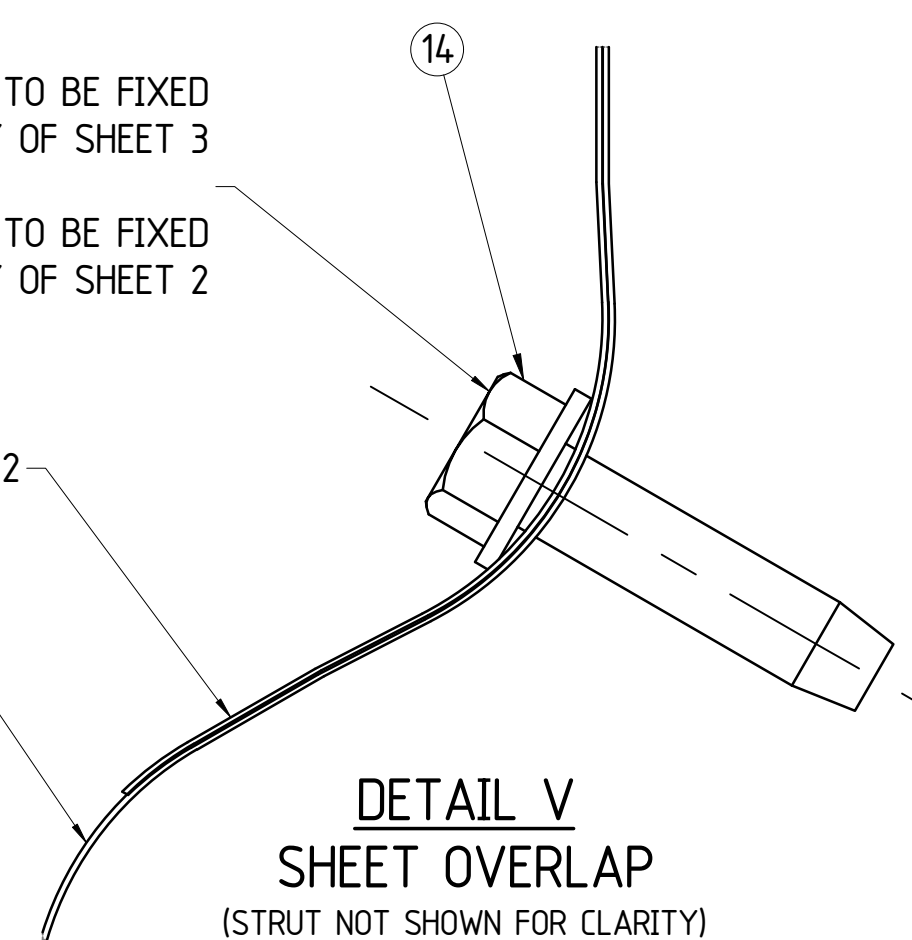
(CLADDING NOT SHOWN FOR CLARITY)

SHEET 2 & 3 OVERLAP - TEK SCREW TO BE FIXED
IN THE FIRST VALLEY OF SHEET 3

SHEET 1 & 2 OVERLAP - TEK SCREW TO BE FIXED
IN THE FIRST VALLEY OF SHEET 2

SHEET 3 ON TOP OF SHEET 2-

SHEET 2 ON TOP OF SHEET 1-



DETAIL V
SHEET OVERLAP
STRUT NOT SHOWN FOR CLARITY

(STRUT NOT SHOWN FOR CLARITY)

COPYRIGHT.
THIS DRAWING AND THE
CONTENTS DEPICTED OR WRITTEN
THEREON, WHETHER IN WHOLE OR IN
PART, IS THE EXCLUSIVE INTELLECTUAL
PROPERTY OF CBH GROUP AND
SHOULD NOT BE USED FOR ANY PURPOSE
WITHOUT THE EXPRESS WRITTEN
APPROVAL OF CBH GROUP.



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

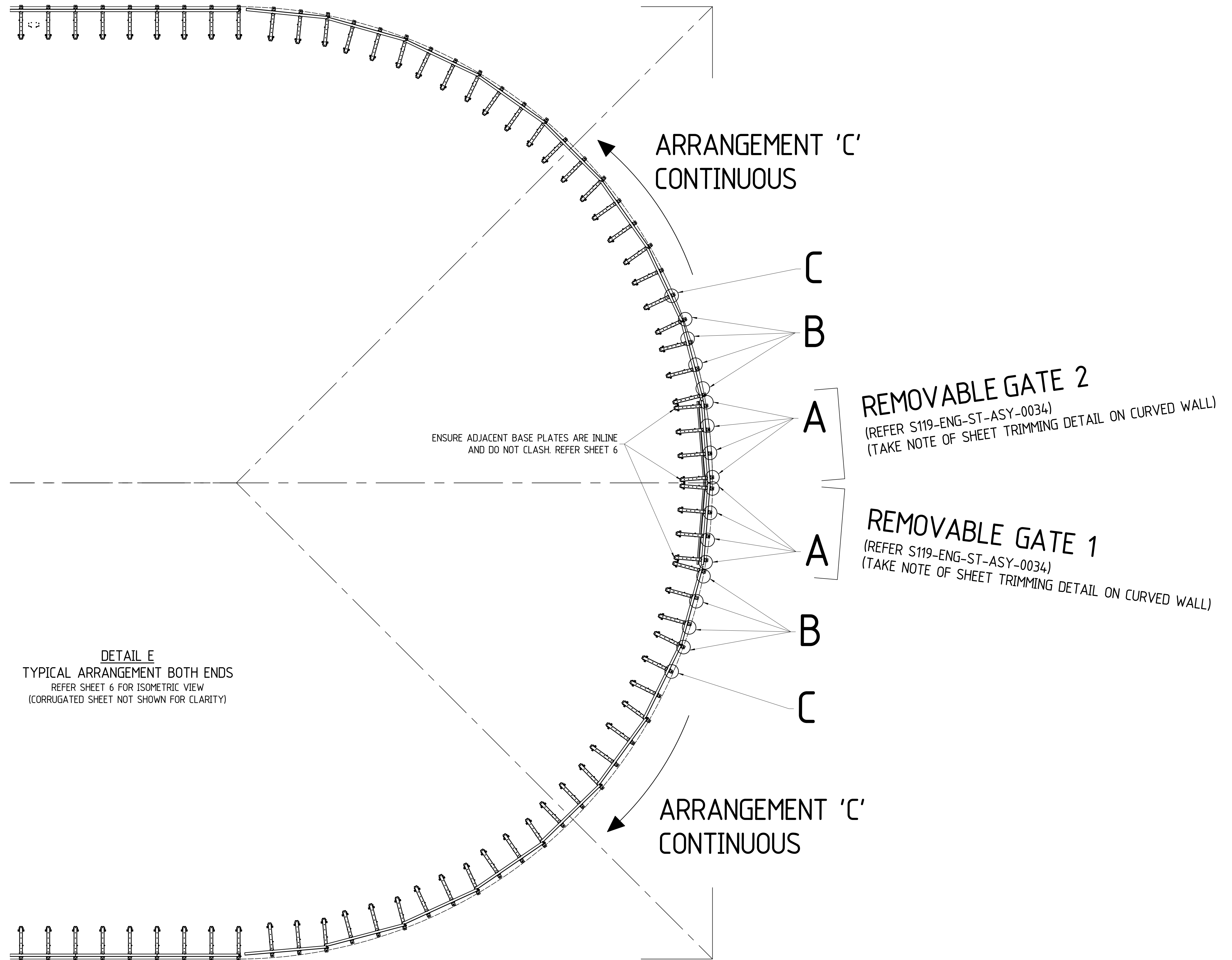
				0	10/06/2021
	BY	CHK	APP	REV	DATE

COPIED FROM S-119, ISSUED FOR CONSTRUCTION
REVISIONS

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

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



DO NOT SCALE FROM THIS DRAWING

REF DRG No.	REFERENCE DRAWING TITLE

REV	DATE	REVISIONS	

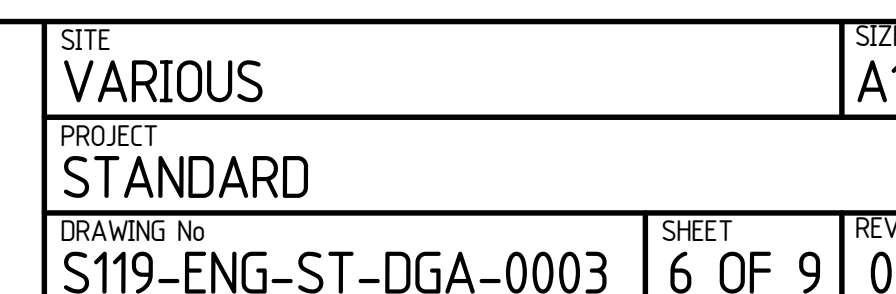
			0	10/06/2020	COPIED FROM S-119, ISSUED FOR CONSTRUCTION
BY	CHK	APP	REV	DATE	REVISIONS

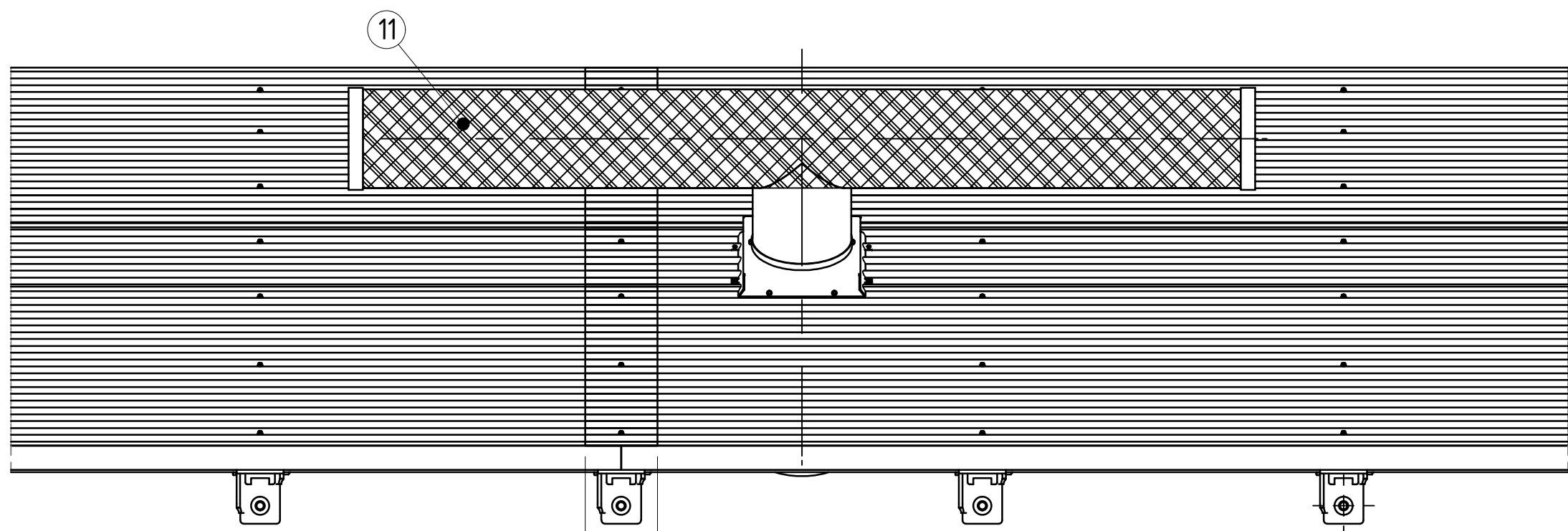
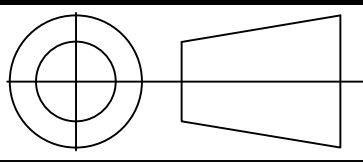
				DRAWN	SCR 10/06/2020
				CHECKED	LS 10/06/2020
				ENGINEER	BC 11/06/2020
SCR	LS	NH			
BY	CHK	APP		APPROVED	NH 11/06/2020

SITE	VARIOUS
PROJECT	STANDARD

DRAWING No S119-ENG-ST-DGA-0003	SHEET 5 OF 9	REV. 0
------------------------------------	-----------------	-----------

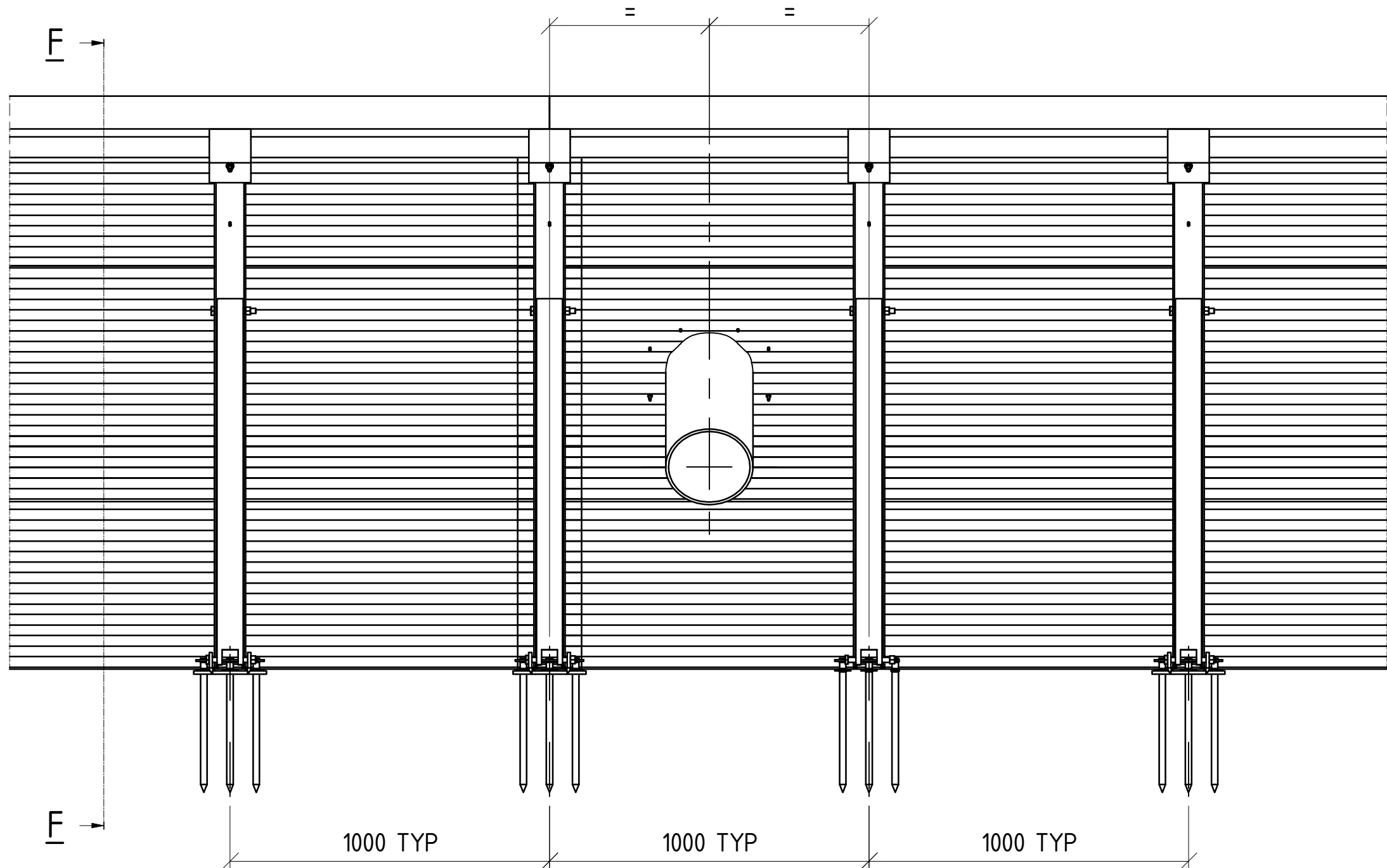
A1



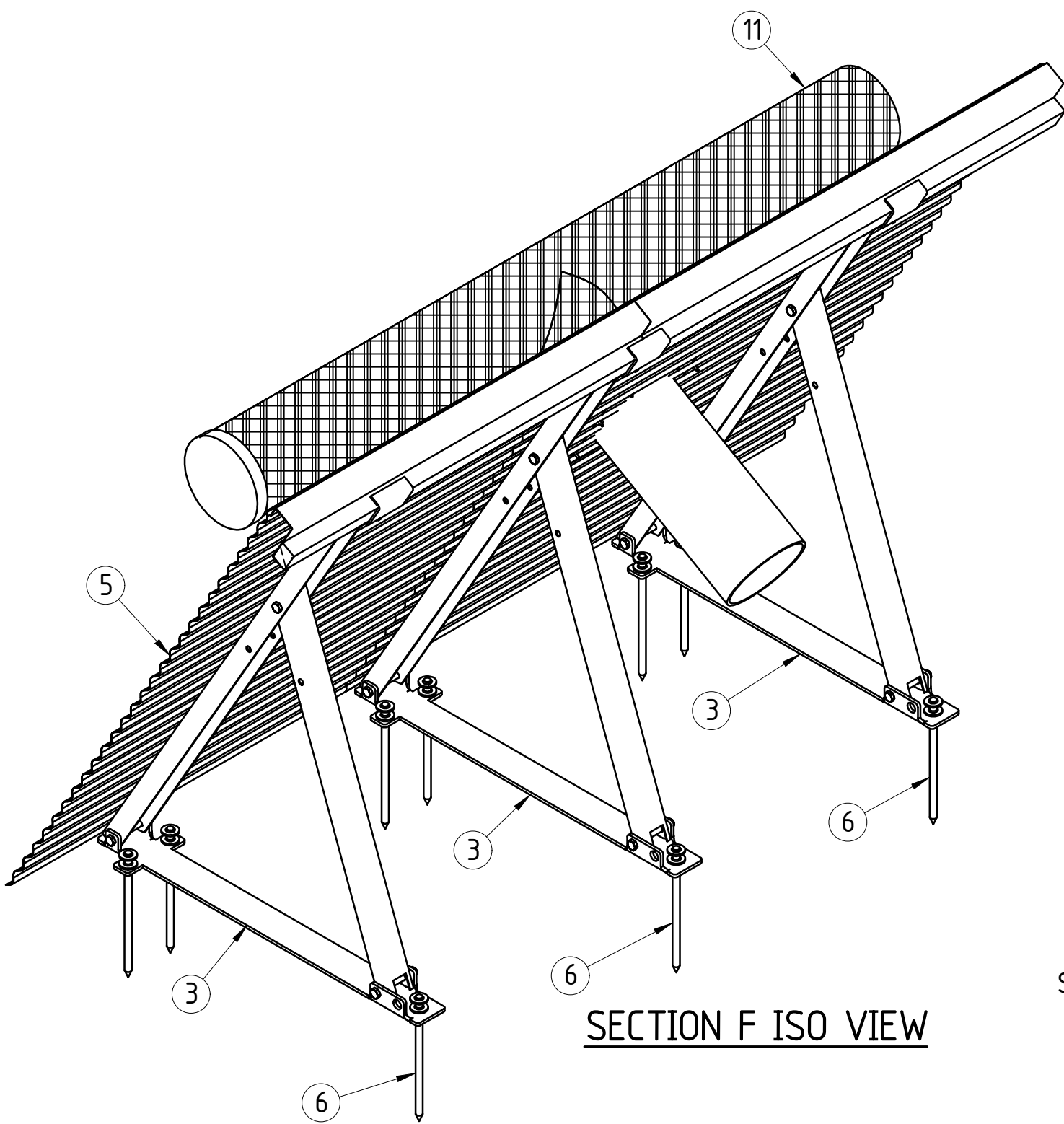


200 CLADDING OVERLAP, CENTERED OVER THE CENTRELINE OF THE STRUT
TYPICAL ALL CLADDING, EXCEPT OBH GATE/DOOR JOINS

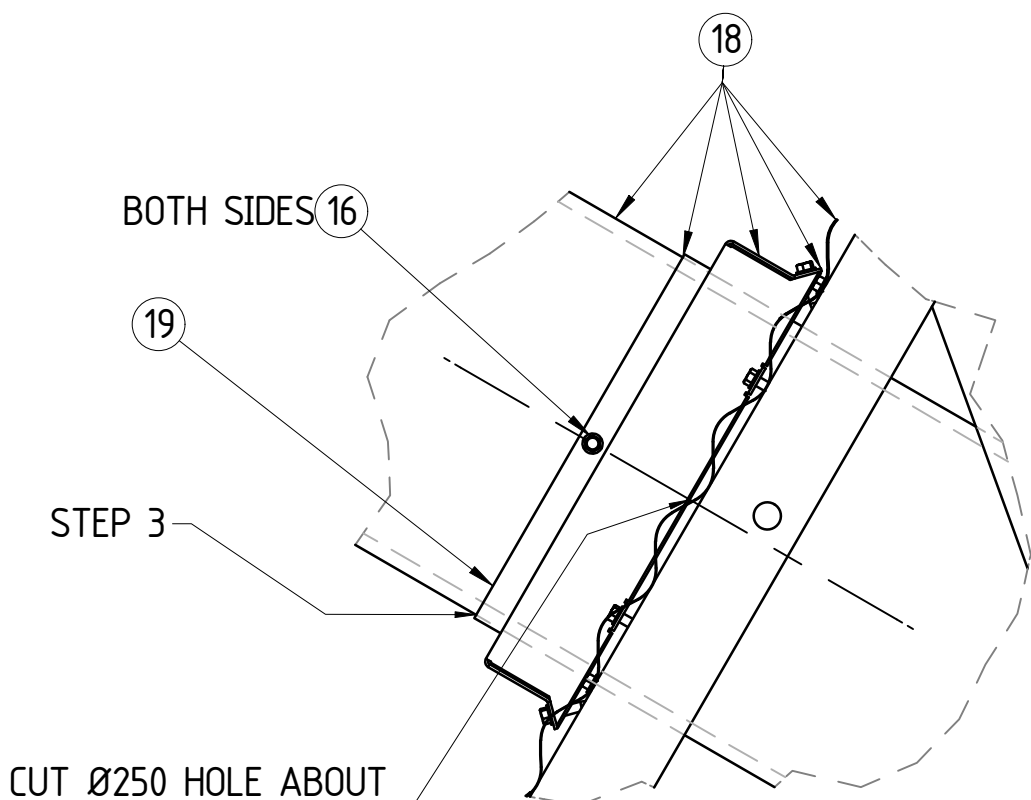
DETAIL B
'T' PIECE INSTALLATION DETAIL



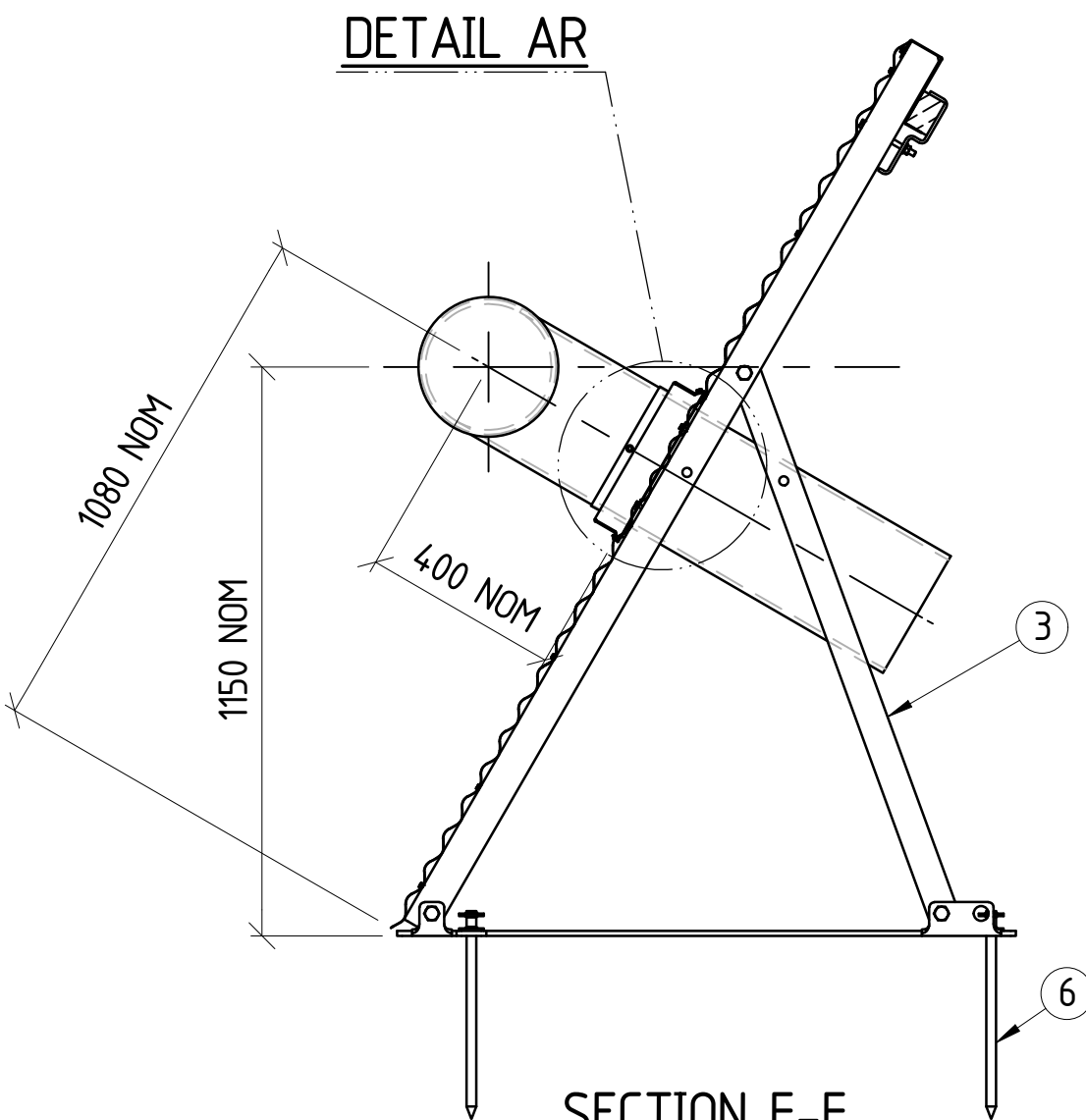
ELEVATION



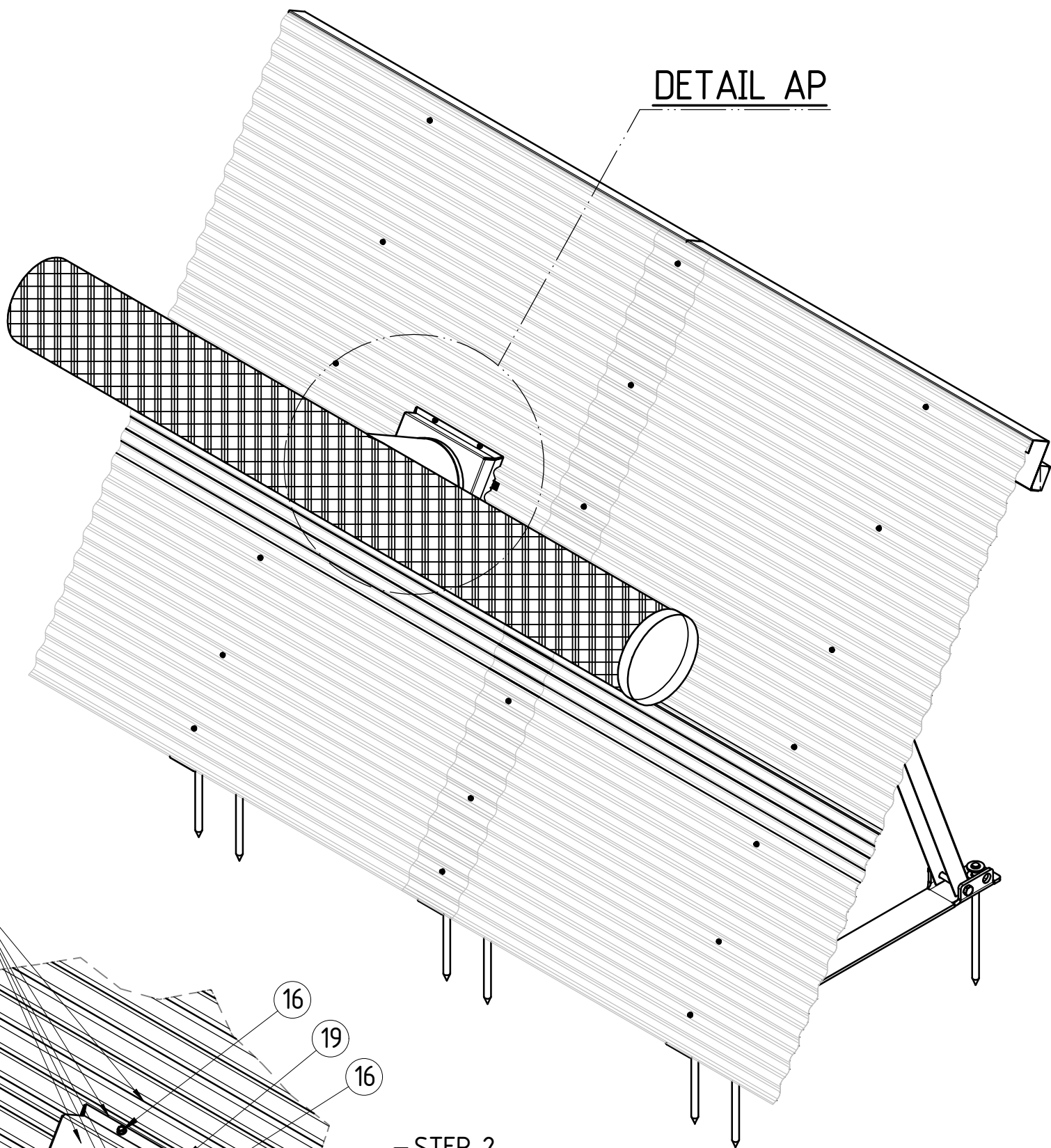
SECTION F ISO VIEW



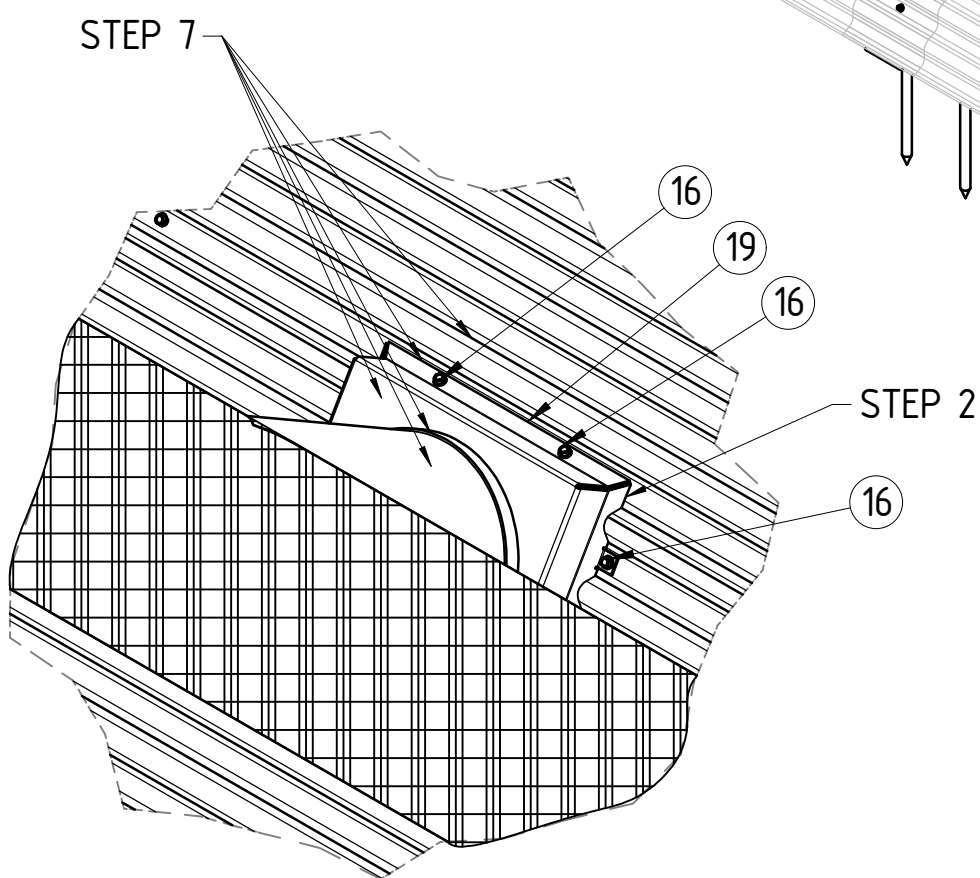
DETAIL AR



SECTION F-F



DETAIL AP



DETAIL AP

BACKGROUND:

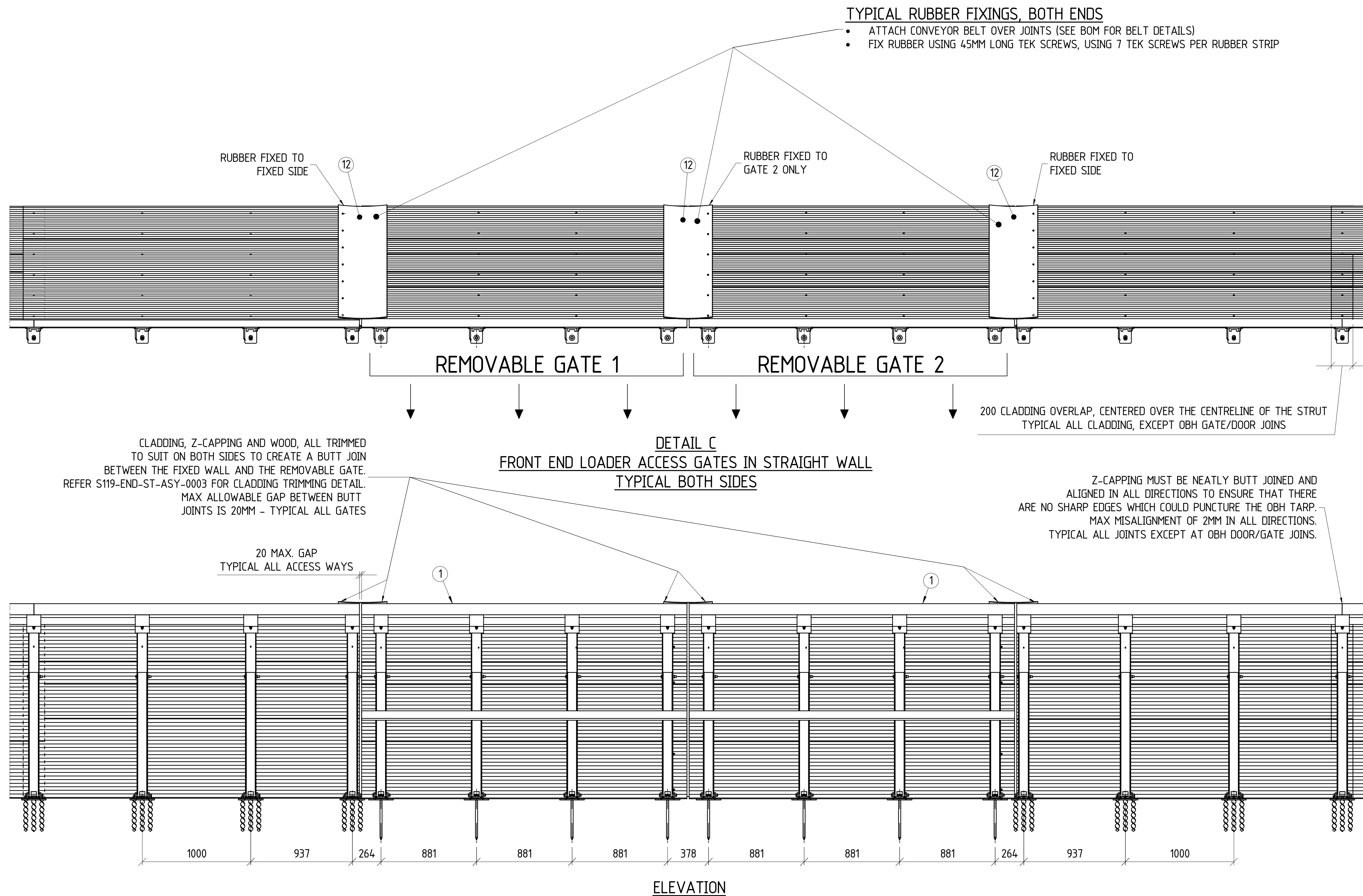
- THE 'T' PIECE IS USED TO PUMP HAZARDOUS FUMIGANT INTO THE STORAGE AFTER IT IS FULLY SEALED. CARE MUST BE TAKEN WHEN INSTALLING THE 'T' PIECE AND APPLYING THE SEALANTS TO ENSURE THE SEAL IS APPLIED TO A HIGH QUALITY.

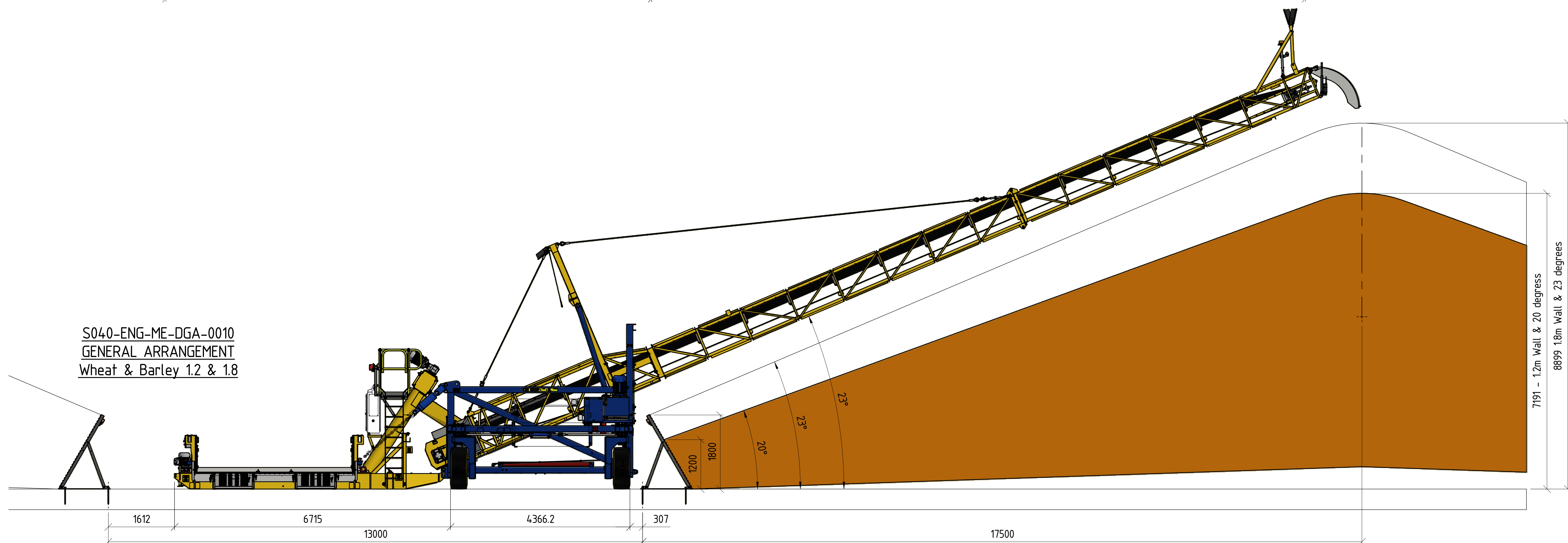
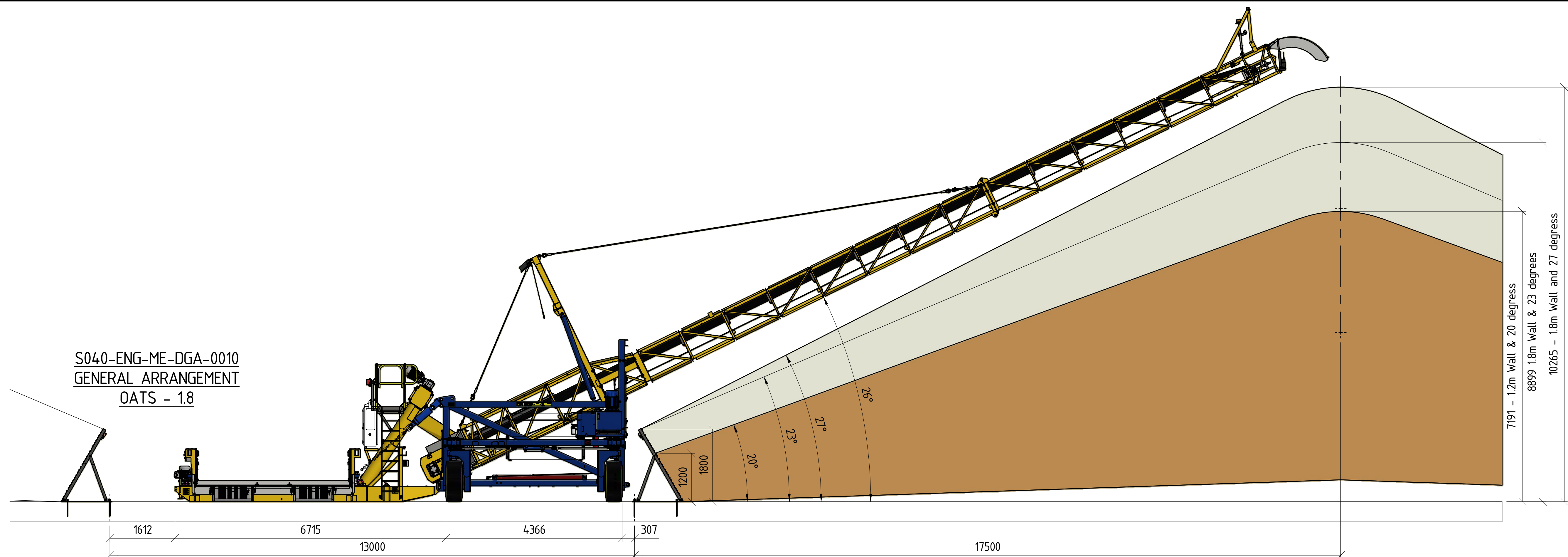
USE THE FOLLOWING QUANTITY'S PER 1 'T'PIECE

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

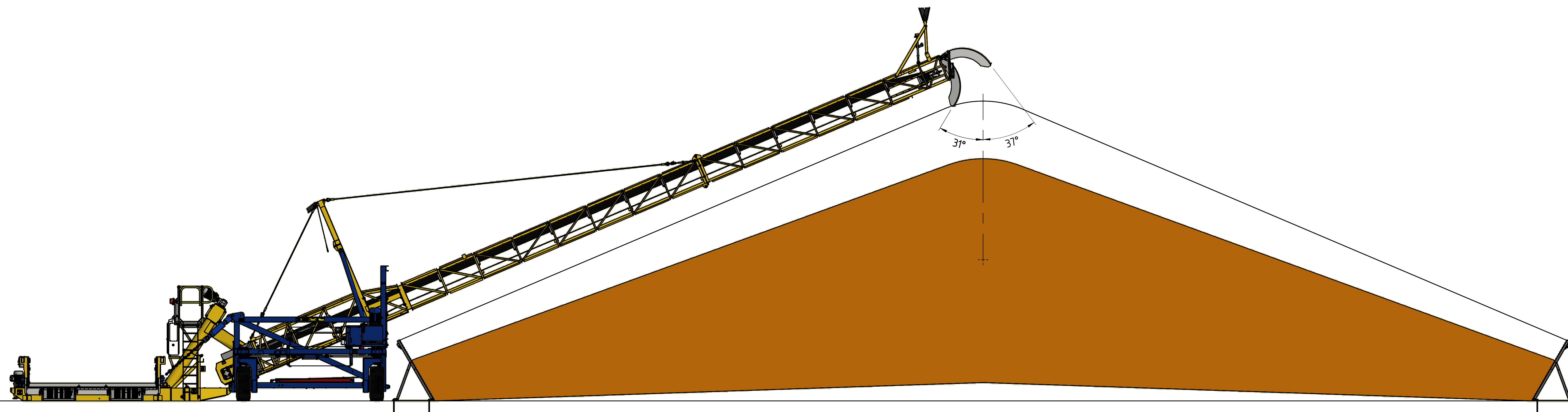
PROCEDURE:

- 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.





SIZE	A1
------	----



S040-ENG-ME-DGA-0010
GENERAL ARRANGEMENT



Stormwater Management Plan

Project:	Nyabing Stormwater Management Plan
Client:	CBH
Author:	B. Smith
Date:	22 nd June 2026
Shawmac Document #:	2605002-SWMP-006
CBH Document #:	TBC

CONSULTING CIVIL AND TRAFFIC ENGINEERS
1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE|+61 8 9355 1300
EMAIL| admin@shawmac.com.au



ISO 9001 QUALITY
Certified System



Document Status: Client Review

Version	Prepared By	Reviewed By	Approved By	Date
A	B. Smith	R. Needham	R. Needham	22.06.2026

Disclaimer

Although all care has been taken in the preparation of this document, Shawmac Pty Ltd and all parties associated with the preparation of this document disclaim any responsibility for any errors or omissions. Shawmac Pty Ltd reserves the right to amend or change this document at any time. This document does not constitute an invitation, agreement or contract (or any part thereof) of any kind whatsoever. Liability is expressly disclaimed by Shawmac Pty Ltd for any loss or damage which may be sustained by any person acting on this document © Shawmac Pty. Ltd. 2022 ABN 51 828 614 001

File Reference: Y:\Jobs Active 2026\CE - Roads & Drainage\CBH_Peak Planning TN & SWMP_2605002\3. Documents\3.20 SWMP\6. Nyabing\2605002-SWMP-006_A.docx



Contents

1.	Introduction	4
1.1.	The Project.....	4
1.2.	Purpose.....	4
2.	Pre Development Situation	5
2.1.	Site Characteristics	5
2.2.	Surface Water Catchments.....	6
3.	Stormwater Management Strategy.....	10
3.1.	Strategy Overview.....	10
3.2.	Design Criteria and Modelling Assumptions	11
3.3.	Stormwater Quantity	14
	Appendix A – CBH Concept Plan.....	15

Figures

Figure 1:CBH Concept Extract	4
Figure 2: Site Characteristics	5
Figure 3: Pre Development Catchment Characteristics.....	7
Figure 4: External Catchment.....	8
Figure 5: Proposed Drainage Strategy	11
Figure 6 : XPSTORM Model.....	13

Tables

Table 1: Drainage Parameters prior to TBH Expansion	9
Table 2: Basin Modelling Outcomes.....	14



Table 3: Culvert Modelling Outcomes (5-year ARI).....	14
---	----

1. Introduction

1.1. The Project

It is understood that CBH has recently constructed two (2) temporary open bulkheads (TBH 09 and 11) at their existing Nyabing site to cater for excess demand during the 2025 peak planning season. CBH now wish to operate these storage areas permanently. Refer to **Figure 1** for an extract of CBH's concept plan

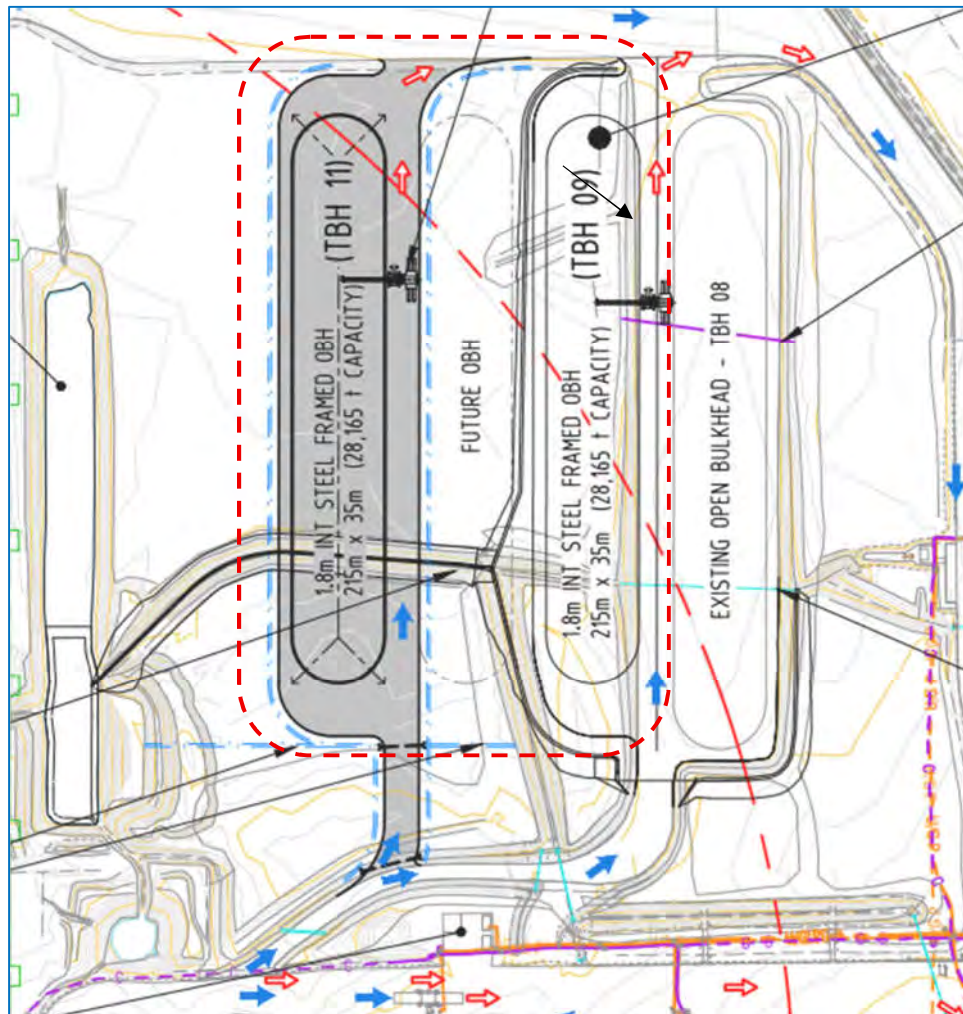


Figure 1:CBH Concept Extract

1.2. Purpose

The purpose of this report is to outline and quantify the stormwater management measures adopted for the design of the recently constructed TBH09 and TBH11.

2. Pre Development Situation

2.1. Site Characteristics

The Nyabing Site can be split into two areas; north and south, separated by Bin Road which is under the care and control of the Shire of Kent. The southern portion of the site contains existing horizontal and circular storage facilities, and the northern portion contains the existing open bulkheads, including the existing emergency bulkhead (TBH 08) and the recently constructed temporary bulkheads (TBH 09 and TBH11). Two open drains ran through the centre of the northern portion. **Figure 2** shows the major features of the existing site.



Figure 2: Site Characteristics

2.2. Surface Water Catchments

As the site is currently developed, the catchment has been heavily altered from its natural state, but in general, surface water flows were maintained towards natural flow paths. **Figure 3** shows the predevelopment major catchment boundaries and stormwater infrastructure.

As shown, the site interacts with three major catchments described as follows:

- Catchment A contained the majority of the northern site. All stormwater runoff within this area either flowed overland or was directed via constructed drains towards the two open drains in the northern portion which discharged into the site drainage basin. The drainage basin has an outlet open drain which connects to two culverts under Kukerin Road. The culverts under Kukerin Road are set at a higher level than the basin floor.
- Catchment B was located just west of the site. This area remains mostly undeveloped but contains part of the Shire depot. This catchment either flows overland or is intercepted by the Kukerin Road table drains which discharges to the two culverts under Kukerin Road as described above.
- Catchment C contained the northern half of the southern site, a small portion of the southern extent of the northern site, and most of the Shire depot. Runoff from this catchment is collected and conveyed by the CBH and Bin Road open drains and culverts, flowing east to another culvert under Kukerin Road, near the Bin Road intersection.

In addition, there is an external catchment to the east/south east of the site which contributes runoff to a 600x300 RCB culvert on the eastern boundary of the site, under the CBH access road near the sampling area, as shown in **Figure 4**. The catchment is completely impervious (except for a small area of Kuringup Road). The 600x300 RCB culvert discharges to the 450RCP culvert running under TBH08 which was designated to be decommissioned as part of the 2025 peak planning works. Ultimately, runoff from the external catchment was conveyed to the site drainage basin and the culverts under Kukerin Road.

The recently constructed works are almost wholly contained within Catchment 'A' so only this catchment will be considered in greater detail.



Figure 3: Pre Development Catchment Characteristics



Figure 4: External Catchment

An XPSTORM model was built previously for the Nyabing CBH site to assess the situation prior to the construction of the emergency bulkhead in 2021, given that these were intended to be temporary and were developed with a less onerous drainage design criterion. This model will be used as the baseline for assessing the impacts of the currently planned works. The model uses the same assumptions described in **Section 3.2**.

Key results from the existing model are provided in **Table 1**. All results are based on the 5% AEP ARI event in accordance with CBH's permanent design criteria. The model shows that the basin is expected to overtop in the critical event, pool in the adjacent vacant land and subside once the culverts under Kukerin Road convey sufficient water downstream.

Table 1: Drainage Parameters prior to TBH Expansion

Element	Quantum
Basin Base Area	3,961m ²
Basin Top Area	11,369m ²
Basin Base Level	320.60
Basin Top Level	322.00
Total Basin Capacity	10,292m ³
Basin TWL	322.00 ¹
Critical Event	18hr
Total Outflow Rate through Kukerin Road Culverts	0.27m ³ /s

¹ TWL overtops basin top level.

3. Stormwater Management Strategy

3.1. Strategy Overview

The temporary OBHs are located within the existing Catchment A (refer to **Figure 3**), which ultimately drains into the site's existing stormwater basin. The stormwater management strategy was to maintain the runoff from the TBH areas into this existing basin. However, increased runoff was expected from the TBH area due to the increased imperviousness of the compacted pavements. The temporary bulkheads are designed to accommodate runoff from the 20% AEP event, and the existing site stormwater basin has been assessed to ensure it has adequate capacity for the 20% AEP event.

Previously, runoff from the area east of the existing TBH08 (including the external catchment) was captured by a 1x450 RCP culvert beneath TBH08, which conveyed flow into the open drains and ultimately into the basin. This culvert was removed, and the drain regraded around TBH08. A new culvert, sized for the 20% AEP event, was constructed beneath the access road south of the TBH area to convey these flows into the existing open drain system. After the existing open drain reached the location of TBH11, runoff was sent into a new open drain running towards the south, where it reaches an additional new culvert, sized for the 20% AEP event, conveying runoff underneath the new access road, towards additional open drains and to the basin. Runoff from the northwestern portion of the catchment enters a new open drain alongside TBH11, before entering the past open drain system and being carried to the basin.

Portions of the realigned flow path, existing drains, and basin floor levelled were deepened to ensure a minimum 0.3% grade. The new drains are trapezoidal shape to limit flow velocities to below 1m/s (typically <0.6m/s). **Figure 5** shows the proposed drainage strategy.

Whilst the strategy is suitable for the 20% AEP events, in larger events, runoff from the external catchment will become more prominent. The new culvert will be undersized, which may cause water to back up in the drains around the sample hut area. In addition, higher velocities and flow rates will be expected, and risk of erosion/scour around the drain bends will increase. It is recommended that in the medium term CBH consider diverting the external flow path north towards the creek line, and there appears to be sufficient room within the CBH site to do this. This will also relieve pressure on the basin capacity.



Figure 5: Proposed Drainage Strategy

3.2. Design Criteria and Modelling Assumptions

Based on the adopted strategy and CBH's emergency/temporary design specifications, the key stormwater management design criteria are summarised as follows:

- The existing internal and external catchments should retain their current flow paths through to the existing site discharge points as far as practical.
- The basin is to be sized for the critical 20% AEP event, with a minimum 300mm freeboard.
- The basin, open drains and culverts are to be sized for the 20% AEP event in accordance with CBH requirements.
- A nominal 50mm/day infiltration rate has been assumed to reflect some seepage and evaporation.
- Open drains are to be set at a minimum 300mm deep below the bottom of pavement, or 600mm below surface where no pavement is to be installed.
- Culvert headwater heights are to be limited to a maximum 300mm below shoulder surface level.
- Culverts may have a minimum 400mm cover.
- Minimum drain fall of 0.3% in accordance with CBH requirements.

- As per CBH Peak Planning Specification, no scour protection or road kerb to be implemented.

Shawmac has prepared an XPSTORM model for the proposed works as shown in **Figure 6** . The following key assumptions were utilised:

- For the CBH site, infiltration losses were assumed as 15mm for pervious areas. Nil losses were assumed for impervious areas. The earthworks formation is assumed to be impervious notwithstanding it will consist of unsealed pavement.
- Basin infiltration losses – 100mm/day.
- Model outcomes reflect the median event from the hydraulic model.
- Rainfall intensities and temporal patterns are consistent with ARR 2019.
- Mannings 'n' value assumed as follows:
 - 0.025 for open drains
 - 0.016 for pavement drains (asphalt surface)
 - 0.014 for concrete culverts
- Culvert energy loss coefficients of 0.5 (entry) and 1.0 (exit).

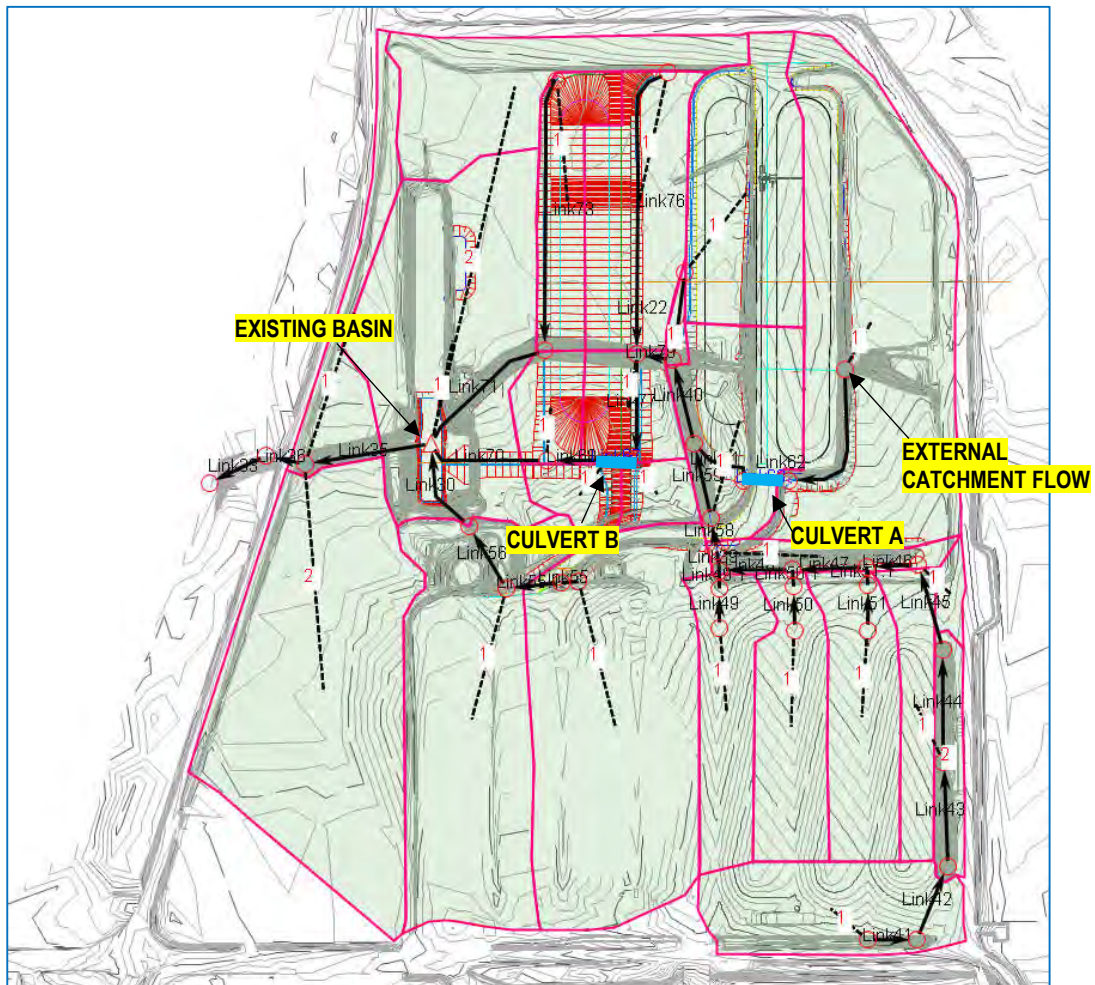


Figure 6 : XPSTORM Model

3.3. Stormwater Quantity

Table 2 and **Table 3** provides the key modelling outcomes for the basin and culverts, which have been assessed for the 20% AEP event.

Table 2: Basin Modelling Outcomes

Element	Quantum
Basin Base Area	960m ²
Basin Top Area	15,900m ²
Basin Base Level	319.65
Basin Top Level	322.00
Total Basin Capacity	17,282m ³
Basin TWL	321.75
Basin TWL - 20 yr ARI (prior to TBH expansion 2021)	322.00
Critical Event	48hr
Total Outflow Rate through Kukerin Road Culverts	0.07m ³ /s
Total Outflow Rate through Kukerin Road Culverts- 20 yr ARI (prior to TBH expansion 2021)	0.28m ³ /s

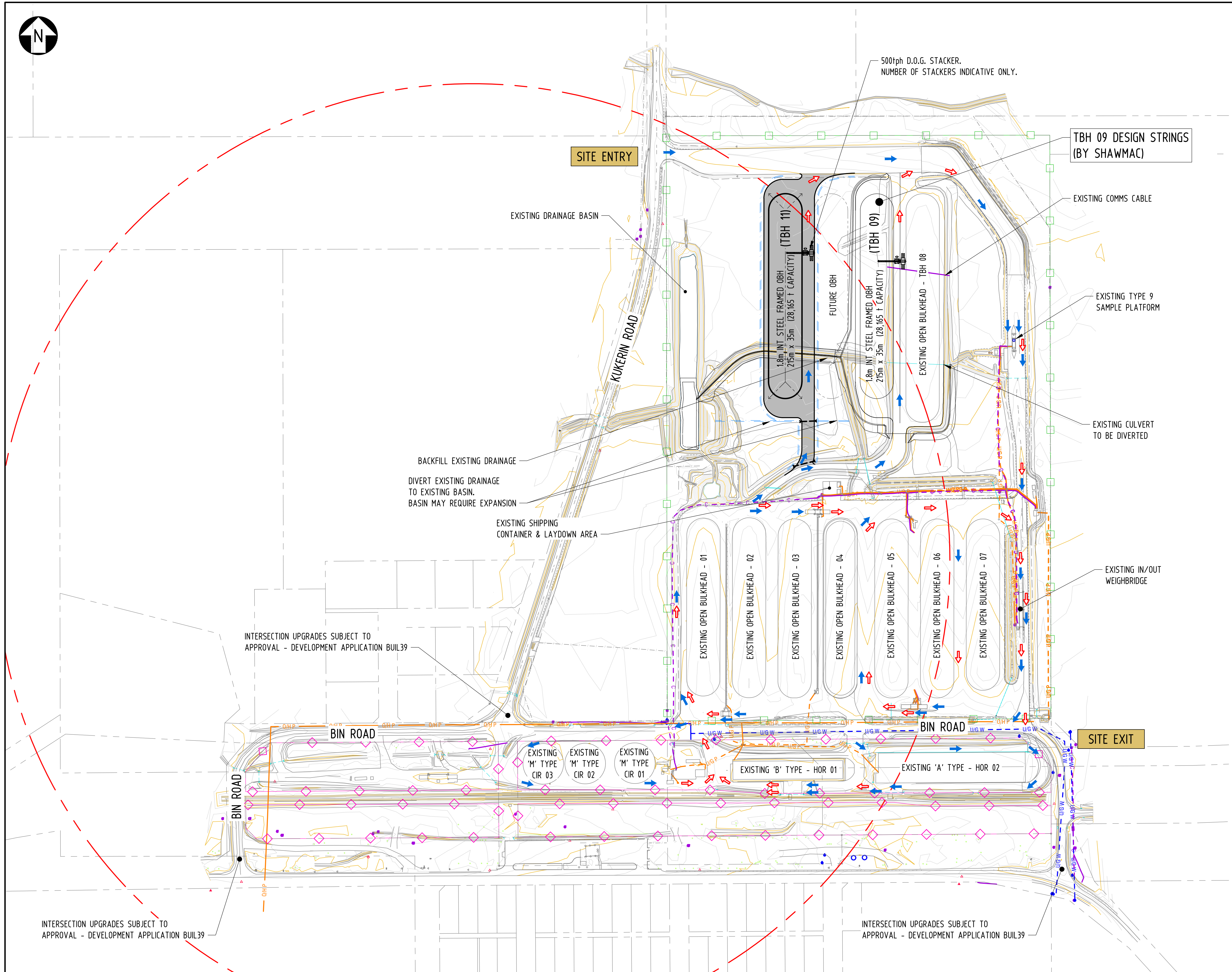
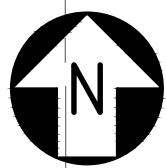
Table 3: Culvert Modelling Outcomes (5-year ARI)

Culvert	Type	U/S Shoulder or Ground Level	HW Level	Freeboard to U/S (m)	Max Flow (m ³ /s)	Max Velocity (m/s)
A	1x450RCP	322.99	321.89	1.10	0.20	1.24
B	1x450RCP	321.91	321.88	0.03*	0.20	1.27

*It is noted that Culvert B only has 0.03m freeboard to the lowest point of the shoulder but does not overtop onto the access road under the critical 20% AEP event. This is largely as a result of the invert levels of the culverts under Kukerin Road



Appendix A – CBH Concept Plan



DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- ⇄ TRAFFIC MOVEMENTS - TRUCKS EMPTY
- - - - - CADASTRAL BOUNDARY
- - - - - EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500m RADIUS
- - - - - CBH SITE BOUNDARY
- - - - - CBH RAIL LEASE BOUNDARY
- - - - - OHP OVERHEAD POWER LINES
- - - - - UGP UNDERGROUND POWER CABLES
- - - - - C UNDERGROUND COMMS CABLES
- - - - - UGW UNDERGROUND WATER PIPES
- - - - - RAIL LINE
- - - - - PROPOSED OPEN DRAINS

STORAGE CAPACITIES

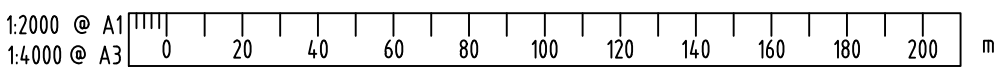
EXISTING STORAGE			
'B' TYPE STORAGE	HOR 01	10,900 t	
'A' TYPE STORAGE	HOR 02	27,200 t	
'M' TYPE STORAGE	(3 CELLS)	21,000 t	
1.6m INT. STEEL FRAMED OPEN BULKHEAD	(01)	24,497 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(02)	24,497 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(03)	21,996 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(04)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(05)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(06)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(07)	23,580 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(TBH 08)	28,080 t	
TOTAL EXISTING STORAGE		255,241 t	
PROPOSED STORAGE			
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 09)	28,165 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 11)	28,165 t	
TOTAL PROPOSED STORAGE		56,330 t	

TOTAL SITE STORAGE 311,571 t

HATCHING LEGEND

AREA OF NEW WORKS 14,050 m²

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 05.09.25





Stormwater Management Plan

Project:	Nyabing Site Expansion Stormwater Management Plan
Client:	CBH
Author:	R. Needham
Date:	10 th August 2022
Shawmac Document #:	2205007-REP-001
CBH Document #:	TBC

CONSULTING CIVIL AND TRAFFIC ENGINEERS
1 ST. FLOOR, 908 ALBANY HIGHWAY, EAST VICTORIA PARK WA 6101.
PHONE|+61 8 9355 1300
EMAIL| admin@shawmac.com.au



ISO 9001 QUALITY
Certified System



Document Status: Client Review

Version	Prepared By	Reviewed By	Approved By	Date
A	R. Needham	J. Bridge	R. Needham	29-07-22
B	R. Needham		R. Needham	10-08-22

Disclaimer

Although all care has been taken in the preparation of this document, Shawmac Pty Ltd and all parties associated with the preparation of this document disclaim any responsibility for any errors or omissions. Shawmac Pty Ltd reserves the right to amend or change this document at any time. This document does not constitute an invitation, agreement or contract (or any part thereof) of any kind whatsoever. Liability is expressly disclaimed by Shawmac Pty Ltd for any loss or damage which may be sustained by any person acting on this document © Shawmac Pty. Ltd. 2016 ABN 51 828 614 001

File Reference: Y:\Jobs Active 2022\CE - Roads and Drainage\CBH_Nyabing_Design_2205007\3. Documents\3.3 Design Report\2205007-REP-001_B.docx



Contents

1.	Introduction	4
1.1.	The Project.....	4
1.2.	Purpose.....	5
1.3.	History.....	5
2.	Pre-developed Situation.....	7
2.1.	Site Characteristics	7
2.2.	Topography.....	8
2.3.	Geotechnical	8
2.4.	Environmental	9
2.5.	Catchment and Surface Water Flows	9
3.	Stormwater Management Strategy.....	13
3.1.	Strategy Overview.....	13
3.2.	Design Criteria and Modelling Assumptions	13
3.3.	Stormwater Quantity	14
3.4.	Mosquito Management	15
	Appendix A – CBH Concept Plan.....	17

Figures

Figure 1: Nyabing Site	4
Figure 2: Site Characteristics	7
Figure 3: Existing Terrain	8
Figure 4: 1:100,000 Geoscience Australia Topographic Map Excerpt	9
Figure 5: Catchment Characteristics	11



Tables

Table 1: Design Drawings	5
Table 2: Existing Drainage Parameters	11
Table 3: Basin Modelling Outcomes	14
Table 4: Culvert Modelling Outcomes.....	15
Table 5: Open Drain Modelling Outcomes	15

1. Introduction

1.1. The Project

CBH are in the process of planning a permanent expansion to their existing Nyabing grain receival site. The plan generally involves upgrading three existing temporary bulkheads to permanent standard, as well as some ancillary upgrades to providing a total additional 71,526t of storage. This will take the total site capacity to 209,626t. Refer to **Appendix A – CBH Concept Plan** for full details of the proposed works.

Figure 1 shows the existing site and the location of the proposed works.



Figure 1: Nyabing Site

1.2. Purpose

The purpose of this report is to outline and quantify the proposed stormwater management measures to be adopted in support of the proposed works. This report should be read in conjunction with the following drawings:

Table 1: Design Drawings

Title	Drawing No.	Revision
Locality Plan and Drawing List	563-ENG-CI-DLP-0001	0 (29.07.22)
Overall General Arrangement, Notes and Legend	563-ENG-CI-DGA-0007	0 (29.07.22)
General Arrangement – Sheet 1 of 2	563-ENG-CI-DGA-0008	1 (29.07.22)
General Arrangement – Sheet 2 of 2	563-ENG-CI-DGA-0009	1 (29.07.22)
Pavement and Surfacing – Sheet 1 of 2	563-ENG-CI-DAL-0004	0 (29.07.22)
Pavement and Surfacing – Sheet 2 of 2	563-ENG-CI-DAL-0005	0 (29.07.22)
Earthworks Heat Map (Design to Existing) Sheet 1 of 2	563-ENG-CI-DAL-0006	0 (29.07.22)
Earthworks Heat Map (Design to Existing) Sheet 2 of 2	563-ENG-CI-DAL-0007	0 (29.07.22)
Conveyor Alignment Plan and Profile	563-ENG-CI-DAL-0008	0 (29.07.22)
Auger Pit Plan and Profile	563-ENG-CI-DAL-0009	0 (29.07.22)
Alignment S2 Plan and Profile	563-ENG-CI-DAL-0010	0 (29.07.22)
Typical Sections Sheet 1 of 2	563-ENG-CI-DSE-0002	0 (29.07.22)
Typical Sections Sheet 2 of 2	563-ENG-CI-DSE-0003	0 (29.07.22)
Typical Details Sheet 1 of 2	563-ENG-CI-DTD-0002	0 (29.07.22)
Typical Details Sheet 2 of 2	563-ENG-CI-DTD-0003	0 (29.07.22)
Auger Pit Concrete Setout Details	563-ENG-CI-DSE-0011	0 (29.07.22)
Compressor and Head Drive Setout Details	563-ENG-CI-DSE-0012	0 (29.07.22)
TX and SMSB and Switchboard Site Setout Details	563-ENG-CI-DSE-0013	0 (29.07.22)
Alignment S2 Cross Sections – Cha 0.766 to Cha 69.510	563-ENG-CI-DSE-0004	0 (29.07.22)
Alignment S3 Cross Sections – Cha 5.00 to Cha 50.00	563-ENG-CI-DSE-0005	0 (29.07.22)
Alignment S4 cross Sections – Cha 0.00 to Cha 65.87	563-ENG-CI-DSE-0006	0 (29.07.22)
Alignment S5 Cross Sections – Cha 1.092 to Cha 70.00	563-ENG-CI-DSE-0007	0 (29.07.22)
Alignment S5 Cross Sections – Cha 80.00 to 163.797	563-ENG-CI-DSE-0008	0 (29.07.22)
Alignment S6 Cross Sections – Cha 15.00 to Cha 52.386	563-ENG-CI-DSE-0009	0 (29.07.22)
Pavement Marking and Signage – Sheet 1 of 2	2205007-801	0 (29.07.22)
Pavement Marking and Signage – Sheet 2 of 2	2205007-801	0 (29.07.22)

1.3. History

CBH has made available two existing drainage reports prepared for the site for reference as follows:

- Nyabing Site Expansion Stormwater Design Report (PFS) – McDowall Affleck Pty Ltd, Rev A, 2020. This was prepared for an earlier version of the planned permanent expansion to the Nyabing site.



- Nyabing Emergency Storage Facility Stormwater Design Report – McDowall Affleck Pty Ltd, Rev B, 2021. This was prepared for the emergency bulkheads constructed in 2021 which are now proposed to be upgraded to permanent standard.

Both reports have been referred to for context only given the development characteristics are significantly different to the current proposals.

2. Pre-developed Situation

2.1. Site Characteristics

The Nyabing Site can be split into two areas; north and south, separated by Bin Road which is under the care and control of the Shire of Kent. The southern portion of the site contains existing horizontal and circular storage facilities and the northern portion contains the existing open bulkheads, including the emergency bulkheads which are proposed to be upgraded. The northern portion of the northern site is largely cleared of significant vegetation, but is mostly undeveloped, except for the existing site drainage basin, site entry, marshalling yard and sample hut. Two existing open drains run through the centre of the northern portion.

Figure 2 shows the major features of the existing site.



Figure 2: Site Characteristics

2.2. Topography

Figure 3 shows the existing topography (2m contours) of the site and its surrounds. As shown, there is a general fall from the southeast/east to the west. The site falls from a high of about 324m in the southeast corner to a low of about 322m midway along the western boundary of the site. Typical site gradients are less than 1% and at an average of 0.5%.

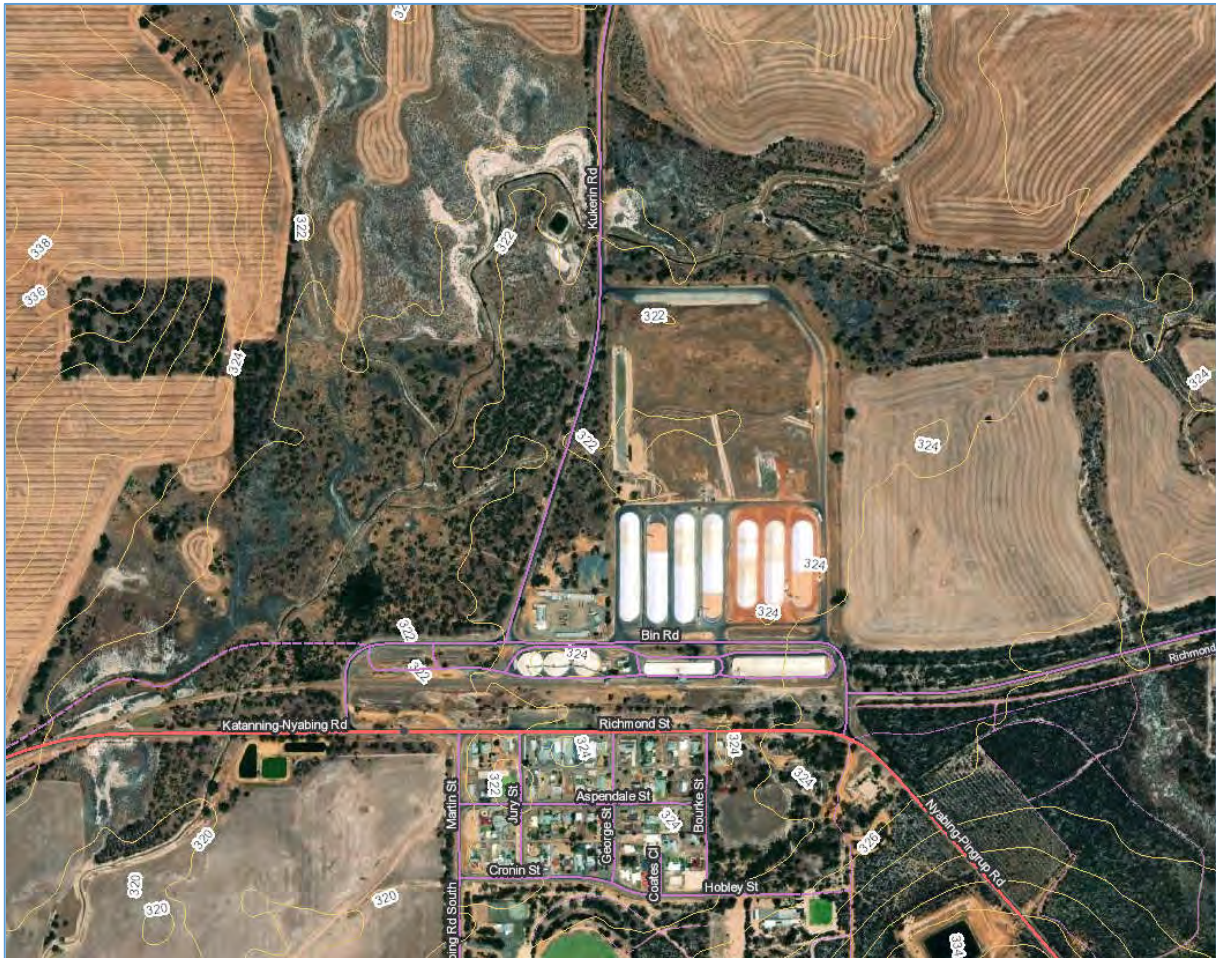


Figure 3: Existing Terrain

2.3. Geotechnical

CBH commissioned Galt to undertake a geotechnical investigation of the site to support the proposed works in July 2022. From two previous site investigations, prior to construction of the emergency bulkheads in 2021, Galt described the site soils as:

- Silty Sand/Clayey Sand present from surface to a depth of 0.1m-0.2m; overlying
- Clayey Sand/Sandy Clay, extending to depths of 1.6m-2.5m; overlying
- Clayey Sand, extending to a depth of 2.5m.

Galt advised to consider the site soils effectively impermeable for the design of stormwater disposal. Galt also highlighted the risk of stormwater ponding of the surface of the shallow clayey soils.

2.4. Environmental

There are no environmentally sensitive features within or immediately surrounding the site. To the north of the site there is a natural creek line which flows towards the west, then south after crossing Kukerin Road. The creek line has been altered to the form of a constructed channel and the surrounding vegetation appears heavily degraded.

Figure 4 provides an excerpt of the 1:100,000 Geoscience Australia Topographic Map 'Nyabing' and shows the environmentally features surrounding the site.

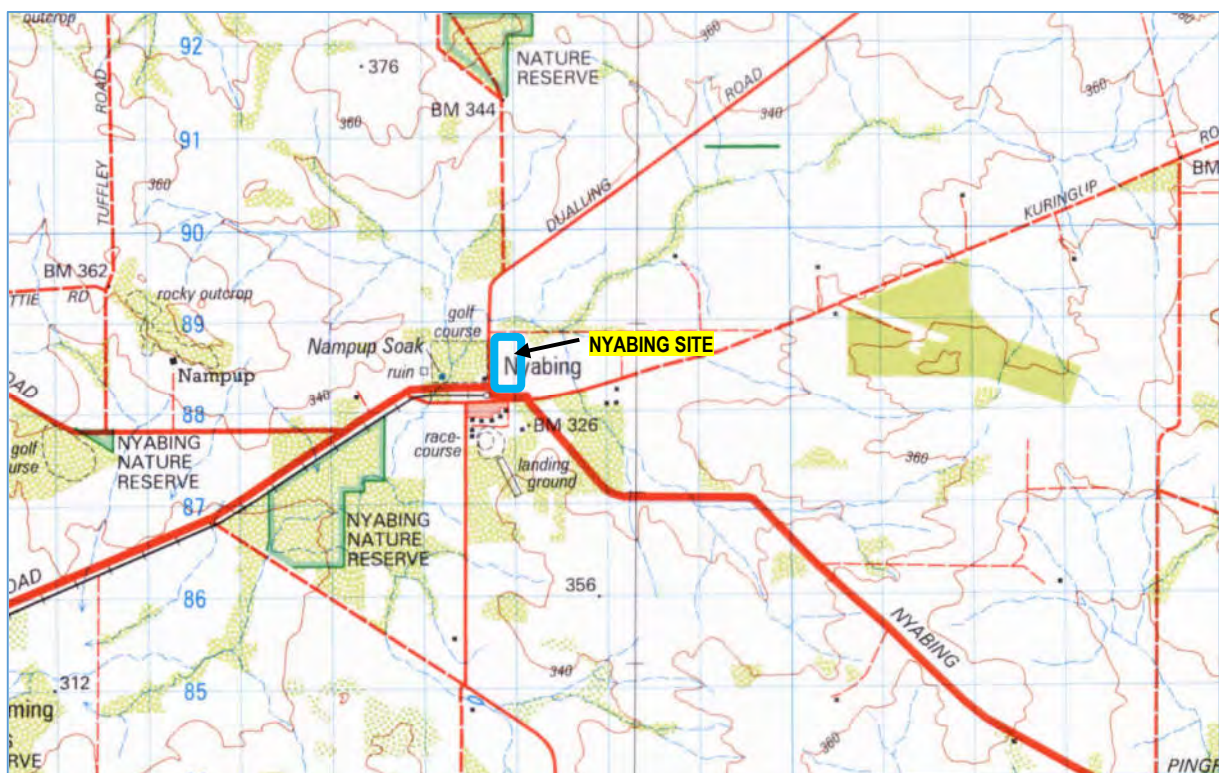


Figure 4: 1:100,000 Geoscience Australia Topographic Map Excerpt

CBH have advised that the Shire of Nyabing has some concern regarding the existing site basin which is not free draining and holds water for extended periods of time. In particular, the Shire is concerned about the potential for mosquito breeding and they have requested that CBH identify some measures which could be taken to prevent this occurrence.

2.5. Catchment and Surface Water Flows

As the site is currently developed, the catchment has been heavily altered from its natural state, but in general,

surface water flows are maintained towards natural flow paths. **Figure 5** shows the existing major catchment boundaries and stormwater infrastructure.

As shown, the site interacts with three major catchments described as follows:

- Catchment A contains the majority of the northern site. All stormwater runoff within this vicinity either flows overland or is directed via constructed drains towards the two open drains in the northern portion which discharge into the site drainage basin. The drainage basin has an outlet open drain which connects to two culverts under Kukerin Road. The culverts under Kukerin Road are set at a higher level than the basin floor.
- Catchment B is located just west of the site. This area is mostly undeveloped, but contains part of the Shire depot. This catchment either flows overland or is intercepted by the Kukerin Road table drains which discharges to the two culverts under Kukerin Road as described above.
- Catchment C contains the northern half of the southern site, a small portion of the southern extent of the northern site, and most of the Shire depot. Runoff from this catchment is collected and conveyed by the CBH and Bin Road open drains and culverts, flowing east to another culvert under Kukerin Road, near the Bin Road intersection.

The proposed works are almost wholly contained within Catchment 'A' (except for some negligible areas in the southern extent), so only this catchment will be considered in greater detail.

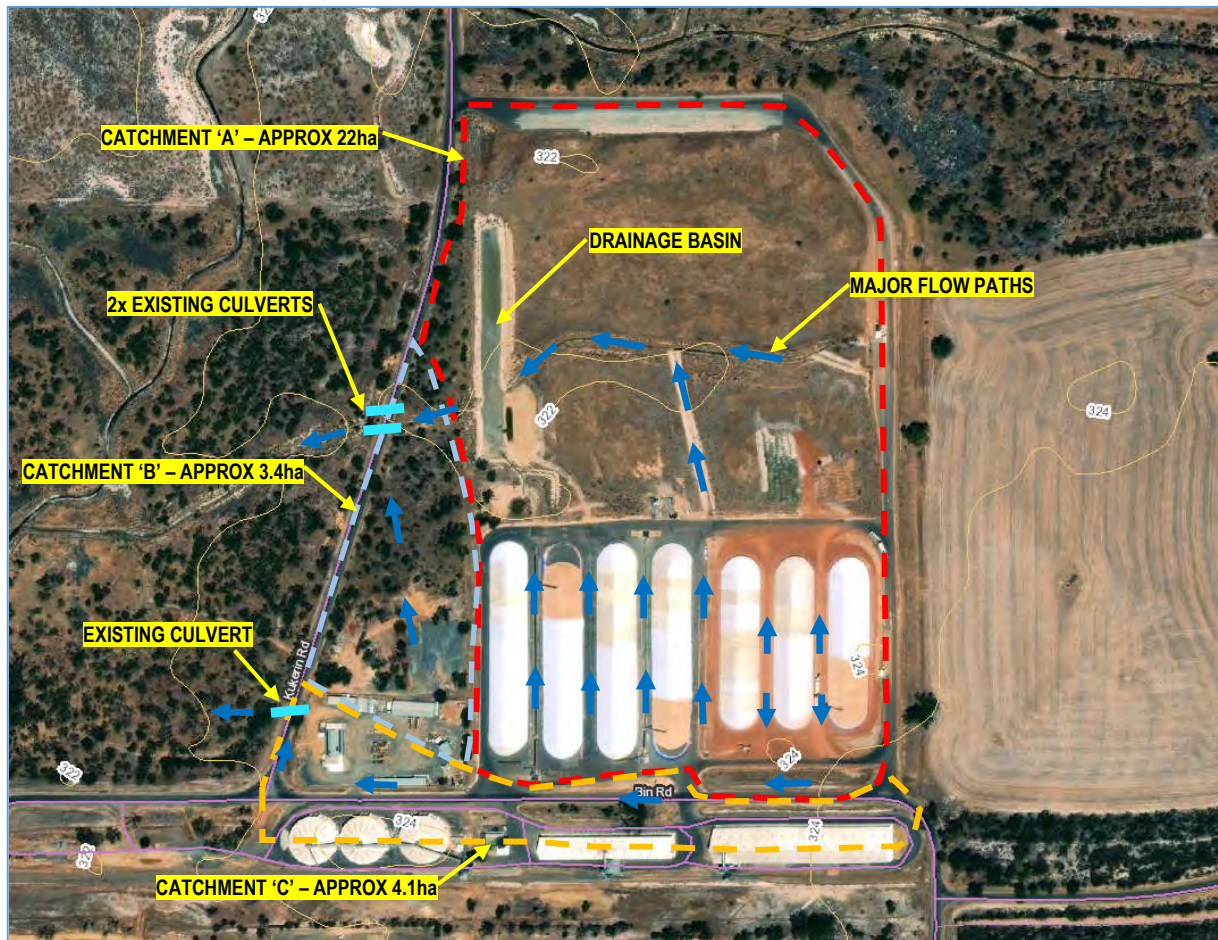


Figure 5: Catchment Characteristics

An XPSTORM model was built for the existing site to determine the existing performance, as a baseline for comparing the impacts of the planned works. The model considers the situation prior to the construction of the emergency bulkheads in 2021, given that these were intended to be temporary and were developed with a less onerous drainage design criteria. The model uses the same assumptions described in **Section 3.2**.

Key results from the existing model are provided in **Table 2**. All results are based on the 20-year event in accordance with CBH's design criteria.

Table 2: Existing Drainage Parameters

Element	Quantum
Basin Base Area	3,961m ²
Basin Top Area	11,369m ²
Basin Base Level	320.60
Basin Top Level	322.00



Element	Quantum
Total Basin Capacity	10,292m ³
Basin TWL	321.91
Critical Event	24hr
Total Outflow Rate through Kukerin Road Culverts	0.20m ³ /s

3. Stormwater Management Strategy

3.1. Strategy Overview

The existing drainage infrastructure on site is comprehensive and well-established. Accordingly, the overall strategy to retain the performance as far as practical whilst designing the new internal infrastructure to CBH's current design standards. In general, this involves:

- Expanding the drainage basin to provide additional compensation for the increased runoff generated by the new impervious areas.
- Ensuring the peak post-development 20-year flow rate through the Kukerin Road culverts does not exceed the existing conditions ($0.2\text{m}^3/\text{s}$).
- Designing the new site drains and culverts to minimise scour velocities, prevent ponding and inundation of subgrades and storage facilities.

Specifically, the proposed drainage design involves:

- Enlarging the basin by approximately 500m^2 on its base to provide additional compensation.
- Regrading several existing open drains at minimum 0.3% grades to provide freeboard to new subgrade levels and provide flow towards the basin.
- Installation of various new culverts and open drains.

In a few locations, CBH's preferred freeboard to subgrade level (0.4m) has not been able to be achieved due to constraints with tie-ins to the existing site and the desire not to reduce the basin floor level. In these locations, trapezoidal shaped drains have been provided to reduce flow depth.

Refer to design drawings 563-ENG-CI-DGA-0008 and 563-ENG-CI-DGA-0009 for full details of the proposed drainage design.

3.2. Design Criteria and Modelling Assumptions

Based on the adopted strategy and CBH's design specifications, the key stormwater management design criteria are summarised as follows:

- Outflow from the culverts under Kukerin Road should not exceed the existing 20-year flow rate of $0.2\text{m}^3/\text{s}$.
- All drainage design is to be based on the 20-year ARI in accordance with ARR 2019 methods.
- Open drain inverts typically to be set at 0.4m below adjacent subgrade level.
- A nominal 100mm/day infiltration rate has been applied to the basin floor to reflect some seepage and evaporation.
- Culvert headwater heights are to be limited to a maximum 300mm below shoulder surface level (short-

term ponding only).

- Minimum drain fall of 0.3% in accordance with CBH requirements.
- Scour protection required where >2m/s velocity is expected.

A XPSTORM model has been built for the proposed works. The following key assumptions were utilised:

- Details of the existing culverts under Kukerin Road were not provided. These have been assumed as 450dia. RCP's.
- Infiltration losses were assumed as 15mm from pervious areas. Nil losses were assumed for impervious areas.
- Rainfall intensities and temporal patterns are consistent with ARR 2019.
- Mannings 'n' value of 0.03 was assumed for open drains, to account for some vegetation growth over time.
- Mannings 'n' value of 0.016 was assumed for pavement drains (asphalt surface).
- Mannings 'n' value of 0.025 was assumed for rock pitched drains.
- Culvert energy loss coefficients of 0.5 (entry) and 1.0 (exit).
- Free outfall condition from the Kukerin Road culverts (i.e. not subject to backwater in the existing drain).

3.3. Stormwater Quantity

Table 3, Table 4 and Table 5 provide the key modelling outcomes for the basin, culverts and open drains

Table 3: Basin Modelling Outcomes

Element	Quantum
Basin Base Area	4,500m ²
Basin Top Area	15,900m ²
Basin Base Level	320.60
Basin Top Level	322.00
Total Basin Capacity	13,565m ³
Basin TWL	321.91
Critical Event	24hr
Total Outflow Rate through Kukerin Road Culverts	0.20m ³ /s

Table 4: Culvert Modelling Outcomes

Culvert	Type	U/S Shoulder or Ground Level	HW Level	Freeboard to U/S	Max Flow (m ³ /s)	Max Velocity (m ³ /s)
A	450RCP	324.55	323.28	1.27	0.15	1.03
B	450RCP	324.17	322.74	1.43	0.16	1.01
Kukerin Road	2x450RCP	322.40	321.91 ¹	0.49	0.20 ²	1.29 ³

¹ Governed by basin water level

² Combined flow rate, measured in outlet channel

³ Lowest culvert

Table 5: Open Drain Modelling Outcomes

Drain	Description	Max Flow	Max Velocity	Max Depth
A	Along southern extent into Culvert A Trapezoidal due to low u/s depth	0.14	0.24	D/S - 0.30 ¹ U/S - 0.10 ¹
B	Along OBH07 between Culvert A and B	0.19	0.41	0.39
C	Along northern boundary of new bulkheads	0.37	0.59	0.44
D	Drain C to Existing drain – running north	0.61	0.35	1.19 ²
E	Inlet to basin	0.90	0.65	1.31 ²
F	Outlet from basin to Kukerin Road culverts	0.18	0.02 ³	1.55 ²

¹ Governed by HW of Culvert A

² Governed by basin water level

³ Generally static and performs as part of basin

3.4. Mosquito Management

The Stormwater Management Manual of WA suggests that the stormwater management system should be designed to ensure that the constructed waterways and wetland areas do not contribute to on-site mosquito breeding. In general, this would involve designing the system so that pooling of water longer than about 4-days is prevented through the warmer months. This would normally be achieved by maximising infiltration, providing a free draining outlet at the base of the system and planting vegetation to draw down water levels.

For the CBH Nyabing site, none of these measures are realistically practical, and given the clayey nature of the site soils, it is likely that the basin will continue to hold water over the warmer months and so there is a risk of mosquito breeding.

Notwithstanding this, there are several other measures which CBH could adopt to manage the risk of mosquito breeding. The Department of Health's Mosquito Management Manual outlines several strategies which could be

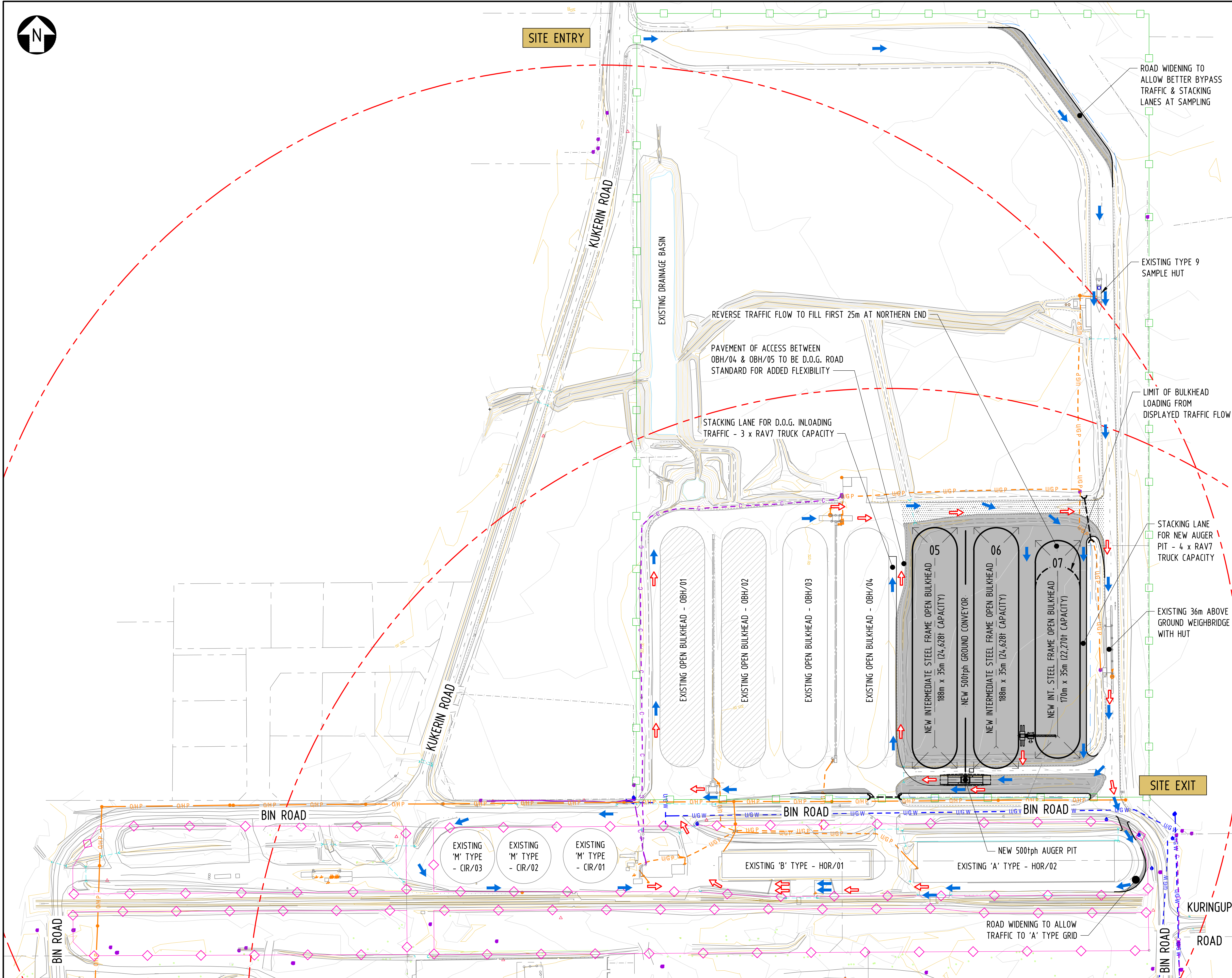
applied to the Nyabing site, including:

- Physical controls – this may include pumping water out of the basin to ensure there is no standing water through the warmer months.
- Chemical controls – larvicides (e.g. *Bacillus thuringensis israelensis*) can be applied to standing water to kill mosquito larvae without harm to other fauna. Adulticides can be applied through spraying, although these may also kill other insects and the Department of Health recommends these are only applied in situations where there is imminent public health risk.
- Cultural controls – this may involve educational campaign to advice nearby residents of the mosquito risks and measures they can take in their own homes to control this.

In the first instance and considering that the basin does have a high-level outfall towards the west, it is recommended that CBH make provision to regularly pump out the water such that there is no standing water within the basin particularly through spring and summer. Regular emptying of the basin (including within winter) will also be advantageous to stormwater management as it will ensure storage capacity is restored after rainfall events.



Appendix A – CBH Concept Plan



DRAWING LEGEND

→

→

TRAFFIC MOVEMENTS - TRUCKS FULL

TRAFFIC MOVEMENTS - TRUCKS EMPTY

LOT BOUNDARIES

CBH SITE BOUNDARY

CBH RAIL LEASE BOUNDARY

OVERHEAD POWER LINES

UNDERGROUND POWER LINES

UNDERGROUND WATER PIPES

UNDERGROUND COMMS LINE

UNDERGROUND STORMWATER PIPES

RAIL LINE

EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500m RADIUS

PROPOSED OPEN DRAINAGE

PROPOSED CULVERT (w/HEADWALLS)

STORAGE CAPACITIES

EXISTING SITE STORAGE		
'B' TYPE STORAGE	HOR/01	10,900t
'A' TYPE STORAGE	HOR/02	27,200t
'M' TYPE STORAGE	(3 CELLS)	21,000t
LOW STEEL FRAME OBH	(01)	18,800t
LOW STEEL FRAME OBH	(02)	18,800t
INT. STEEL FRAME OBH	(03)	22,600t
LOW STEEL FRAME OBH	(04)	18,800t
TOTAL EXISTING STORAGE		138,100t
PROPOSED SITE STORAGE		
INT. STEEL FRAME OBH	(05)	24,628t
INT. STEEL FRAME OBH	(06)	24,628t
INT. STEEL FRAME OBH	(07)	22,270t
INT. STEEL FRAME OBH (OPTIONAL)	(01)	+ 3,800t
INT. STEEL FRAME OBH (OPTIONAL)	(02)	+ 3,800t
INT. STEEL FRAME OBH (OPTIONAL)	(04)	+ 3,800t
TOTAL PROPOSED STORAGE		71,526t
TOTAL PROPOSED AND OPTIONAL STORAGE		82,926t

TOTAL SITE STORAGE

209,626t

TOTAL INCREASE IN STORAGE

71,526t

INCREASE IN STORAGE (WITH OPTIONS)

82,926t

HATCHING LEGEND

AREA OF NEW WORKS

32,800m²

AREA OF EXISTING ROAD TO BE REGRADED

1,950m²

AREA OF EXISTING ASPHALT TO BE REPLACED (OPTIONAL)

12,600m²

1:500 @ A1

1:3000 @ A3

0 20 40 60 80 100 120 140

m



Consulting Civil & Traffic
Engineers, Risk Managers.

PO Box 1271
East Victoria Park
WA 6981

P | +61 8 9355 1300
E | admin@shawmac.com.au

Chris Ong
Manager – Project Delivery
CBH
Level 6, 240 St Georges Terrace
Perth, WA 60004
via email chris.ong@cbh.com.au

17th June 2026

Dear Chris

Re: Nyabing Peak Planning Project – Traffic Impacts

It is understood that CBH has recently undertaken temporary works at its existing Nyabing grain receival site to accommodate excess storage demand. The temporary works involved the construction of two temporary open bulkheads (TBH09 and TBH11) adjacent to existing site, as shown in **Figure 1** and the attached concept plans as provided by CBH.

CBH are now seeking to operate the temporary bulkheads permanently.

This letter is provided to outline the traffic impacts associated with the upgrades to support CBH's Development Application to the Shire of Kent.



Figure 1: Site Location

Traffic Volumes

The proposed site works consisted of constructing two new emergency-specification (unsealed) bulkheads, providing 56,330t of storage.

Although there is an increase in total site storage, CBH advise that there is not expected to be an increase in grower demand, and it is anticipated that the development will result in a net decrease in peak truck movements which occur during the busy harvest period. This is because Harvest Essential Moves (HEM's) will be reduced. HEM's occur when local production exceeds the onsite storage capacity, and to continue to offer a service to growers during the harvest, grain must be out-turned to restore storage capacity. The proposed increase in storage will accordingly reduce the risk that storage capacity be exceeded, and that out-turning needs to be undertaken during the busy harvest period.

Out-turning outside of the harvest period will ultimately be required to remove all grain from site for export, but this will be undertaken at the same rate that currently occurs (approximately 2,000t/day),

although over a longer period, proportional to the increase in storage.

Traffic Impacts and Level of Assessment

In accordance with WAPC's Transport Impact Guidelines (refer excerpt in **Figure 2**), for individual developments which generate a low traffic impact (<10 vehicle trips during peak hour) a formal transport impact document is not normally required, but a brief description of the proposed development should be provided to confirm the low traffic impacts.

As explained previously, the modest increase in storage capacity will not result in any increase in peak hour trips but rather is likely to result in a reduction in peak movements. Accordingly, the traffic impacts are low (nil), and a formal transport impact document is not needed.

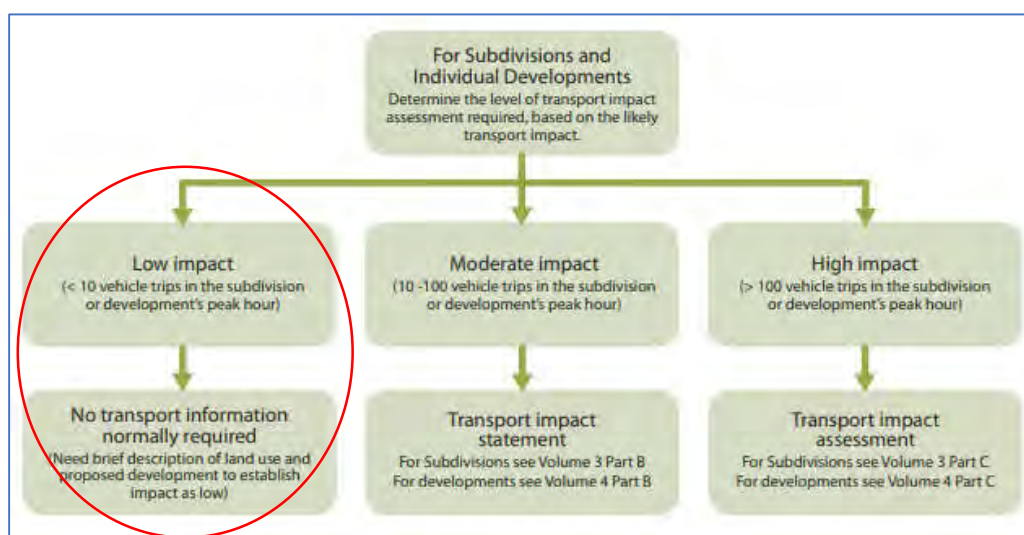


Figure 2: Project Location

I trust this letter addresses CBH's and the Shire's requirements and should you have any queries please do not hesitate to contact the undersigned.

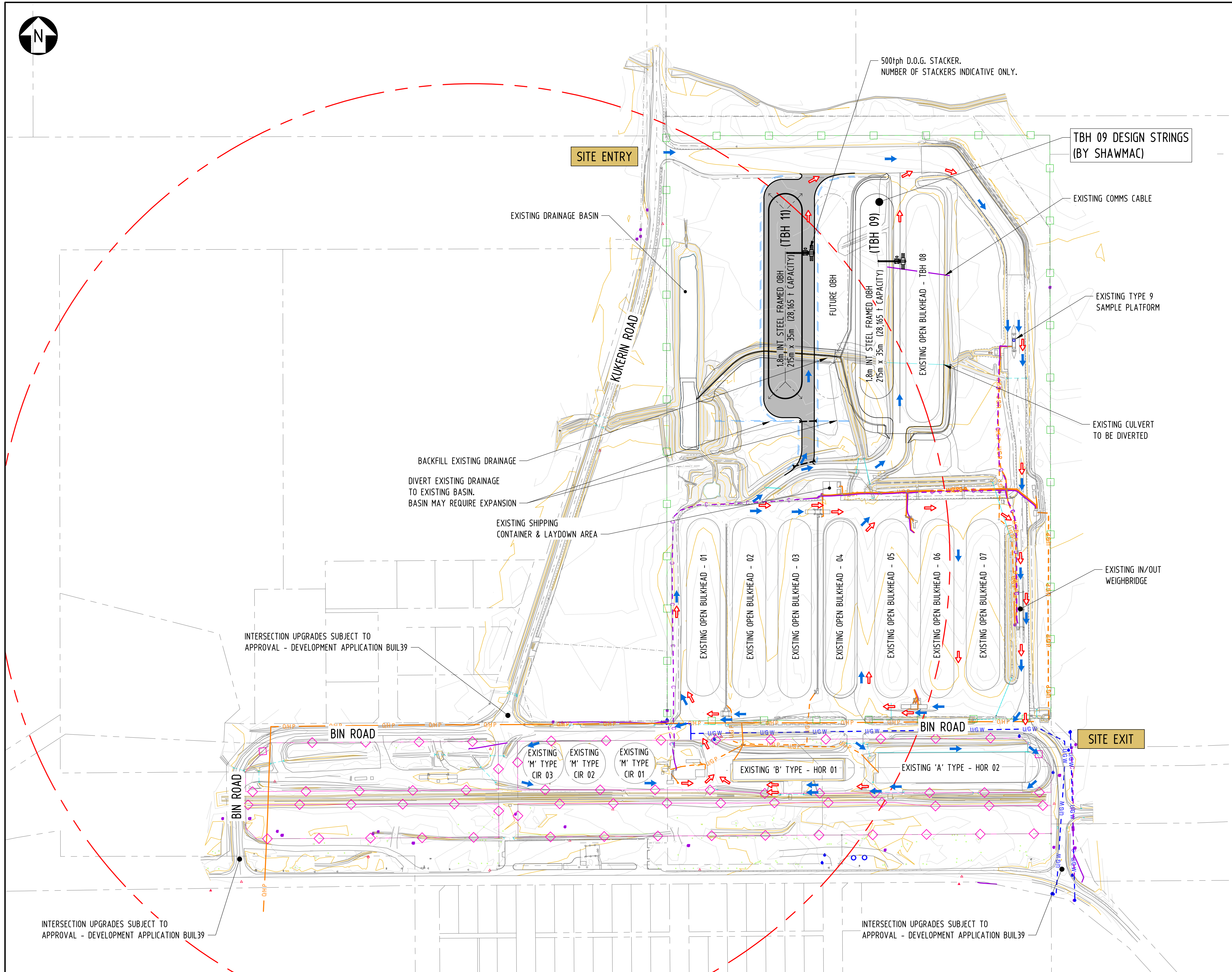
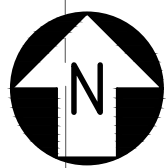
Kind Regards

James Bridge

Principal Civil Engineer / Director

Attachments:

563-ENG-CI-DCO-0026– CBH Concept Plan



DRAWING LEGEND

- TRAFFIC MOVEMENTS - TRUCKS FULL
- TRAFFIC MOVEMENTS - TRUCKS EMPTY
- CADASTRAL BOUNDARY
- EPA INDUSTRIAL/SENSITIVE LAND USE SEPARATION DISTANCE - 500m RADIUS
- CBH SITE BOUNDARY
- CBH RAIL LEASE BOUNDARY
- OVERHEAD POWER LINES
- UNDERGROUND POWER CABLES
- UNDERGROUND COMMS CABLES
- UNDERGROUND WATER PIPES
- RAIL LINE
- PROPOSED OPEN DRAINS

STORAGE CAPACITIES

EXISTING STORAGE			
'B' TYPE STORAGE	HOR 01	10,900 t	
'A' TYPE STORAGE	HOR 02	27,200 t	
'M' TYPE STORAGE	(3 CELLS)	21,000 t	
1.6m INT. STEEL FRAMED OPEN BULKHEAD	(01)	24,497 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(02)	24,497 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(03)	21,996 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(04)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(05)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(06)	24,497 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(07)	23,580 t	
1.2m LOW STEEL FRAME OPEN BULKHEAD	(TBH 08)	28,080 t	
TOTAL EXISTING STORAGE		255,241 t	
PROPOSED STORAGE			
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 09)	28,165 t	
1.8m INT. STEEL FRAMED OPEN BULKHEAD	(TBH 11)	28,165 t	
TOTAL PROPOSED STORAGE		56,330 t	

TOTAL SITE STORAGE 311,571 t

HATCHING LEGEND

AREA OF NEW WORKS 14,050 m²

PRELIMINARY ISSUE
DO NOT USE FOR CONSTRUCTION
DATE 05.09.25

1:2000 @ A1 0 20 40 60 80 100 120 140 160 180 200 m
1:4000 @ A3

CBH Nyabing Mosquito Management Plan

Document Control

Item	Detail
Document Title	CBH Nyabing Mosquito Management Plan
Document Owner	Government & Industry Relations
Version	Draft v1.0
Status	Draft for Consultation
Date Issued	17 September 2026
Approved By	TBC
Review Frequency	Annual
Next Review Date	August 2027
Distribution	Shire of Kent, CBH Operations, CBH Government & Industry Relations, CBH Health, Safety & Environment
Document Reference	TBC

This document has been prepared by CBH to support engagement with the Shire of Kent regarding the management of mosquitos associated with CBH operations at the Nyabing receival site. The document is issued as **Draft for Consultation** and may be updated following stakeholder feedback, operational experience, changes in regulatory requirements, or the adoption of revised management practices.

Contents

CBH Nyabing Mosquito Management Plan	1
1. Context	Error! Bookmark not defined.
1.1 Purpose	3
1.2 Scope	3
2. Site Description	4
3. Risk Assessment	4
4. Management Measures	5
4.1 Physical Controls	5
4.2 Chemical Controls	Error! Bookmark not defined.
4.3 Cultural Administrative Controls	5
4.4 Personal Protection Measures	6
5. Monitoring Program	6
6. Trigger Levels and Corrective Actions	7
7. Roles and Responsibilities	7
8. Incident Response	8
10. Records	8
11. Review	8
12. Conclusion	9

Mosquito Management Plan

CBH Grain Receival Facility – Lot 100 DP 420337, Nyabing WA

1. Context

1.1 Purpose

This Mosquito Management Plan (MMP) has been prepared for the CBH Nyabing Grain Receival Facility to satisfy Condition 14 of the Development Approval (Shire Ref: OPA28) and to provide a framework for monitoring and managing mosquito breeding associated with site drainage infrastructure, while maintaining safe operations, regulatory compliance, appropriate stakeholder notification and effective coordination with local government.

The objectives of the Plan are to:

- Minimise mosquito breeding within the facility.
- Protect workers, contractors and nearby residents from mosquito nuisance and mosquito-borne disease.
- Ensure stormwater infrastructure is maintained in a manner that does not create persistent mosquito breeding habitat.
- Establish monitoring, reporting and corrective action requirements.
- Demonstrate ongoing compliance with local government requirements.

1.2 Scope

This plan applies to CBH-managed land and operations at the Nyabing site. It recognises that mosquitos are airborne in nature and move across property boundaries and that effective management relies on coordination with the Shire of Kent.

CBH understands the importance of demonstrating a structured, evidence-informed and auditable approach to managing mosquito impacts associated with its operations. This plan provides that framework by documenting the controls, responsibilities, notification pathways and review mechanisms that will guide CBH's site-based response.

The plan is not intended to represent a whole-of-shire mosquito control program. Rather, it defines CBH's site-based responsibilities, the controls available to CBH, and the areas where coordination with the Shire and other stakeholders can improve practical outcomes.

2. Site Description

The CBH Nyabing Grain Receival Facility is located on Kukerin Road, Nyabing, within the Shire of Kent. The facility operates as a seasonal grain receival, storage and outloading site servicing grain growers throughout the surrounding agricultural district.

The site comprises permanent grain storage infrastructure, grain handling equipment, road and rail receival and dispatch facilities, hardstand areas, internal access roads, drainage infrastructure and associated operational support assets. Recent site upgrades have included the construction of additional permanent grain storage bulkheads and expansion of the site's stormwater management infrastructure. These works have increased the extent of impervious surfaces and stormwater runoff generated within the facility.

Stormwater generated from operational areas is directed through the site's drainage network to a stormwater detention basin located in the north-western portion of the facility. Due to the clay soils present at the site and the limited infiltration capacity of the basin, standing water may remain following rainfall events, particularly during periods of above-average rainfall. This represents the primary potential mosquito breeding habitat associated with the facility.

The surrounding land uses are predominantly broadacre agricultural activities typical of the Great Southern region. Whilst naturally occurring mosquito populations may occur within the wider district, the principal mosquito risk requiring management at the facility relates to the temporary retention of water within the stormwater detention basin and any other artificial water-holding areas that may develop within operational areas.

This Mosquito Management Plan focuses on the identification, monitoring and management of potential mosquito breeding habitat associated with site operations to minimise nuisance impacts and reduce potential public health risks.

3. Risk Assessment

Primary Mosquito Breeding Risks

Potential Source	Risk Level	Comments
Stormwater detention basin	High	May retain standing water after rainfall events
Drainage pits and culverts	Medium	Potential for ponding if poorly maintained
Construction depressions or ruts	Medium	Temporary breeding habitat following rain
Water storage containers	Low	Readily controlled through housekeeping
Adjacent agricultural drainage	Low-Medium	Outside CBH control but may contribute to regional mosquito populations

4. Management Measures

4.1 Physical Controls

CBH will implement physical controls as the primary mosquito management strategy.

Measures include:

- Routine inspection of the stormwater basin during the mosquito season (September to April).
- Pumping of retained water from the basin where practical to prevent prolonged standing water exceeding seven days.
- Maintaining drainage infrastructure to prevent blockages and localised ponding.
- Removal of debris, sediment and vegetation that may impede drainage.
- Ensuring construction and maintenance activities do not create depressions capable of holding water.
- Maintaining stormwater storage capacity in accordance with the Stormwater Management Plan.

4.2 Chemical Controls

Where monitoring identifies mosquito larvae or prolonged standing water that cannot be removed:

- Approved biological larvicides containing *Bacillus thuringiensis israelensis* (Bti) may be applied by suitably qualified personnel.
- Chemical treatment will be undertaken in accordance with manufacturer recommendations and regulatory requirements.
- Adult mosquito spraying will only be considered where there is evidence of significant nuisance or a public health risk and after consultation with relevant authorities.

4.3 Cultural and Administrative Controls

CBH will:

- Educate site personnel regarding elimination of standing water.
- Incorporate mosquito management checks into routine site inspections.
- Encourage reporting of mosquito nuisance by employees and contractors.
- Provide information regarding personal protection measures during periods of elevated mosquito activity.

4.4 Personal Protection Measures

Where mosquitoes are present, personnel should:

- Wear long sleeves and trousers where practical.
- Apply mosquito repellent containing approved active ingredients.
- Limit outdoor exposure during dawn and dusk where mosquito activity is greatest.
- Report significant mosquito activity to site management.

5. Monitoring Program

Routine Inspections

Activity	Frequency
Basin inspection	Monthly (May-August)
Basin inspection	Fortnightly (September-April)
Inspection following significant rainfall (>20 mm in 24 hrs)	Within 5 days
Drainage infrastructure inspection	Quarterly
Mosquito nuisance review	Ongoing

Inspections will record:

- Presence and depth of standing water.
- Evidence of mosquito larvae.
- Vegetation growth within drainage areas.
- Maintenance requirements.
- Corrective actions undertaken.

6. Trigger Levels and Corrective Actions

Trigger	Action
Standing water remains >7 days	Inspect and arrange pumping, if mosquitos observed, and where practical.
Mosquito larvae observed	Implement larval treatment and investigate drainage improvements
Increased mosquito complaints	Undertake additional monitoring and assess treatment requirements
Blocked drainage infrastructure	Remove obstruction within maintenance program

7. Roles and Responsibilities

CBH Site Manager

Responsible for:

- Implementation of this Plan.
- Ensuring inspections are completed.
- Coordinating maintenance and corrective actions.
- Maintaining records.

CBH Environment Team

Responsible for:

- Providing technical support.
- Reviewing monitoring outcomes.
- Updating the Plan as required.
- Liaising with the Shire of Kent and Department of Health if required.

8. Incident Response

If unusual mosquito activity, disease concerns, or public complaints arise:

1. Undertake immediate site inspection.
2. Identify potential breeding sources.
3. Implement corrective actions.
4. Record findings and actions.
5. Consult the Shire Environmental Health Officer where necessary.
6. Consider additional specialist mosquito assessment if recurring issues occur.

9. Records

CBH will maintain a Mosquito Complaint Register to document and investigate any complaints received from employees, contractors, neighbouring landowners, community members or regulatory agencies relating to mosquito nuisance or suspected mosquito breeding associated with the Nyabing Grain Reveal Facility.

The following records will be maintained:

- Inspection checklists.
- Maintenance records.
- Pumping records.
- Larvicide application records.
- Complaints register.
- Annual review reports.

10. Review

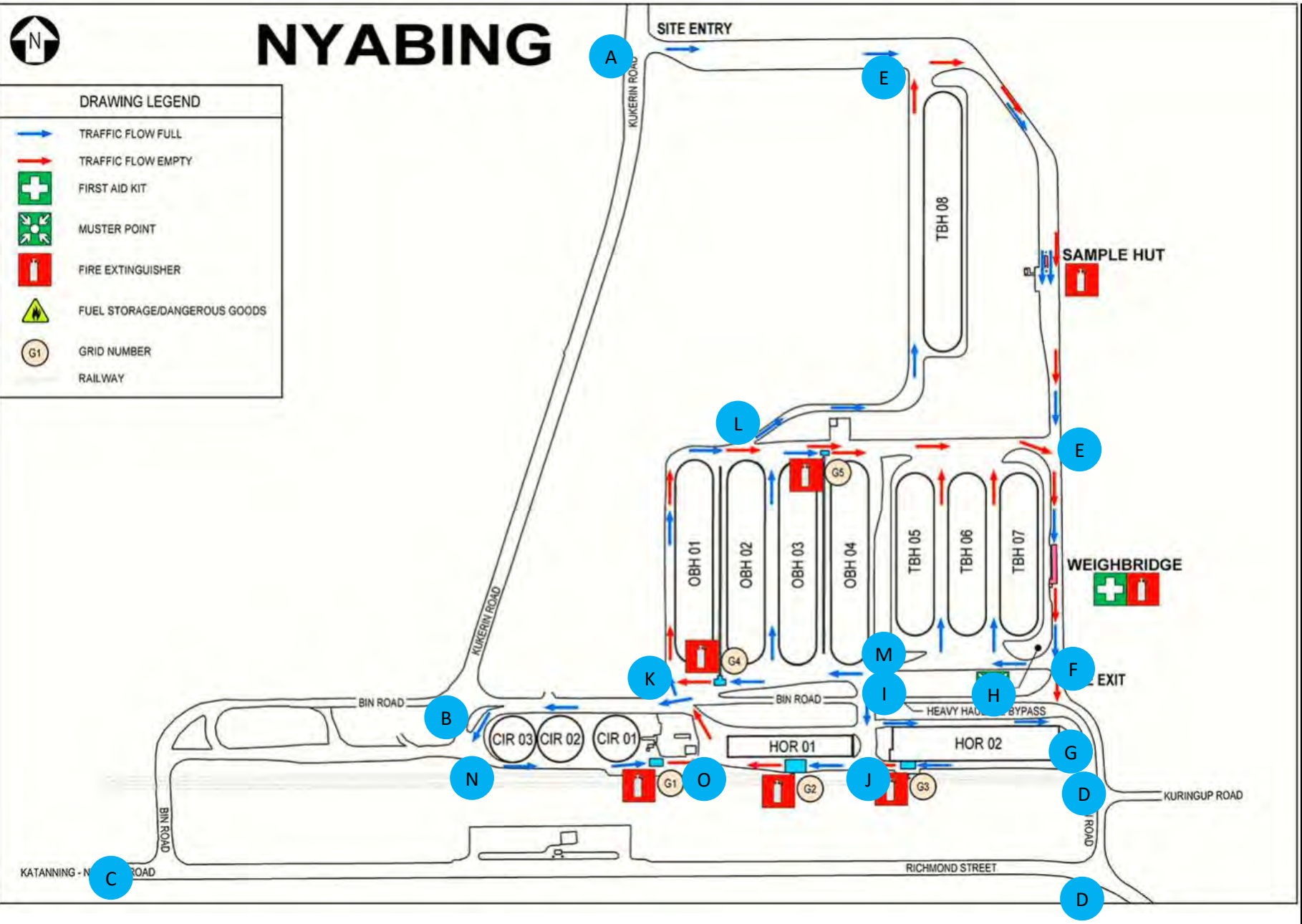
This plan should be reviewed annually, or earlier if there is a material incident, significant community concern, a change in regulatory requirements, a change in mosquito behaviour at the Nyabing site, or a material change to CBH operations. Review should consider whether controls remain practical, whether record keeping is adequate, whether stakeholder notifications are working, and whether additional measures are required.

CBH will continue to draw on regional evidence, operational experience and discussions with the Shire of Kent and other relevant stakeholders to refine its approach over time.

11. Conclusion

The principal mosquito risk at the Nyabing facility is associated with the stormwater detention basin retaining water after rainfall events. Regular inspection, prompt removal of standing water through pumping, maintenance of drainage infrastructure, and targeted larval control will minimise mosquito breeding risk and satisfy the intent of the development approval condition.

DRAFT



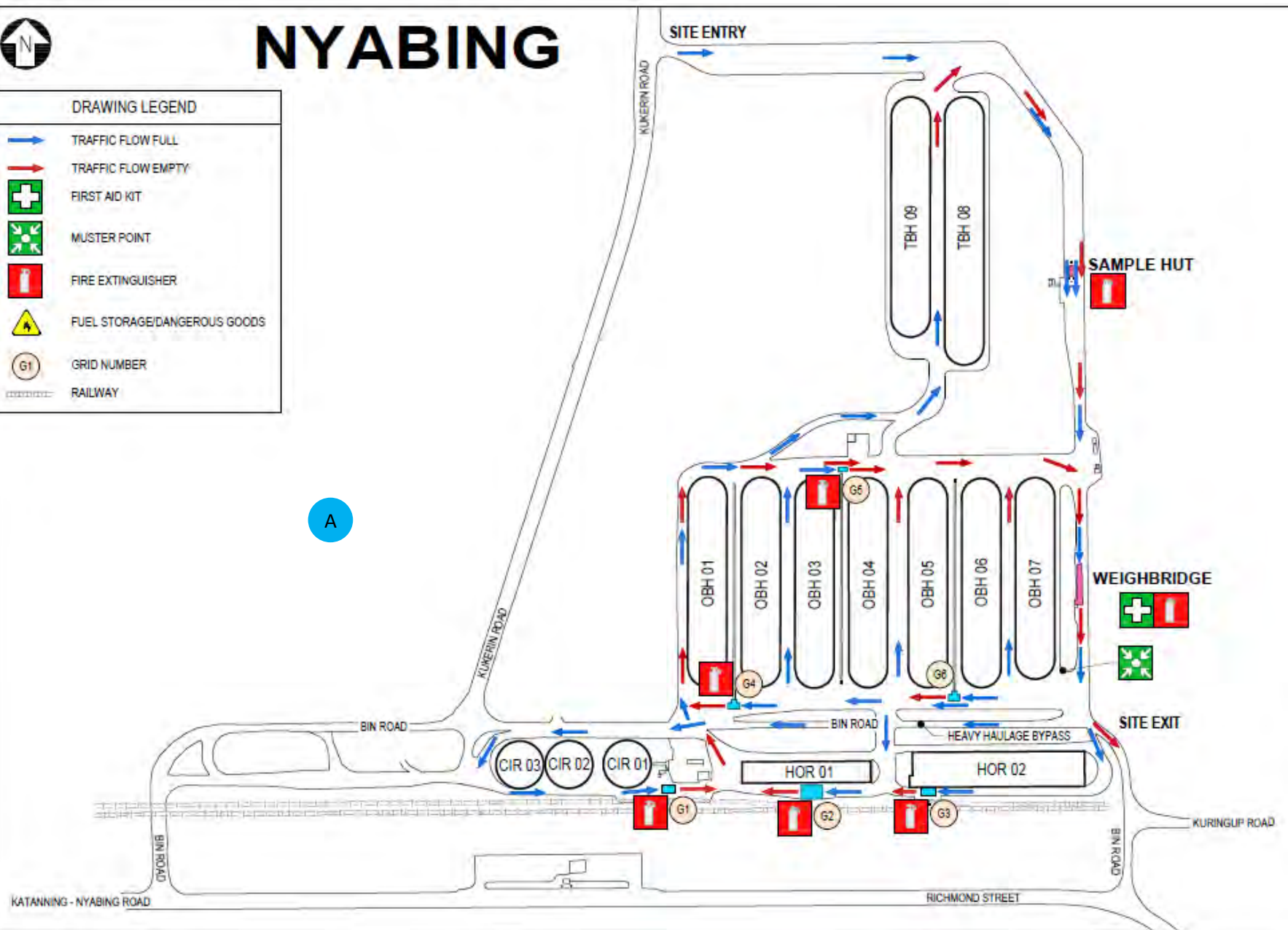
- Standard Signage – Red Circles, Custom Signage – Blue Circles**
- A** – CBH ENTRY arrow left, arrow right (back-to-back)
 - B** – CBH ENTRY arrow right, arrow left (back-to-back), Grid 1 arrow left
 - C** – CBH Entry arrow left
 - D** – CBH Entry arrow right
 - E** – Weighbridge and Exit arrow right
 - F** – Grid 3 arrow up, Grid 1, 3 & 5 and Grid 8 (DOG) hook arrow up and right, Grid 4, 6 and Grid 7 (DOG) arrow right, Exit arrow diagonal left up and arrow right on
 - G** – Grid 3 arrow right
 - H** – Grid 4 arrow up, Grid 7 (DOG) arrow right
 - I** – Grid 1 arrow up, grid 2 arrow left
 - J** – Weighbridge and Exit arrow up
 - K** – CBH Entry and Grid 1 arrow up, Grid 5 and Grid 8 (DOG) arrow right, Weighbridge arrow right
 - L** – Grid 8 (DOG) arrow diagonal left up
 - M** – Grid 1 arrow left

NYABING



DRAWING LEGEND

-  TRAFFIC FLOW FULL
-  TRAFFIC FLOW EMPTY
-  FIRST AID KIT
-  MUSTER POINT
-  FIRE EXTINGUISHER
-  FUEL STORAGE/DANGEROUS GOODS
-  GRID NUMBER
-  RAILWAY



Standard Signage – Red Circles, Custom Signage – Blue Circles

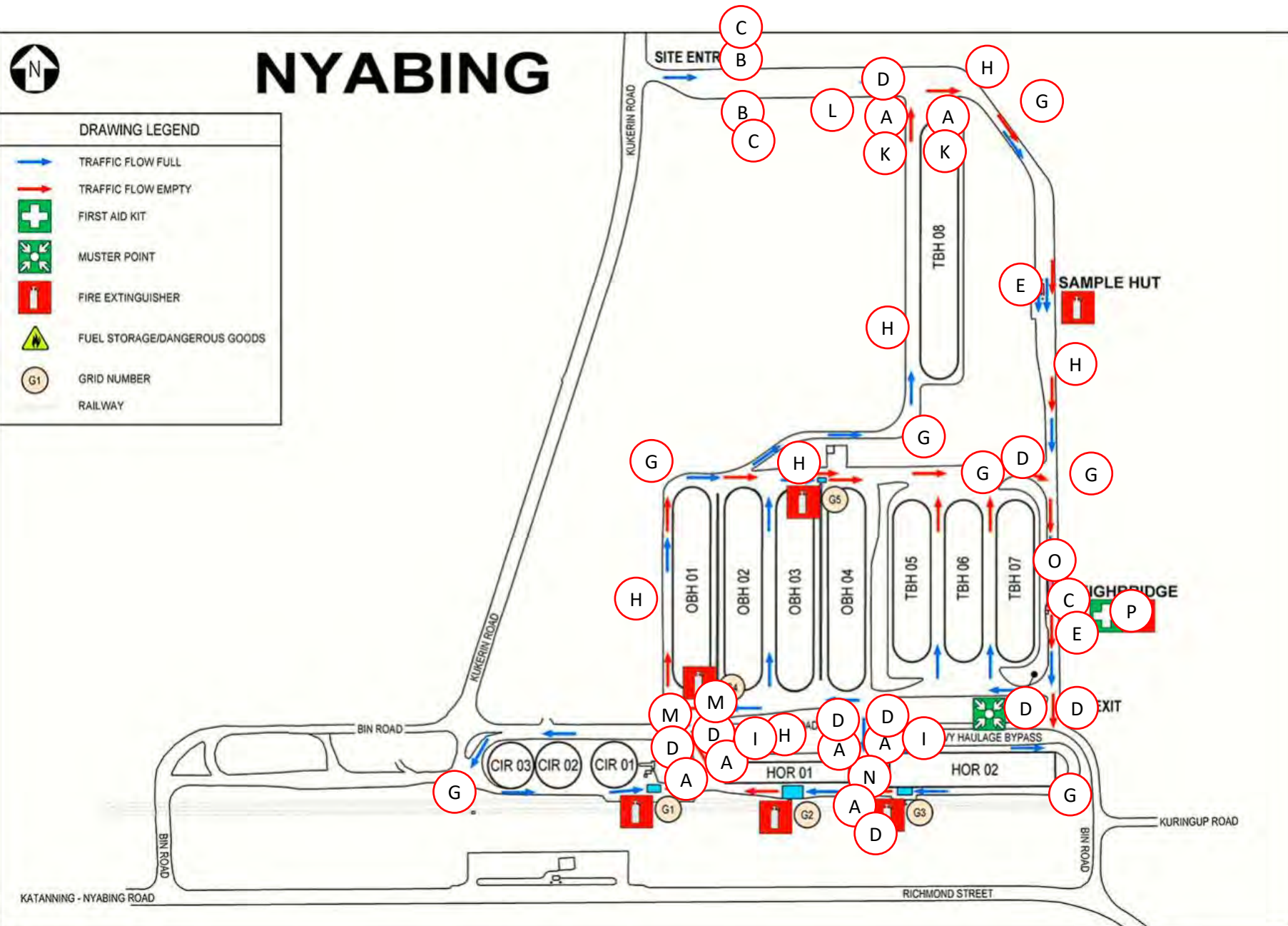
- A** – CBH ENTRY arrow left, arrow right (back-to-back)
- B** – CBH ENTRY arrow right, arrow left (back-to-back), Grid 1 arrow left
- C** – CBH Entry arrow left
- D** – CBH Entry arrow right
- E** – Weighbridge and Exit arrow right
- F** – Grid 3 arrow up, Grid 1, 3 & 5 and Grid 8 (DOG) hook arrow up and right, Grid 4, 6 and Grid 7 (DOG) arrow right, Exit arrow diagonal left up and arrow right on
- G** – Grid 3 arrow right
- H** – Grid 4 arrow up, Grid 7 (DOG) arrow right
- I** – Grid 1 arrow up, grid 2 arrow left
- J** – Weighbridge and Exit arrow up
- K** – CBH Entry and Grid 1 arrow up, Grid 5 and Grid 8 (DOG) arrow right, Weighbridge arrow right
- L** – Grid 8 (DOG) arrow diagonal left up
- M** – Grid 1 arrow left



NYABING

DRAWING LEGEND

- TRAFFIC FLOW FULL
- TRAFFIC FLOW EMPTY
- FIRST AID KIT
- MUSTER POINT
- FIRE EXTINGUISHER
- FUEL STORAGE/DANGEROUS GOODS
- GRID NUMBER
- RAILWAY



Standard Signage – Red Circles, Custom Signage – Blue Circles

- A** – CBH ENTRY arrow left, arrow right (back-to-back)
- B** – CBH ENTRY arrow right, arrow left (back-to-back), Grid 1 arrow left
- C** – CBH Entry arrow left
- D** – CBH Entry arrow right
- E** – Weighbridge and Exit arrow right
- F** – Grid 3 arrow up, Grid 1, 3 & 5 and Grid 8 (DOG) hook arrow up and right, Grid 4, 6 and Grid 7 (DOG) arrow right, Exit arrow diagonal left up and arrow right on
- G** – Grid 3 arrow right
- H** – Grid 4 arrow up, Grid 7 (DOG) arrow right
- I** – Grid 1 arrow up, grid 2 arrow left
- J** – Weighbridge and Exit arrow up
- K** – CBH Entry and Grid 1 arrow up, Grid 5 and Grid 8 (DOG) arrow right, Weighbridge arrow right
- L** – Grid 8 (DOG) arrow diagonal left up
- M** – Grid 1 arrow left

- A** – Give way (3)
- B** – Speed limit area reminder ("You are within a 20 AREA") (2)
- C** – Channel number – 18 (3)
- D** – No entry (7)
- E** – 5k speed limit (8)
- F** – Grid numbers (6) **1 to 6**
- G** – Chevron (8)
- H** – 20k speed limit (5)
- I** – Pedestrian Crossing 1
- J** – Power lines (12)
- K** – Right Turn Only (2)
- L** – Cleaning Trucks (1)
- M** – CBH Light Vehicles Only (2)
- N** – Grid 2 Hook Arrow right (1)
- O** – Reverse Parking Only (1)
- P** – First Aid Sign (1)

Q – DEFIB Sign and Sticker?