PENINSULA PORTS

Port Spencer Grain Export Facility

Public Environmental Report

Amendment to the Approved PER

Document history and status

Rev	Prepared by	Date	Reviewed by	Date	Endorsed by	Date
Draft	Farzad Taheri / Mark Wilson	2 May 2022	Peninsula Ports	2 May 2022	Greg Walters	**2 May 2022**
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Table of Abbreviations

Term / Acronym	Definition
DPTI	Department of Planning and Transport Infrastructure
DCTB	District Council Tumby Bay
EPA	Environment Protection Authority
EPP	Environmentally Preferable Product
FEL	Free Eyre Limited
GLC	Ground Level Concentration
PER	Public Environmental Report
TSP	Total Suspended Particulate

1 BACKGROUND

The Port Spencer Stage 1 Project by Centrex Metals (the Evaluated Project) received provisional development authorisation in December 2012, after being the subject of a Public Environmental Report (PER) under the Major Development process (pursuant to sections 46-48 of the Development Act 1993). The proposal was for the development of a multi-user bulk commodity port, with the primary focus on the export of iron ore and grain.

The Evaluated Project comprised a deep-water marine port, capable of accommodating Panamax and Cape class vessels, suitable for export of up to 2 million tonnes of ore and up to 1 million tonnes of grain per annum. At this time, Free Eyre Limited (FEL) was the preferred grain supplier and were involved in assessing the potential grain export demand for the project. The Proposed Amendment removes the storage and export of iron ore from the Evaluated Project and seeks to reconfigure the site for efficient grain storage, handling and export.

FEL and Peninsula Ports have experience in grain bulk handling and have established a team with the necessary credentials to deliver a grain export terminal. The economics of grain export are well established on Eyre Peninsula, whereas the economics of bulk commodity export for other commodities on Eyre Peninsula have been less clear. For these reasons FEL and Peninsula Ports are delivering a new grain focussed export terminal for Eyre Peninsula, which will aid in protecting the clean and green reputation of the industry on Eyre Peninsula and significantly improve the competitiveness of the industry in reaching global markets.

The provisional development authorisation granted to Centrex Metals in 2012 was extended in December 2014 and currently remains active at the site. Peninsula Ports (a subsidiary company of Free Eyre) is now the owner of the subject land and the existing approval has also transferred with the land. Peninsula Ports sought to make a variation to the existing authorisation for a modified design of the marine and land-based infrastructure.

Peninsula Ports sought to amend the existing authorisation under Section 47 of the Development Act. To provide clarity, it is also sought to extend the period of the authorisation in accordance with Section 48(11)(b) of the Development Act. The amendment process is required to take account of alterations to the Evaluated Project and to update the PER due to the length of time that has passed since the PER was originally prepared. The delegate for the Minister advised via public notice that Peninsula Ports had prepared an Amendment to the PER for the Port Spencer Grain Export Facility, which by way of that notice, was released on public consultation from 16 January until 21 February 2020.

Peninsula Port provided a response to the submissions received in response to the Amendment to PER. Following submission of the response document on 23 March 2020 further questions and clarifications were sought by several state agencies through DPTI. The additional questions and responses to these questions and additional information were provided as a separate attachment to the response document (Attachment 5 to the response document).

The Minister for Planning and Local Government approved the variation to the development authorisation via gazettal on 13 August 2020.

The new planning system recognises the previous PER as if it were an EIS under the new planning system (refer to Clause 11A of the PDI Transitional Regulations 2017). As such this document

represents an amendment to the EIS documentation in seeking a further variation to the development authorisation of the Minister for Planning under of the Planning, Development and Infrastructure Act 2016. In order to avoid confusion however, this document will continue to be described as an amendment to the approved PER, rather than as an amendment to the approved EIS.

2 PROPOSED AMENDMENTS

The only changes being proposed to the approved PER are:

- Increased paved surface for **increased heavy vehicle marshalling**, with a resulting increase in stormwater management asset sizing, noting that the reorientation of grain storage bunkers from a N-S orientation to E-W (as generally described in the response document) was approved via the current authorisation;
- **Expansion of the project area** to include 40m of an adjacent road reserve on the Western and Northern boundaries of the site;
- Formalisation of the process of **staged submission** of construction issue drawings and other documentation **to demonstrate compliance with development authorisation conditions** in a staged manner in line with construction staging.

2.1 INCREASED MARSHALLING AREA / CHANGED BUNKER ALIGNMENT

The alignment of the bunkers to an E-W orientation allowed a significant increase to on-site truck marshalling areas to further reduce the risk of heavy vehicles queueing onto Lipson Cove Road. It also allowed the noise and dust sources to spread over a larger area of the site rather than being more concentrated to the Northern area of the site.

In addition to increasing the truck marshalling area one of the benefits of this change was to reduce the impacts on the nearest sensitive receptor to the site, being a house approximately 400m North of the site. Since the approval of the Minister in 2020 it has been confirmed that the original nearest receptor identified in the previous PER is now an abandoned building with no floors or ceilings and Peninsula Ports has reached agreement with the owner to purchase the site.

The original 'Design basis report – Functional layout phase, Rev. B, dated 24 August 2020' was developed to address the increased marshalling area. The same level of design detail has been provided in this document as per the originally approved PER submission. Detention basins have been designed in to be used to retain water. During the detailed design phase, the 3-D design of the site, including the water retention structures, is to be developed.

Further discussion of these changes follows.

2.1.1 INCREASED ON SITE HEAVY VEHICLE PARKING

Truck Parking

The harvest season at Eyre Peninsula represents a period of intense grain delivery at the proposed facility and is expected to last for approximately 2 months between mid-October and mid-December. During this time, there will be a high number of trucks entering and leaving the site during the day and until approximately 10 pm (based on current typical harvest operations patterns). For the remaining 10 months of the year, the activity at the site is expected to be considerably less with operational hours for receival of grain expected during the day only. This may change for limited durations if a customer seeks to transfer grain from other storages on Eyre Peninsula to the silos on site on a just in time basis to align with their shipping requirements.

The truck marshalling area has been increased to provide parking for all trucks arriving at site during operating hours, thus avoiding the possibility of them being lined up along Lipson Cove Road awaiting entry to the site and reducing the impact upon any through traffic in the area. Prior to entering the Facility an allowance has been made to provide up to 10 unmarked truck parking spaces for those vehicles arriving at the Facility outside of operating hours. A portion of this allocated area will be unsealed. During harvest heavy vehicles will be able to arrive after hours and park in the primary staging area, enabling drivers to sleep in their vehicles overnight without disrupting Lipson Cove Road.

Generally, there is no area for truck parking once inside the controlled facility outside of marshalling areas, which are short duration standing zones. The operation of the site is such that truck drivers are expected not to alight from their truck once entering the Facility.

Marshalling space for 70 triple road trains is enabled through the re-orientation to an E-W bunker alignment and expansion of the marshalling area to the South end of the site. It represents an increase of 40-50 additional A-triple road train positions on site compared with the submitted N-S configuration.

Site and Staff Vehicles

Staff car parking is to be provided in two locations, at the Sampling Laboratory and by the Control Building. The car park for the Sampling Laboratory will allow for a small number, nominally 12, of parks at a 45 deg. The number of car parks to be allowed for at the Control Building is nominally 28 perpendicular parks. A designated site vehicle parking area is within the vehicle storage area.

Hopper Locations

Each of the fixed road hopper locations servicing conveyor systems on bunkers 1-10 is provided with an individual queuing lane, with a separate empty vehicle departure lane and a full vehicle bypass lane (enabling full vehicles to bypass the bunkers and go directly to the silo complex or exit the site). This increased number of lanes on the Western side of the site further reduces the risk of on-site congestion in addition to the increased marshalling areas. This extensive queueing facility shortens the effective bunker length in the E-W orientation, which is offset by the proposed 40m increase in length of the bunkers, described at Section 2 of this report.

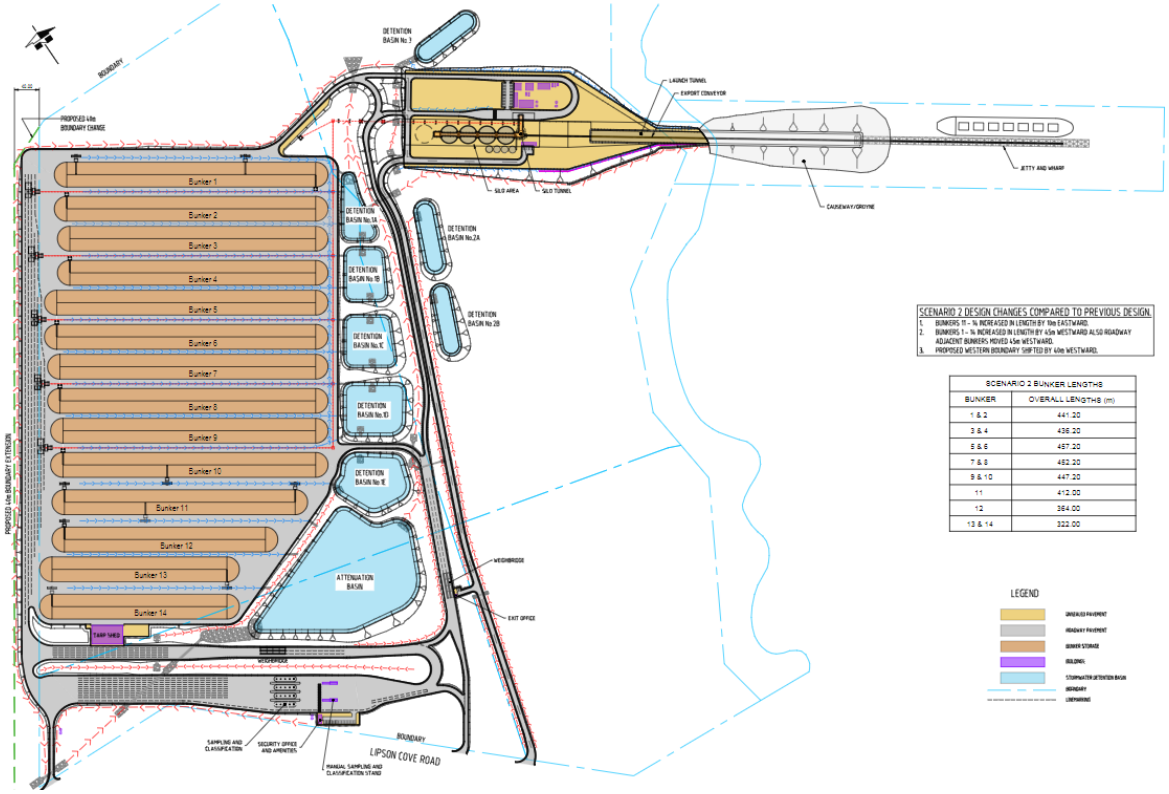


Figure 1: Final proposed layout (Increased vehicle marshalling and expanded site)

2.2 EXPANDED SITE AREA

Trucks with up to 70 tonne capacity will enter and exit the facility from the Lincoln Highway via Lipson Cove Road. The grain will be unloaded from the trucks at each of fourteen grain storage bunkers, and then stockpiled at the bunker via conveyors or manually via mobile drive over grid stackers. From the bunkers, the grain is reclaimed and transferred via conveyors or trucks to the silo area, from where it is either stored or transferred via conveyor to the ship's cargo holds.

Reconfiguration of the project (changing the bunker alignment) and significantly increasing the vehicle staging and queueing capacity while keeping on-site grain storage capability would allow more efficient vehicle movement and reduce the risk of queueing onto Lipson Cove Road.

Based on retaining the required storage capacity the facility boundary utilises the 40m expansion to the west to provide the additional truck marshalling area at unloading points in front of the bunkers entrance and 40m expansion to the north to keep the total annual grain export capacity of the facility at the approved one million tonnes.

Peninsula Ports has reached agreement with the District Council of Tumby Bay (DCTB) to acquire the 40m of additional land through the acquisition of part of the adjacent road reserve. DCTB has completed its necessary processes to deal with the change to the road reserve size (reduction from 60m to20m) and enter into the transaction with Peninsula Ports.

As part of the agreement between Peninsula Ports and DCTB to acquire the 40m of the current road reserve that reaches Rogers Beach, Peninsula Ports has agreed to establish an all-weather access adjacent to the Western and Northern boundaries of the expanded site (refer to Figure 2) along the remaining 20m road reserve to improve access to Rogers Beach. This all-weather access is not a change under this amendment as it sits outside the project site area and will be approved through DCTB as works inside a council road reserve.

The same level of design detail has been provided for this amendment as per the original approved EIS. Whilst the 3-D design of the site layout is not required at this stagwill be completed prior to construction.

2.2.1 IMPACT OF CHANGE – AIR QUALITY

The key air emissions expected from the grain facility are dust emissions resulting from the unloading, storage, handling, and ship loading operations. In addition, there will occasionally be emissions of methyl bromide gas from the silos as a result of fumigation of the grain. Methyl bromide is used as a pest control treatment for grains which is applied at storages prior to export.

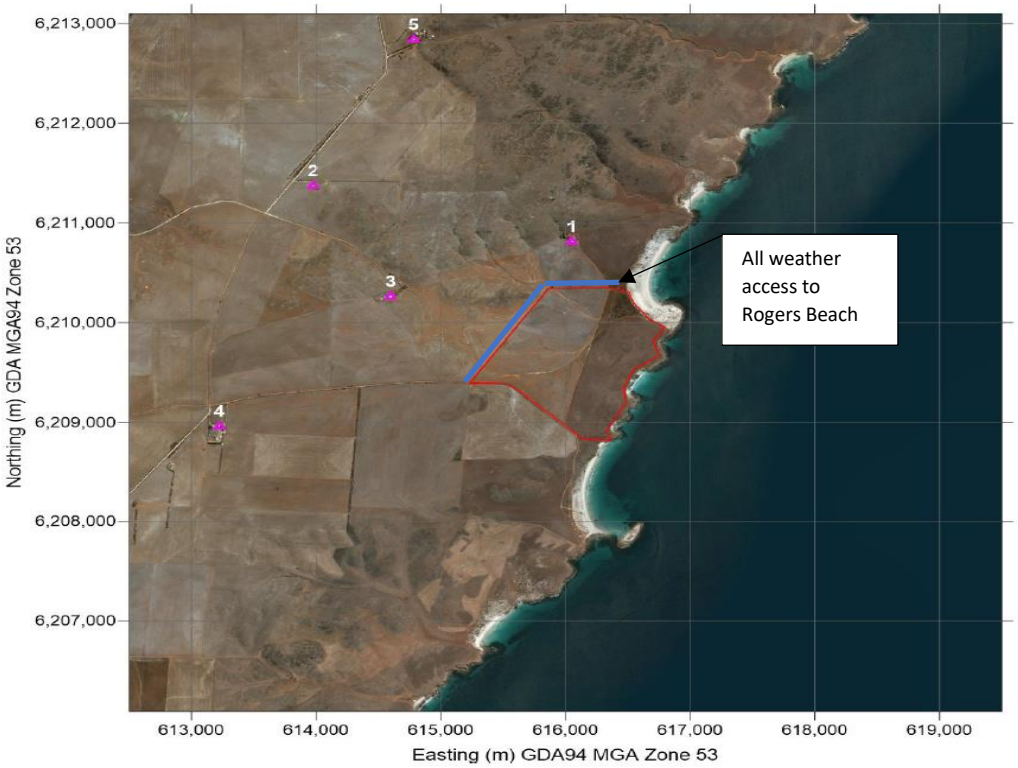


Figure 2: Sensitive Receptors and all-weather access

The dispersion modelling outputs for the dust emissions at the Port Spencer grain facility has been provided and the results has been compared with the environmentally preferable product (EPP) concentration criteria for PM10 and PM2.5, and the NSW environment protection authority (EPA) (2017) criteria for dust (TSP) deposition. Each of the model outputs incorporates the respective background concentrations. The Ambient Air Quality Assessment guideline (EPA, 2016b) requires predicted pollutant concentrations to be less than the EPP criteria at sensitive receptor sites. In each output plot, the site boundary is depicted by the red line and the sensitive receptor sites are shown by the pink triangles. The acceptance criteria is shown as a yellow contour line.

The change of expanding the site area to the North and West by 40m essentially brings the receptors 40m closer to the modelled emission sources. In considering the impact of the change, each receptor is assessed as being 40m closer to the relevant yellow output plot line from the modelling.

Sensitive Receptor 1 (SR#1), the house immediately North of the site, was the only receptor that experienced exceedances in the original configuration (prior to this proposed 40m change). SR#1 has now been confirmed to have no floors or ceilings and Peninsula Ports has entered an agreement to purchase that property and confirms that it is not to be reinstated to be a habitable building. For the purpose of this proposed change, it is no longer treated as a receptor.

None of the remaining receptors, experience exceedances after moving their position 40m closer to the site.

Figure 3: SR#1 Recent photograph

The distances between each of the identified receptors and the approximate centre of the emissions sources are shown in Table 1.

Sensitive Receptor	Receptor Type Note 1	Distance from Emissions (m)
SR1	House	930
SR2	House	2580
SR3	House	1625
SR4	House	3100
SR5	House	3265

Table 1: Sensitive Receptor Summary

Dispersion modelling

The CALPUFF (version 7.3.1) model was used to predict ambient pollutant Ground Level Concentrations (GLCs) for the estimated dust and methyl bromide emissions associated with the operation of the grain facility.

CALPUFF is a variable-trajectory dispersion model that simulates the dispersion of pollutants within a turbulent atmosphere by representing emissions as a series of puffs, emitted sequentially. Provided the rate at which the puffs are emitted is sufficiently rapid, the puffs overlap and the serial release is representative of a continuous release.

The CALPUFF model differs from traditional (simpler) Gaussian plume models in that it models spatially varying wind and turbulence fields that are important in complex terrain, for long-range transport, and near calm conditions. Also, the TAPM-CALMET-CALPUFF combination is expected to provide higher quality results for the project's coastal location.

The modelling has been performed using the meteorological information provided by the CALMET model, and the particulate emission estimates for the proposed Port Spencer facility. There are no other significant existing particulate emission sources in the region which would be expected to influence the existing baseline particulate concentrations at the site. An exception may be smoke particles from controlled burning and other fires.

However, these emissions are not normally included in air quality assessments for individual projects, and in any case the estimates for background PM2.5 and PM10 would include some effects from smoke.

The CALPUFF model was used in this study to predict the pollutant concentrations at a set of ground-level receptors covering the region surrounding the proposed site, both land and over water. Use of a grid receptor spacing of 200 metres across a domain of 12.0 km by 12.0 km led to a total of 3,600 gridded receptors in the horizontal plane being used. Five sensitive receptor sites within this domain were also included.

The particulate emission sources for the port operations (e.g. grain truck unloading, conveying and transfers, ship-loading activities) were represented using individual volume emission sources. Emissions from the bag filters, diesel generator, and venting of the silos after fumigation, were represented as point emission sources. Time-varying emissions were incorporated to represent the seasonal and diurnal variation of operations.

The predicted pollutant GLCs and dust deposition results are provided as below.

- **Maximum 24-hour average PM10 GLC**

  CALPUFF results for maximum 24-hour average PM10 GLCs (µg/m3) are provided as contour plots in Figure 4. The yellow contour indicates where the model results are equal to the relevant EPP concentration criterion of 50 µg/m3.

  The results (Figure 4) indicate exceedances of the 50 µg/m3 EPP criterion only at SR#1 to the north of the site boundary. At this location, exceedances of the PM10 24hr average criterion are expected for 13 separate days in the year, each during the harvest season (November and December).

  As SR#1 is no longer considered to be a receptor, this exceedance has been eliminated.

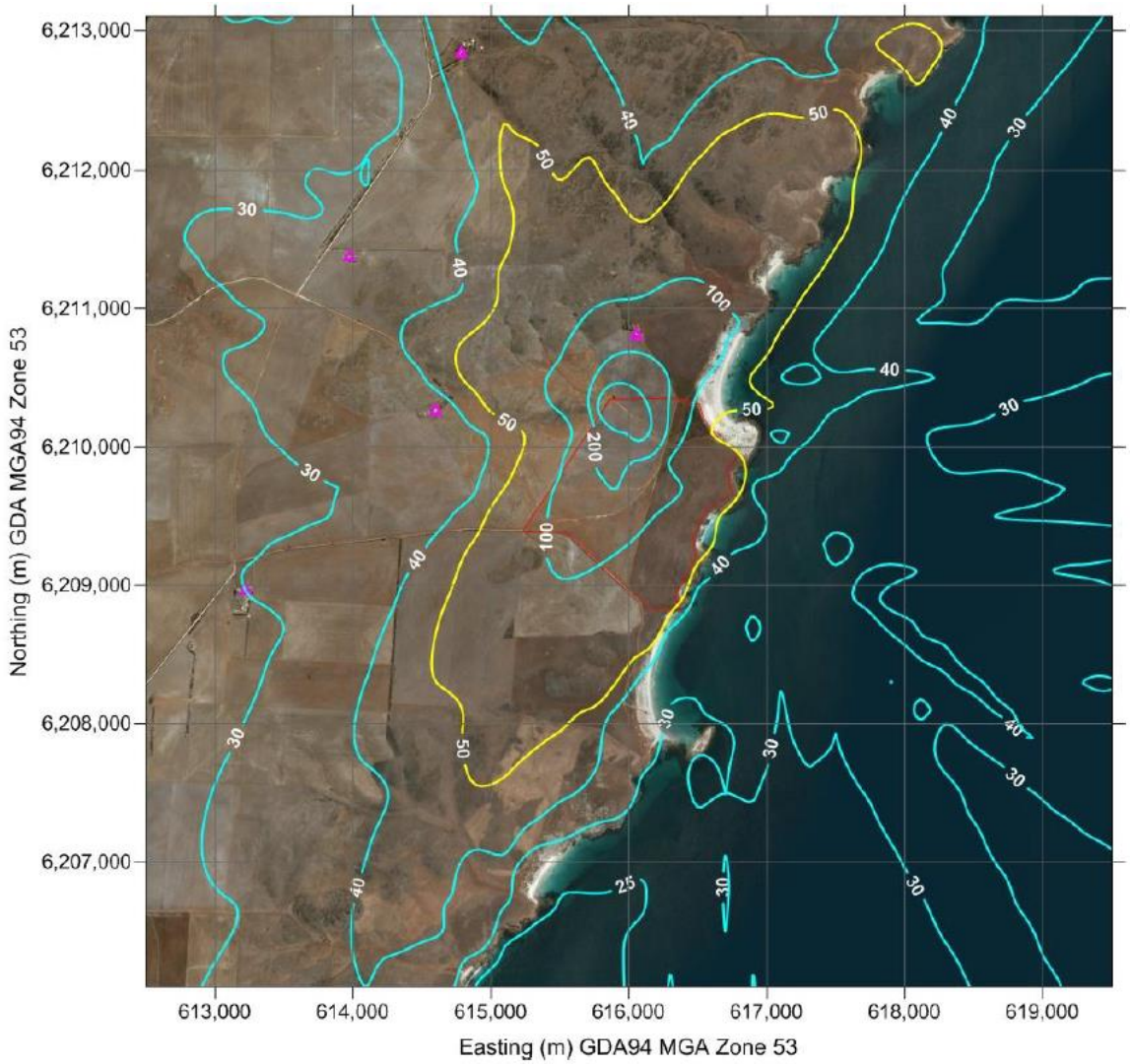


Figure 4: Maximum 24-hour average PM10 GLC (µg/m3), including background concentration

- **Maximum 24-hour average PM2.5 GLC**

CALPUFF results for the maximum 24-hour average PM2.5 GLCs (µg/m3) are provided as contour plots in Figure 5. The results indicate exceedances of the relevant EPP criterion, 25 µg/m3 in this case, only at the closest reference location (SR#1).

As SR#1 is no longer considered to be a receptor, this exceedance has been eliminated.

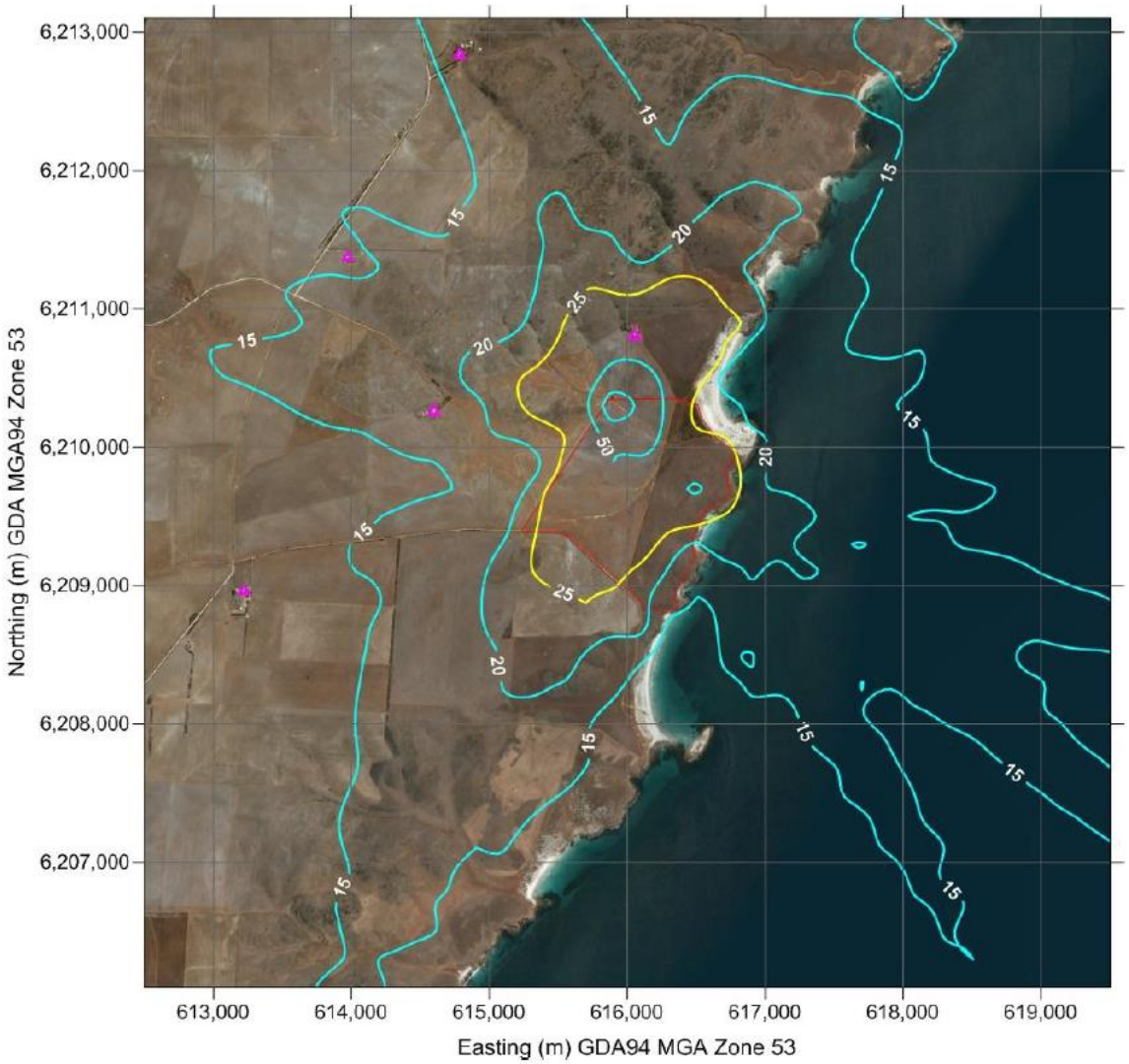


Figure 5: Maximum 24-hour average PM2.5 GLC (µg/m3), including background concentration

- **Annual average PM2.5 GLC**

CALPUFF results for annual average PM2.5 GLCs (µg/m3) are provided in Figure 6. The results indicate exceedances of the 8 µg/m3 EPP criterion (yellow contour) only at the closest reference location, SR#1, to the north of the site boundary.

As SR#1 is no longer considered to be a receptor, this exceedance has been eliminated.

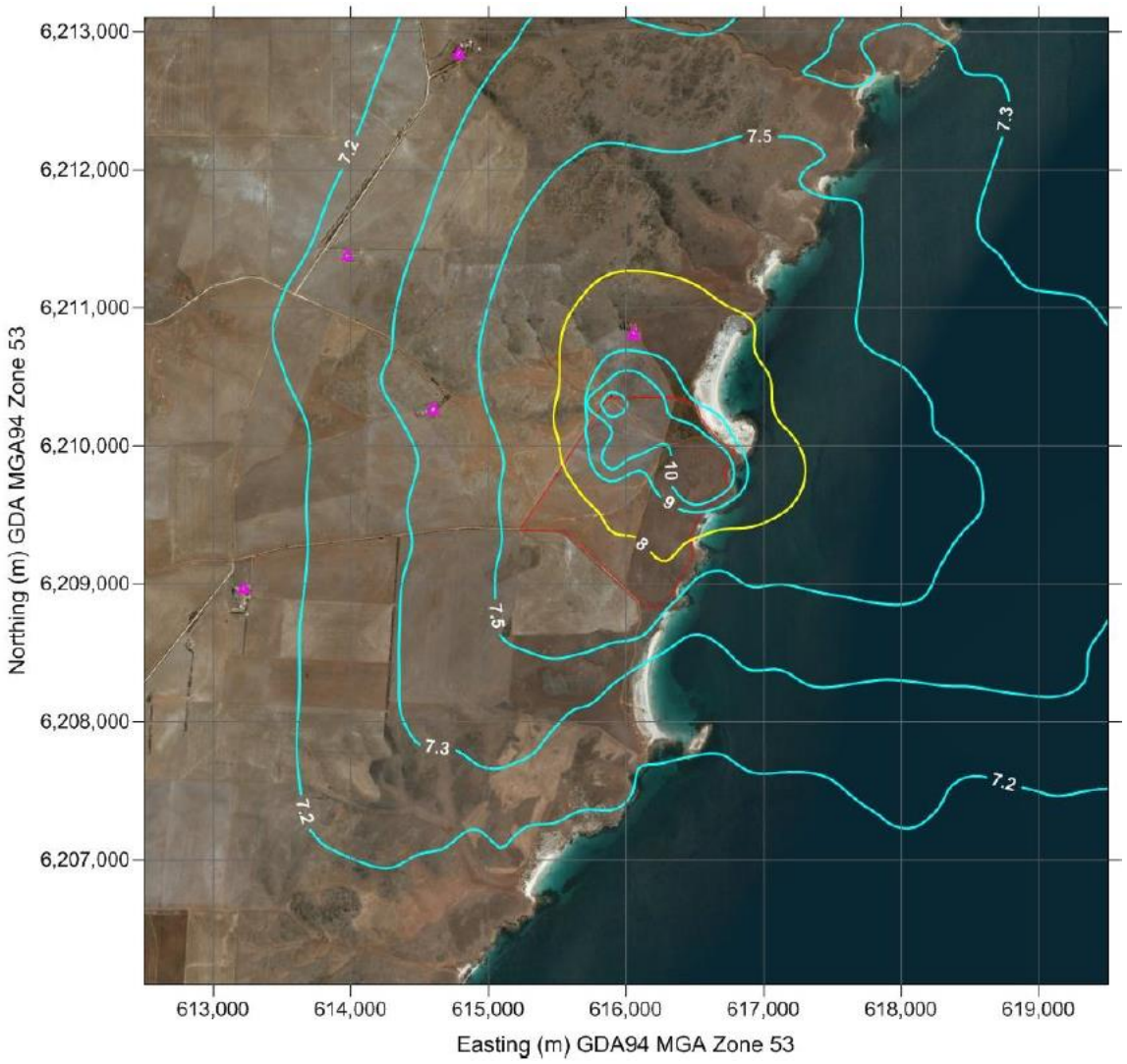


Figure 6: Annual average PM2.5 GLC (µg/m3), including background concentration

- **Key air emission**

Dust emissions resulting from the truck unloading, storage, handling and ship loading operations are the key air emission being expected from the grain facility.

In addition, there will occasionally be emissions of methyl bromide gas from the silos as a result of fumigation of the grain. Methyl bromide is used as a pest control treatment for grains which is applied at storages prior to export.

- **Average annual dust deposition**

CALPUFF results for annual average dust or Total Suspended Particulate (TSP) deposition (g/m2/month) are provided as contour plots in Figure 7. The yellow contour indicates the NSW EPA criterion of 4 g/m2/month.

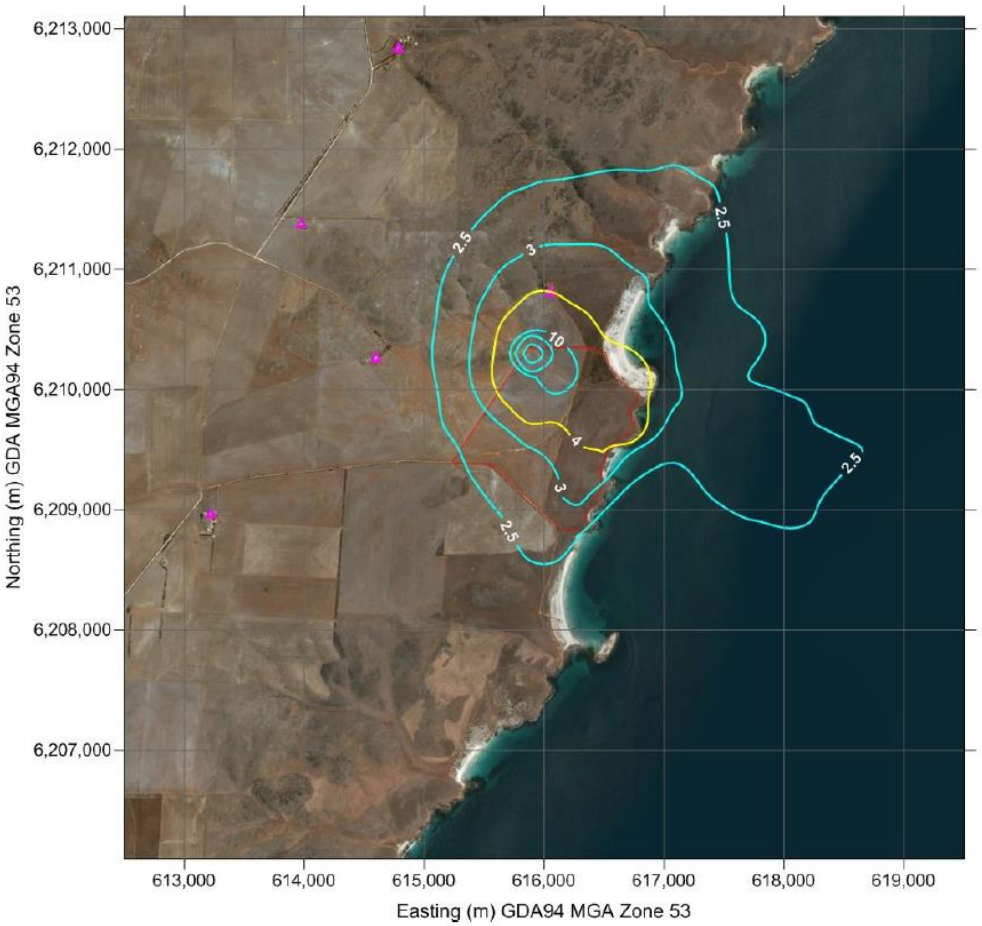


Figure 7: Annual average TSP deposition (g/m2/month), including background concentration

The results predict conformance with the 8 g/m2/month NSW EPA criterion at all sensitive receptor sites, noting the result at reference location SR#1 of 4.0 g/m2/month, which is equal to the criterion is no longer relevant as SR#1 is no longer considered to be a receptor.

Conclusions

The air quality assessment for the Port Spencer grain facility involved the generation of the dust emissions inventory for the site, followed by CALPUFF dispersion modelling to predict the potential impact of the dust emissions on the surrounding area.

The model outputs for PM10 24-hour average, PM2.5 24-hour average, and PM2.5 annual average indicated that exceedances are not expected at any current sensitive receptor of the EPP criterion, with reference location SR#1 no longer being considered as a sensitive receptor and so exceedances at that location are no longer relevant.

Even though the project's boundary has been expanded 40m North and 40m West, there are no environmental concerns regarding SR#1 as the property in that area has been abandoned and is physically uninhabitable. None of the remaining receptors have become materially closer to the acceptance criteria in each plot and none reach a level of exceedance.

2.2.2 IMPACT OF CHANGE – NOISE

An environmental noise assessment on noise sources has been made of the proposed Port Spencer grain handling and export facility development on Lipson Cove Rd, Lipson, South Australia. This was conducted for the previous Amendment to the PER. The noise assessment figures used therefore are for the approved design. The modified design moves the marshalling area (and associated noise sources) to the south-western boundary. The bunker storage area is also proposed to be extended 40m to the west. For the purpose of the noise analysis, we have presumed that the resulting noise modelling contours are moved 40m further to the west, despite the likelihood that the noise sources are likely to be reduced due to the relocation of the truck marshalling and the sites for unloading of grain into hoppers.

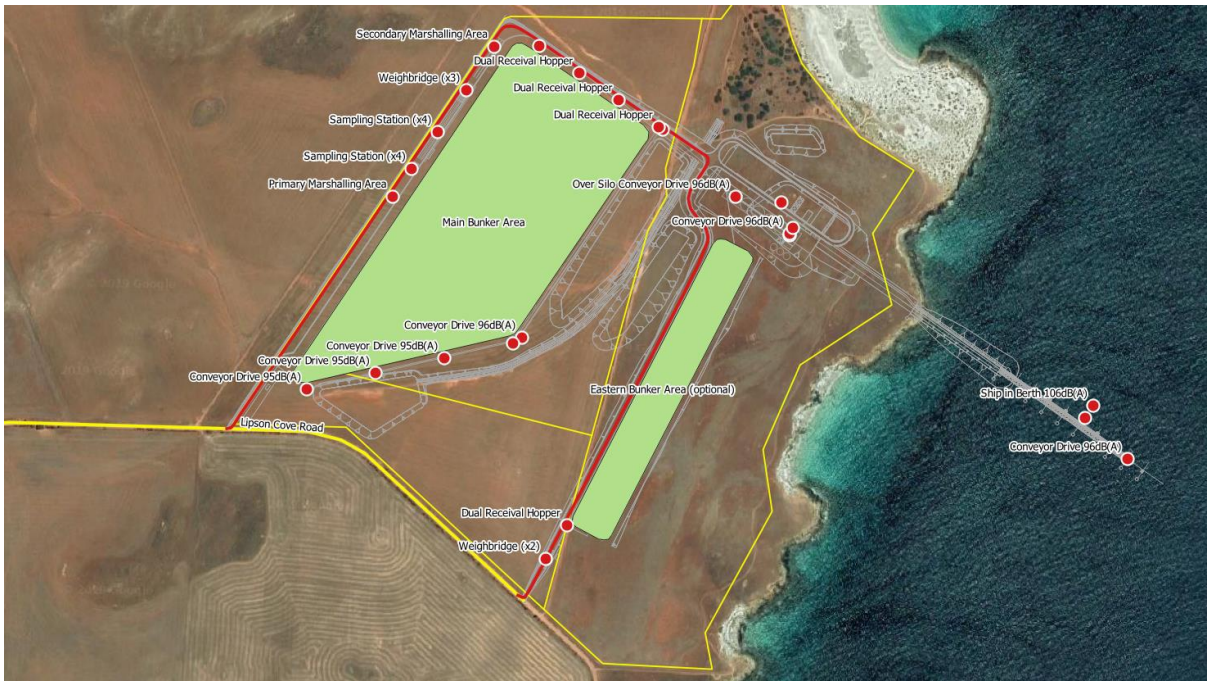


Figure 8: Sources of Noise

Planning approval already exists over the site. This proposal seeks to amend the existing approval to increase the size of the site by 40m to the North and West.

The nearest noise sensitive receivers (dwellings) to the site comprise isolated rural dwellings to the north and west of the site, at a distance of approximately 560 metres and 960 metres from the site boundary, respectively. The nearest dwellings to the Lipson Cove Road access route are approximately 200 metres from the road alignment.

The subject site (original boundaries shown in yellow) and surrounding locality is shown in Figure 10. The nearest dwellings to the site and to the road alignment are indicated by Red markers and are labelled “A” through “E”. Note that Location A is the same as reference location SR#1 referred to in the Air Quality modelling that is no longer a dwelling or considered to be a receptor.

This noise assessment has conducted the following to ensure the amenity at the nearest dwellings is not unreasonably impacted upon:

- Review of the Tumby Bay Council Development Plan (the Development Plan) and the Planning and Design Code to determine the relevant noise provisions for the development;

- Establishment of assessment criteria provided by the Environment Protection (Noise) Policy 2007 (the Policy), in accordance with the Development Plan;
- Prediction of the worst-case (highest) noise levels at the dwellings from the proposed daytime and night-time operations at the development; and,
- Comparison of the predicted noise levels against the established assessment criteria and determination of treatments to ensure compliance.

Figure 9: Noise Receptors / Reference Points

Predictions have been made of the environmental noise levels at the nearest dwellings arising from the proposed grain handling and export facility. The predicted noise levels account for the highest level of concurrent activity expected at the facility coinciding with weather conditions which are most conducive to noise propagation. Refer to Figures 10 through 15 for the noise contour plots.

The highest predicted noise levels at the nearest reference location (location A – SR#1) are 50 dB(A) during the day and 45 dB(A) at night (including a 5dB(A) penalty where applicable), thereby achieving the day-time and night-time criteria of 52dB(A) and 45dB(A) respectively applicable under the Environment Protection (Noise) Policy 2007 (the Policy).

As SR#1 is no longer considered to be a receptor, this nearest location that was considered to be close to the exceedance criteria has been removed from consideration. All remaining receptors are well below the limits.

By expanding the site by 40m towards the nearest receptors none of the remaining receptors experience a materially relevant increase and still fall well below the criteria.

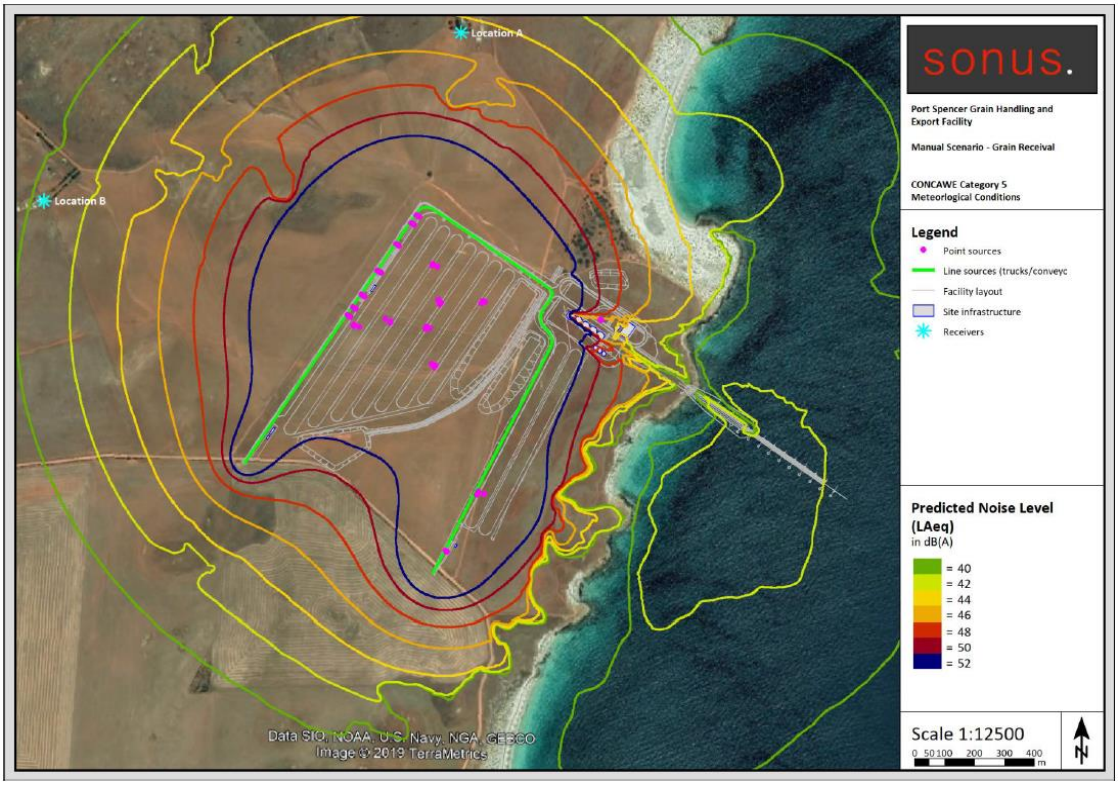


Figure 10: Manual Scenario – Grain Receival

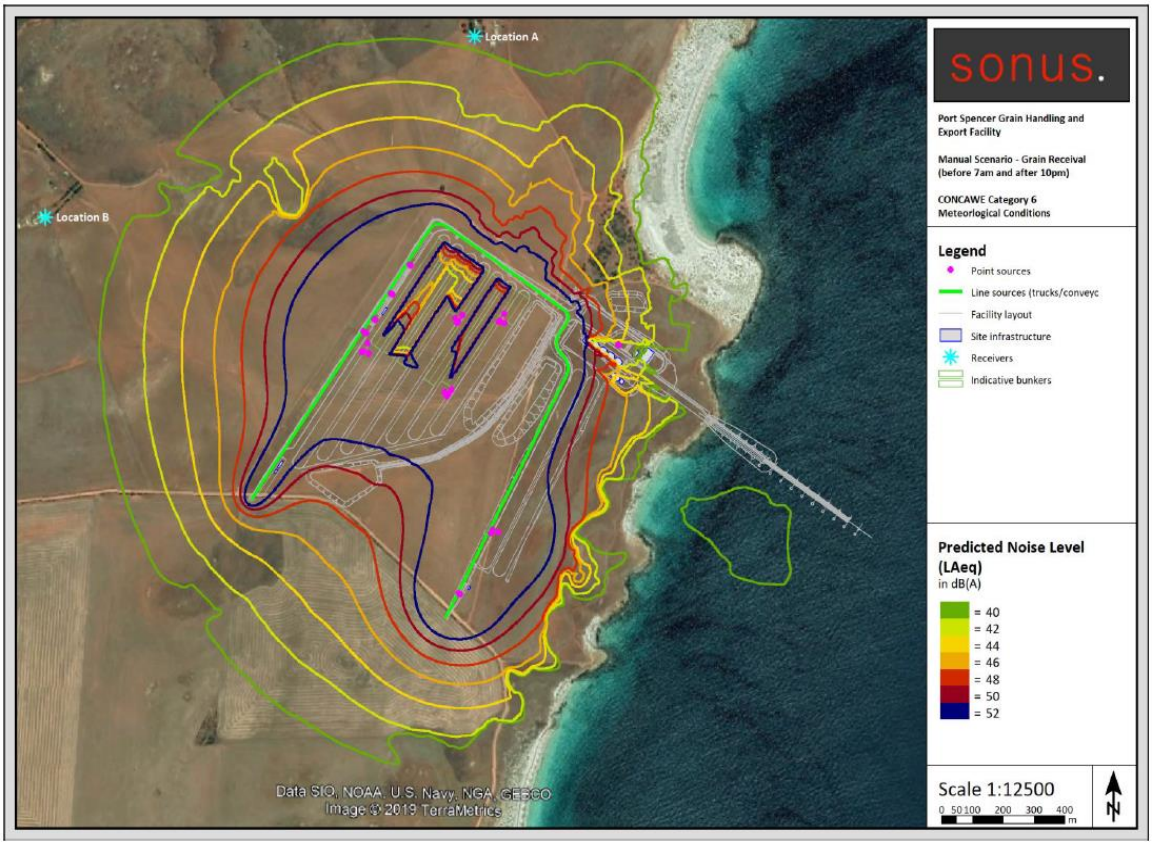


Figure 11: Manual Scenario – Grain Receival (before 7am and after 10pm)

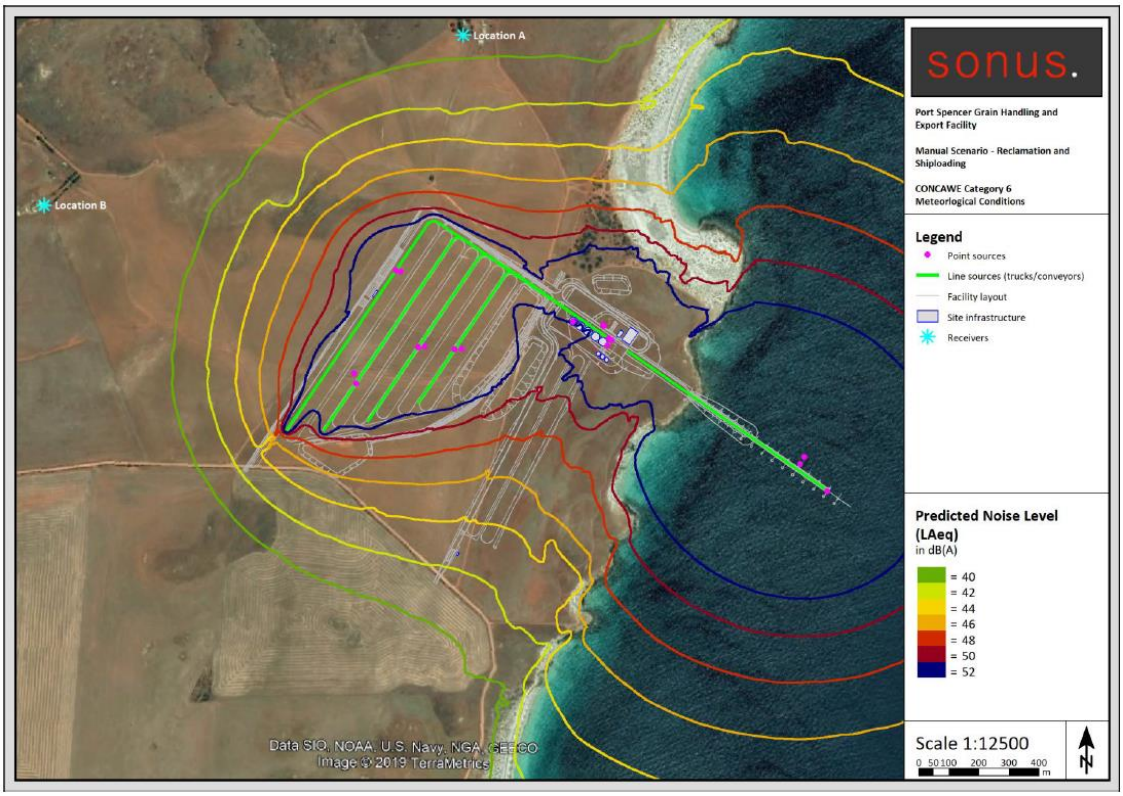


Figure 12: Manual Scenario – Reclamation and Shiploading

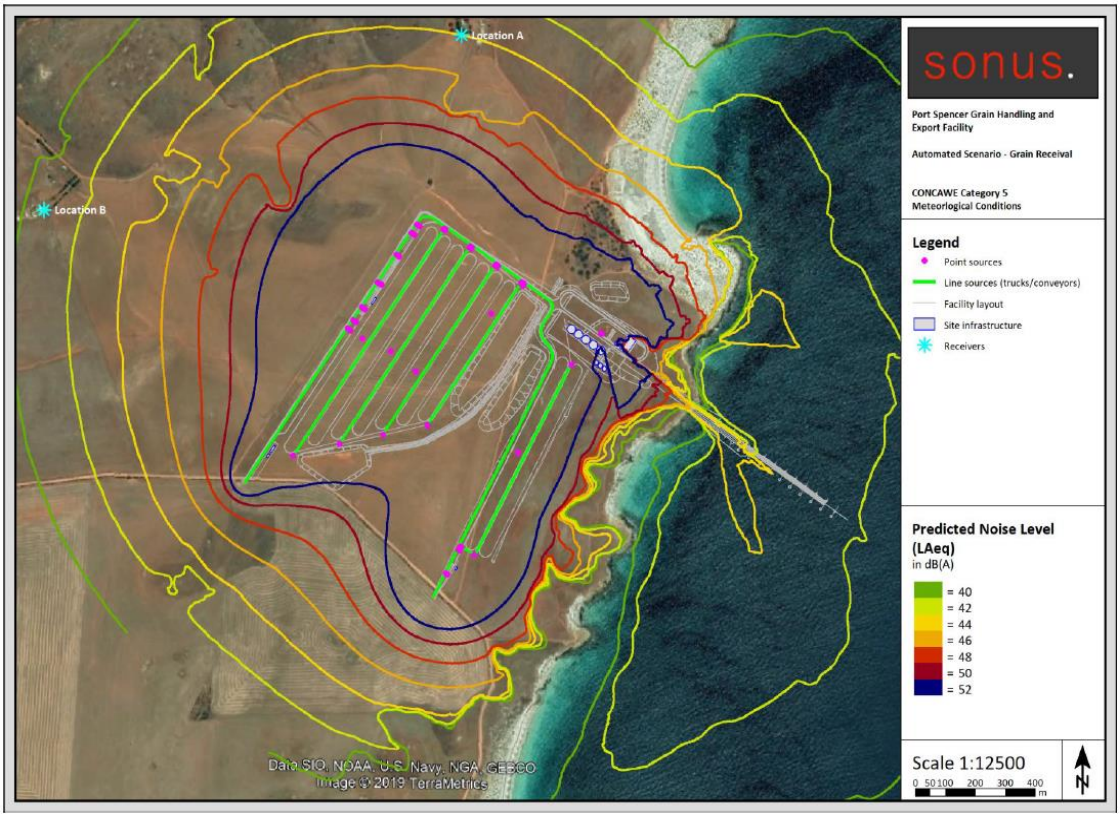


Figure 13: Automated Scenario – Grain Receival

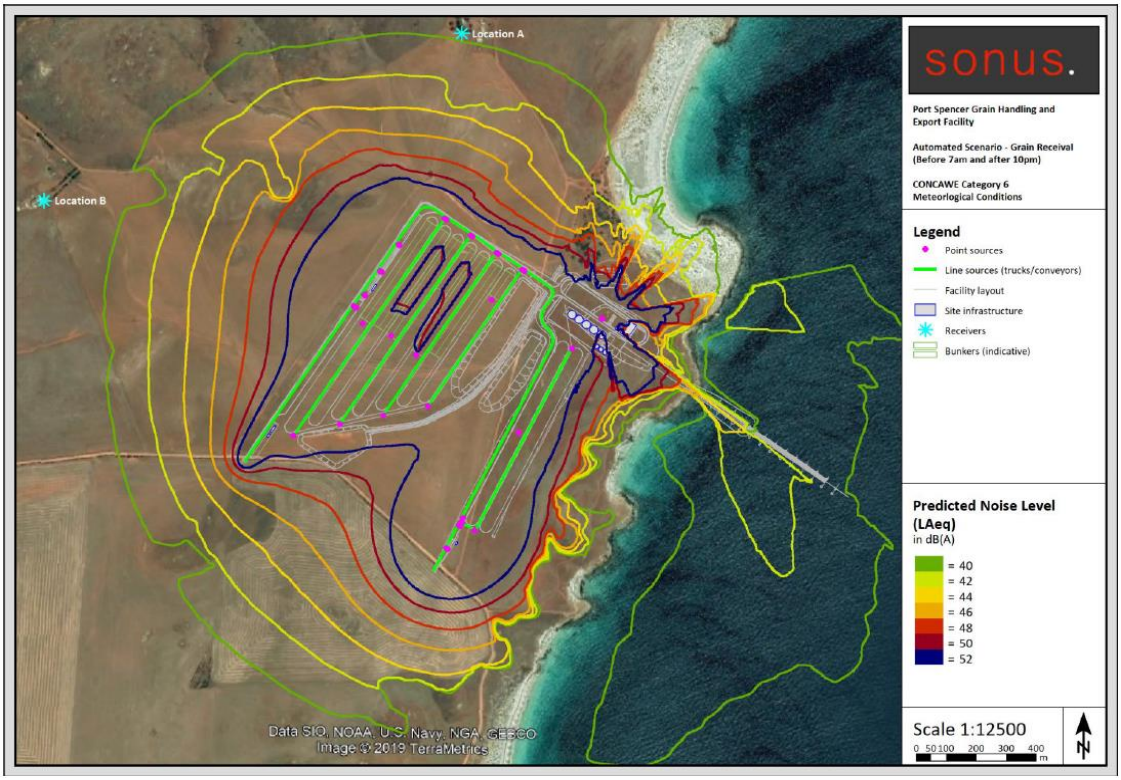


Figure 14: Automated Scenario – Grain Receival (before 7am and after 10pm)

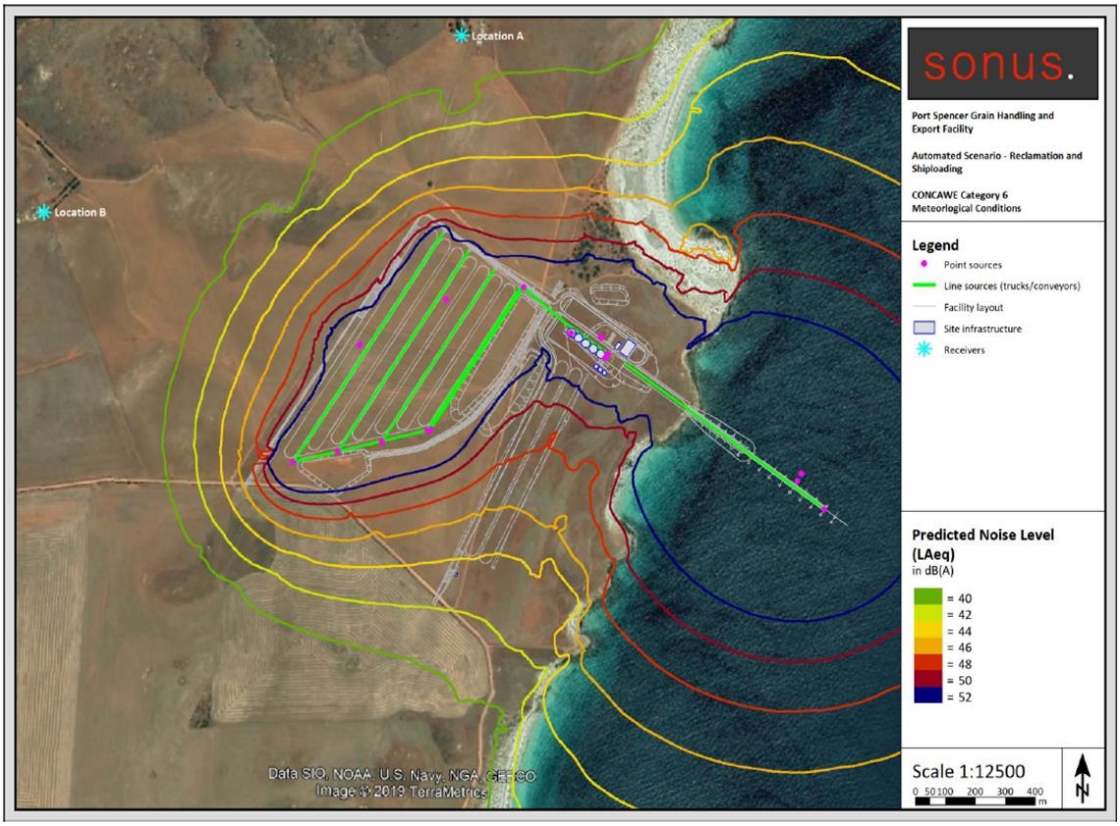


Figure 15: Automated Scenario – Reclamation and Shiploading

Conclusions

The previously approved approach for noise assessment is still valid for assessment purposes. Considering the site plan with different noise source locations across the Port Spencer site, and analysis on all above noise contour plots based on different scenarios , it is noted that the predicted noise levels in this assessment even considering the 40m boundary expansion (less than 7% (40m) westward and around 4% (40m) northward) will be no worse than under the existing approval.

Based on the above, the proposal does not unreasonably interfere with the amenity and minimises adverse impacts on the locality, and therefore is considered to continue to meet the objective and subjective noise requirements of the Tumby Bay Council Development Plan as per the current authorisation.

2.2.3 IMPACT OF CHANGE – SITE STORM WATER

Stormwater Management Ponds

The stormwater management ponds are designed to manage the changed stormwater flows across the site resulting from the proposed changes to the site layout. All stormwater management infrastructure is sized to manage the increased runoff from the expanded hardstand area. This includes the truck marshalling area prior to the site gate (but contained within the subject land) for heavy vehicles arriving during the working time or even prior to opening hours. During the detailed design phase, the 3-D design of the site is to be developed. At that time a water balance is to be undertaken to confirm that captured water can be used on site, and reuse options are to be developed. Relocation and expansion of the stormwater management ponds, and the parking areas enables the increase in the dedicated truck marshalling areas at the site entry and following weighing area. This then allows for improved traffic management on site during the intense grain delivery period.

Site Stormwater Strategy

The function of the drainage / water management system is to direct runoff away from the site's hardstand areas, buildings and roads to the existing discharge locations whilst providing pollution reduction measures and the required flood immunity. The WGA *'Design basis report – Functional layout phase, Rev. B, dated 24 August 2020'* was completed to address the increase in the marshalling area on the site. The key principles of the document are:

- No discharge from the site is to runoff into the marine environment
- Low flow velocity design where possible
- Offsite runoff can continue to discharge at Roger's Beach, but quantity is not increased by the project.
- Tributary flows are diverted around the site towards Roger's Beach
- Detained site runoff is to be reused on site

This is proposed to be achieved by the following infrastructure:

- Three detention basins for site stormwater runoff, sized to cater for the 1% AEP event, to contain all site runoff and prevent discharge to the marine environment.
- A decrease in total catchment discharging to Roger's Beach with the construction of a flow attenuation basin on the major creek upstream of the site to reduce the 1% AEP event storm flow.
- A combination of open channels and swales, culverts, water reuse measures and energy dissipation and flow spreaders.

Diagrams at Attachment 1 provide a comparison of the original layout as approved in the PER, with the proposed revised layout, and indicates the water flows across the site. All on site water flow are shown flowing into detention basins. This detained water is to be reused on site. Upstream tributary flows go via an attenuation basin to Rogers Beach.

Diversion Channels

Channels will be designed to contain either:

- The 1% AEP event, where overtopping of the channel would cause water to come into contact with the grain bunkers or water from disturbed areas of the site (potentially contaminated water) to enter the undisturbed runoff drainage system and discharge to the marine environment.
- The 10% AEP event, at significant flow paths that have acceptable impacts when overtopping.
- A "minimal" flow, where the contributing catchment is minimal, and the purpose of the channel is primarily to collect and redirect flows that would have an ongoing but minor impact on operations or maintenance.

Culverts

Culverts will be provided to convey collected runoff under roads and infrastructure. Culverts will either be sized to convey:

• The 1% AEP event at critical locations. This is to ensure that flows does not enter grain storage facilities (bunkers and sample store), underground grain receival infrastructure (hoppers) and/or contaminate the external waterway flow.

• The 10% AEP design event, with higher storm events to exceed the capacity of the culvert and initiate overflow.

Culverts have been designed following the procedure outlined in Austroads 'Guide to Road Design Part 5B: Drainage - Open Channels, Culverts and Floodways'. A blockage factor of 0% will be applied as per 'Blockage of Hydraulic Structures' (2013), as the site location has a "low" at-site debris potential and the control dimension (culvert width) (minimum 90mm for undisturbed catchments) is larger than the longest 10% of debris that will arrive at the site, given the surrounding vegetation is predominantly shrubs.

A Stormwater Management Plan will be developed at the commencement of the detailed design stage to further clarify the design strategy and constraints to be used in the design.

Conclusions

The previously approved approach for storm water management is still valid for assessment purposes The site stormwater strategy and planned design solution accommodates the increased size of the marshalling area resulting in no additional impact on the site due to storm water flows.

2.3 STAGED APPROVALS FOR CONSTRUCTION

It is usual practice for projects under Major Development approvals to have a staged approach to review and acceptance of compliance with the conditions of authorisation. In particular, design documentation and other required documentation are typically reviewed and approved by the relevant Minister or delegate in a staged approach in line with construction staging.

The Minister has already approved the first such stage to enable construction to commence for the approved project.

This proposed variation to the approved PER seeks to confirm the staged process of approving construction of the various elements of the project.

2.3.1 PROPOSED STAGING

Following is a summary table of the proposed staged approval of documentation and current indicative timing of construction for consideration by the Minister. It is intended to submit a total of six packages of information for approval, noting that Submission ID#1 has already been approved by the Minister. As a result of amendments to the schedule throughout the construction program, the dates for packages may change but their sequence is indicatively shown below.

Submission ID	Construction Package ID Number	Package Description	Planned Construction Commencement of Each Package
1	1	Silo Pad Bulk Earthwork (Blasting) Ministerial approval already granted	Oct 2022
2	6	Silo Base	Jan 2023
	3	Site bulk Earthworks	Jan 2023
3	2	Causeway Construction	Mar 2023
4	4	Pavement Construction	Apr 2023
	5	Services and conduit installation	Apr 2023
5	7	Silo Erection	May 2023
	11	Lipson Cove Road	Apr 2023 Detailed Design Delivery deadline Feb 2023
6	8	Balance of project facilities including: Bunkers Materials Handling and Sitewide General facilities	Jun 2023
	9	Marine Construction (Wharf)	Oct 2023
	10	Marine Construction (Ship Loader)	Oct 2023

Table 2: Proposed staged approval of documentation

3 CONCLUSION

The changes identified in this Amendment to the Approved PER (noting that the new planning system recognises the previous PER as if it was an EIS under the new planning system (refer to Clause 11A of the PDI Transitional Regulations 2017

- There are road safety benefits from the increase to on-site heavy vehicle marshalling areas by reducing the risk of queueing onto Lipson Cove Road further compared with the current authorisation;
- The proposed re-sizing of the site (40m North and West) has been confirmed to not adversely impact on the remaining receptor sites, acknowledging that SR#1 is no longer a habitable dwelling.
- Stormwater management capacity has been increased due to the increased paved area associated with increased heavy vehicle marshalling areas; and
- Staged approval of construction through staged assessment of compliance with conditions of Authorisation is proposed to formalised through this proposed variation to the approved EIS, noting that stage 1 of construction has already been approved by the Minister.

ATTACHMENT 1: COMPARISON OF ORIGINAL LAYOUT WITH REVISED LAYOUT (INCREASED MARSHALLING)

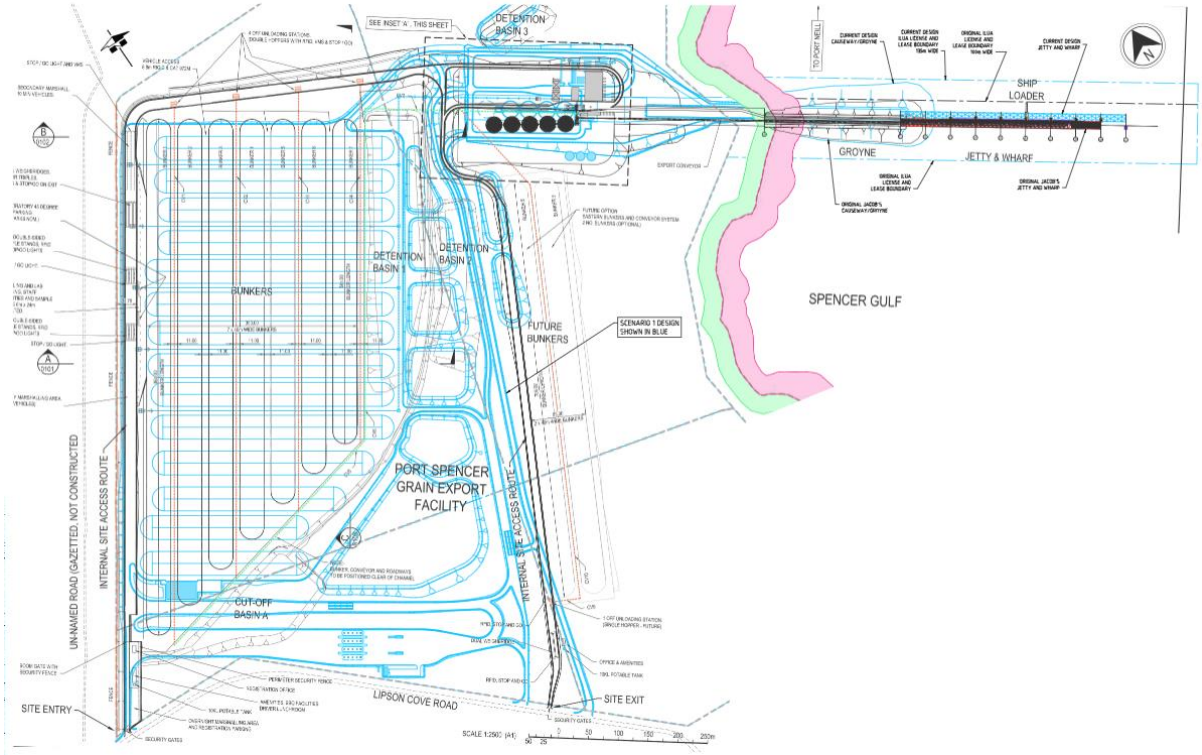


Figure A1: Increased marshalling Vs. Approved design

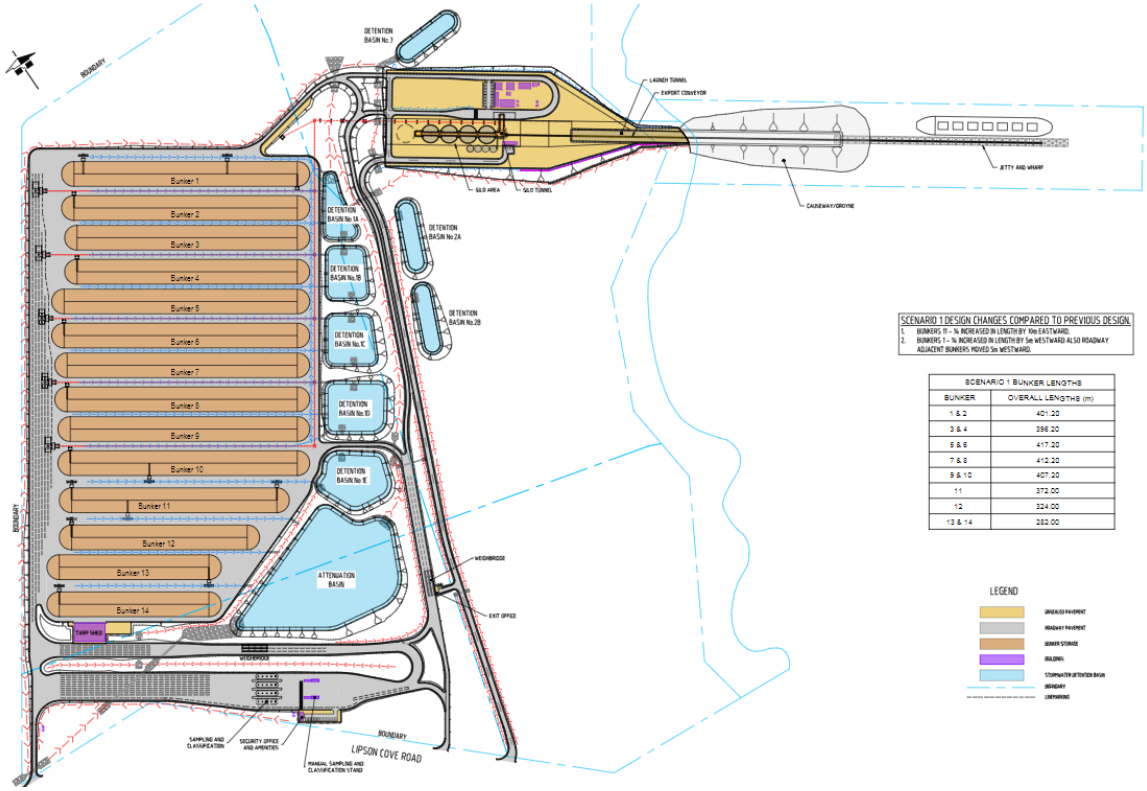


Figure A2: Overall site plan (Increased marshalling)

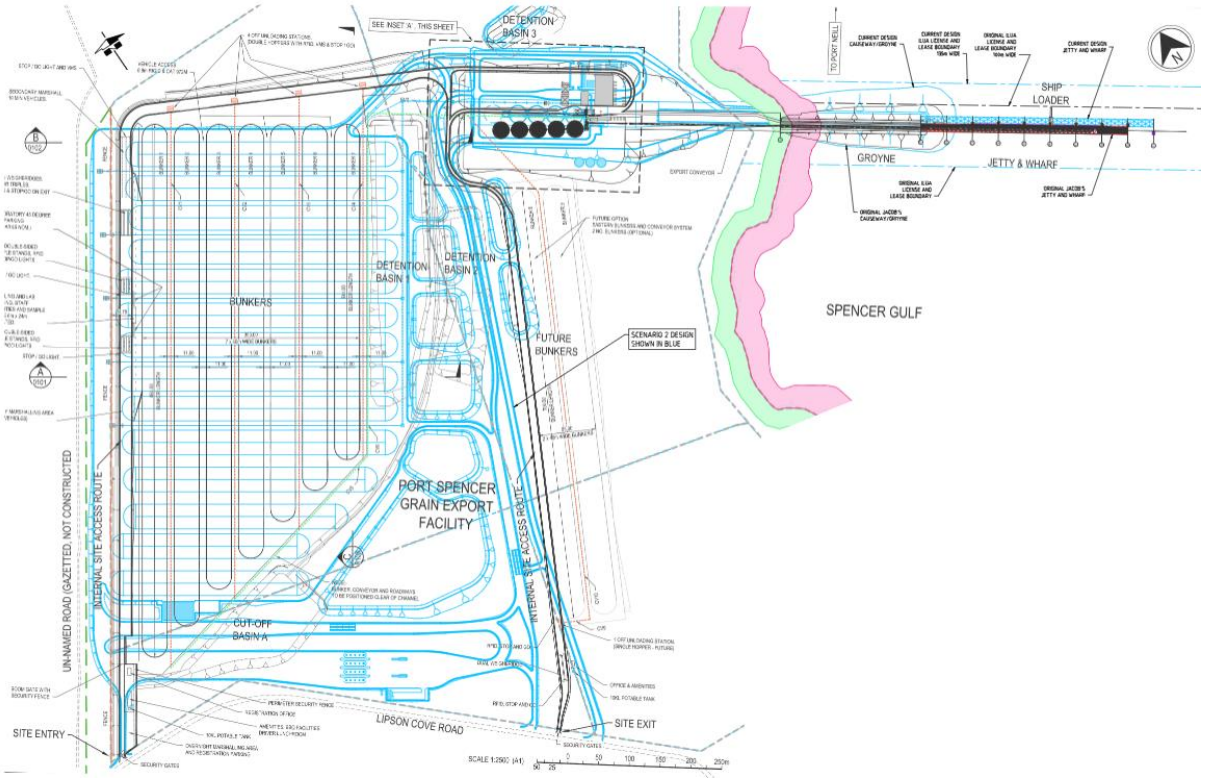


Figure A3: Increased marshalling + expanded site area Vs. Approved design

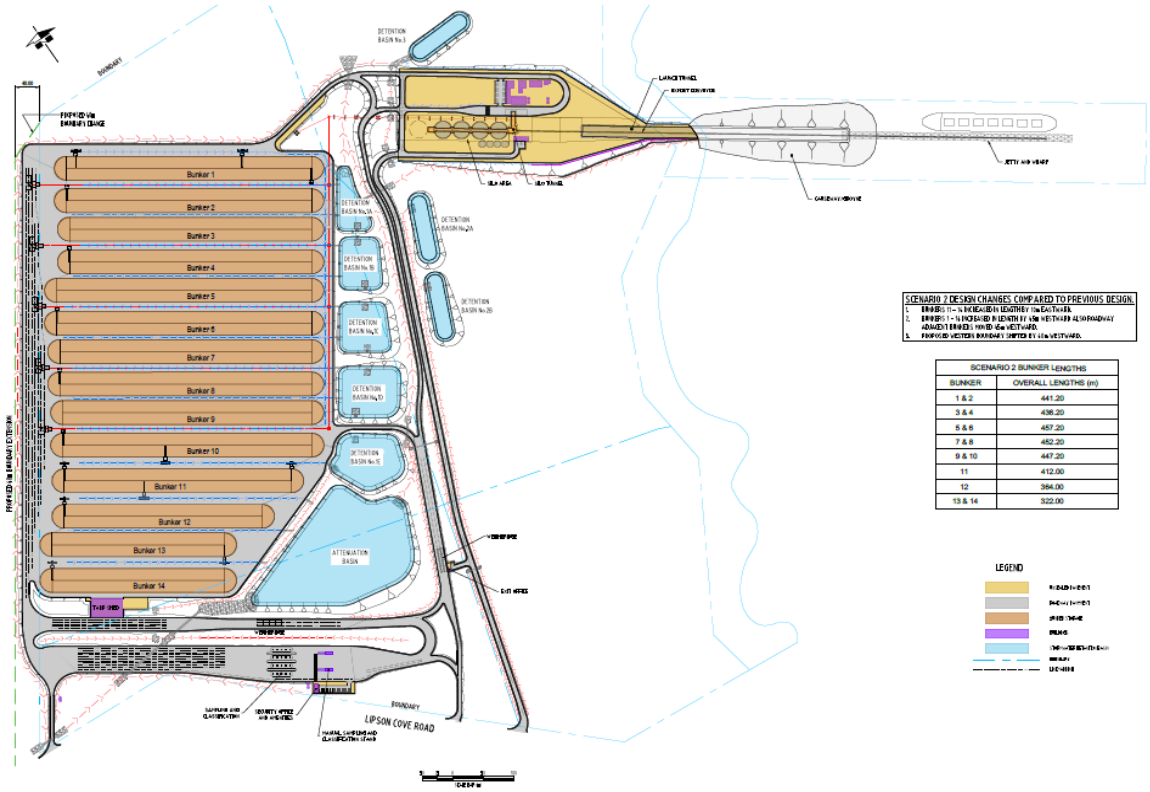


Figure A4: Increased marshalling + expanded site area

The layout diagrams contained in Figures A1-4 provide the site layout. They provide the same level of detail as provided in the original approved PER. The site layout diagrams are not intended to be the drainage design. Figure A4 does however show drainage flows in accordance with the legend at Figure A5.

The detention basins are collectively designed to contain a 1% AEP (Annual Exceedance Probability) event. This means that the detention basins will be able to contain flows of up to a 1 in 100 year flood event.

Additional detail will be developed in the detailed design phase which would occur after an approval of this PER amendment. Those detailed design are to be submitted and approved in accordance with the staged documentation approval process outlined in Section 2.3 in the main body of this report

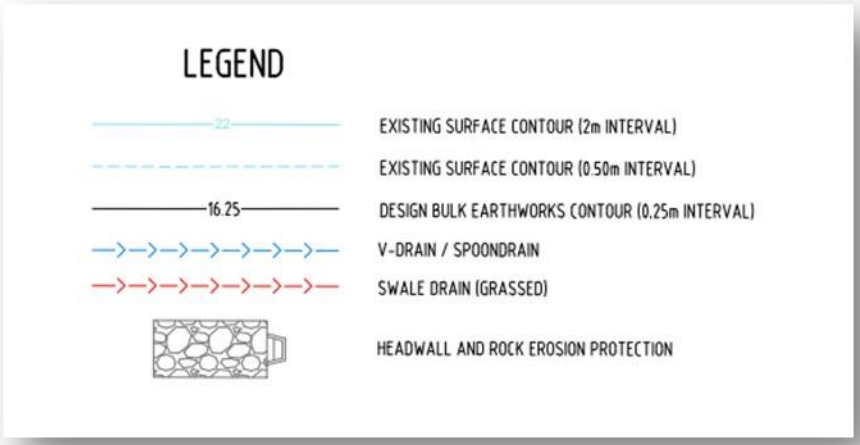


Figure A5: Legend for Figure A4.

WALLBRIDGE GILBERT AZTEC

Peninsular Pty Ltd

Port Spencer

DESIGN BASIS REPORT – FUNCTIONAL LAYOUT PHASE

Project No. WGA192262
Doc No. WGA192262-RP-AA-0001
Rev. B

24 August 2020

Disclaimer

This document sets out the agreed Basis of Design for the Grain Storage and Export Facility at Port Spencer. Wallbridge Gilbert Aztec (WGA) has prepared the Basis of Design on behalf of Peninsular Ports Pty Ltd to be used to inform the detailed design requirements of the project.

In preparing this report, WGA has relied upon information provided by Peninsula Ports, contractors engaged by Peninsula Ports Pty Ltd and other sources.

This report has been prepared on behalf of and for the exclusive use by Peninsular Ports Pty Ltd and Wallbridge Gilbert Aztec (WGA). *As the facility owner, the stipulated facility requirements in this document are the responsibility of Peninsular Ports Pty Ltd.*

WGA accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon this report by any third party. Copying this report without the permission of Peninsular Ports Pty Ltd or WGA is not permitted.

Revision History

Rev	Date	Issue	Originator	Checker	Approver
A	05/06/2020	Draft for Review	Various	JFW	-
B	24/08/2020	Revised Bunker Layout – Issued for Approval	Various	JFW	KW

6 CIVIL DESIGN

6.1 GENERAL

The scope for civil design is all earthworks, stormwater drainage and pavements for the entire site.

6.2 BATTERY LIMITS

The battery limit for civil design is from the Lipson Cove Road site access entry to the site exit gates. Note that modification of Lipson Cove Road is not included as part of WGA current design scope.

6.3 STORMWATER

6.3.1 Site Stormwater Strategy

The function of the drainage / water management system is to direct runoff away from the sites hardstand areas, buildings and roads to the existing discharge locations whilst providing pollution reduction measures and the required flood immunity.

The key principles in the stormwater management of the site are as follows:

- No discharge from the site is to runoff into the marine environment
- Low flow velocity design where possible
- Offsite runoff can continue to discharge at Roger's Beach, but quantity is not increased by the project.
- Tributary flows are diverted around the site towards Roger's Beach
- Detained site runoff is to be reused on site.

This above is proposed to be achieved by the following infrastructure:

- Three detention basins for site stormwater runoff, sized to cater for the 1% AEP event, to contain all site runoff and prevent discharge to the marine environment.
- A decrease in total catchment discharging to Roger's Beach with the construction of a flow attenuation basin on the major creek upstream of the site to reduce the 1% AEP event storm flow.
- A combination of open channels and swales, culverts, water reuse measures and energy dissipation and flow spreaders.

6.3.2 Diversion Channels

Channels will be designed to contain either:

- The 1% AEP event, where overtopping of the channel would cause water to come into contact with the grain bunkers or water from disturbed areas of the site (potentially contaminated water) to enter the undisturbed runoff drainage system and discharge to the marine environment.
- The 10% AEP event, at significant flow paths that have acceptable impacts when overtopping.
- A “minimal” flow, where the contributing catchment is minimal, and the purpose of the channel is primarily to collect and redirect flows that would have an ongoing but minor impact on operations or maintenance.

6.3.3 Culverts

Culverts will be provided to convey collected runoff under roads and infrastructure. Culverts will either been sized to convey:

- The 1% AEP event at critical locations. This is to ensure that flows does not enter grain storage facilities (bunkers and sample store), underground grain receival infrastructure (hoppers) and/or contaminate the external waterway flow.
- The 10% AEP design event, with higher storm events to exceed the capacity of the culvert and initiate overflow.

Culverts have been designed following the procedure outlined in Austroads ‘Guide to Road Design Part 5B: Drainage - Open Channels, Culverts and Floodways’.

A blockage factor of 0% will be applied as per ‘Blockage of Hydraulic Structures’ (2013), as the site location has a “low” at-site debris potential and the control dimension (culvert width) (minimum 90mm for undisturbed catchments) is larger than the longest 10% of debris that will arrive at the site, given the surrounding vegetation is predominantly shrubs.

A Stormwater Management Plan will be developed for the detailed design to further clarify the design strategy and constraints used in the design.

6.4 PAVEMENT DESIGN

6.4.1 General

The function of the pavement is to provide support and wearing surface for the hardstands and access roads. The proposed pavement shall provide a durable, minimal maintenance and all weather access and storage areas.

The use of on-site material will be considered during the pavement detailed design. The design aims to present flexible pavements with an asphalt wearing course. A Pavement Design Report will be produced outlining the pavement design undertaken and the criteria used. The below is a summary of the proposed design criteria.

6.4.2 Pavement Design Life

The design life of all pavement areas is 20 years.

Design Vehicles and Design Traffic Loading

The design will consider the proposed vehicle distribution in Section 4.2 and 0. This will be adjusted to a Design Equivalent Standard Axles to be used in calculations for the pavement design.

California Bearing Ratio (CBR)

The geotechnical information indicates that the CBR varies across the site depending on location and depth of the subgrade. The CBR used at each location will be detailed in the Pavement Design Report.

6.4.3 Site Won Granular Material Properties

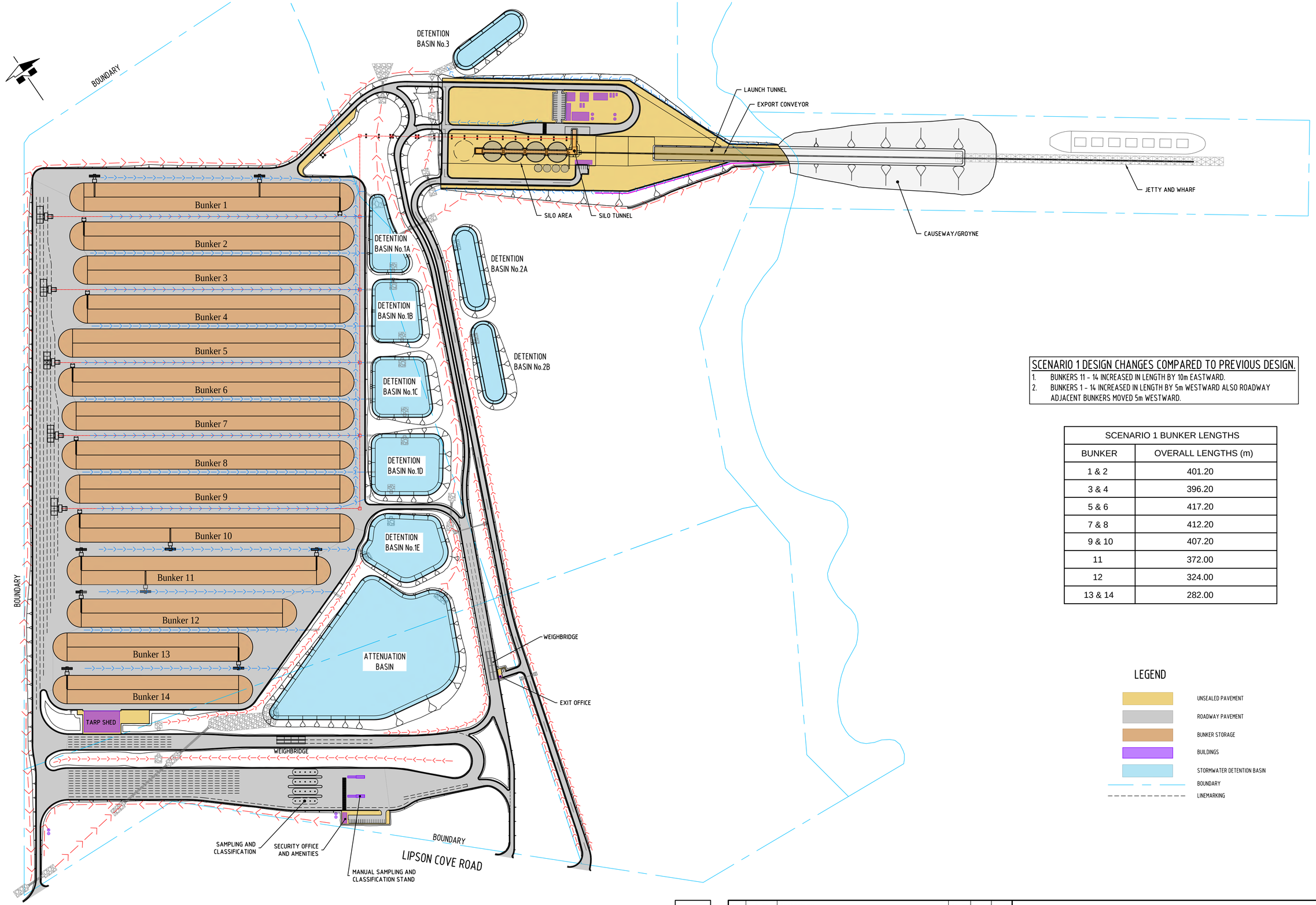
It is understood that the granular material for the flexible pavement is to be sourced and crushed from rock at the site. This quality of the granular material produced will be considered in the pavement design.

6.5 ROADS AND BUNKER AREA GRADES

Road design areas will be designed in accordance with the relevant road design standards and principles.

The proposed grades for the bunker areas are as follows:

- Longitudinal Grade 2.5%
- Cross Grade 0.5% to 1.5%



SCENARIO 1 DESIGN CHANGES COMPARED TO PREVIOUS DESIGN.

1. BUNKERS 11 - 14 INCREASED IN LENGTH BY 10m EASTWARD.
2. BUNKERS 1 - 14 INCREASED IN LENGTH BY 5m WESTWARD ALSO ROADWAY ADJACENT BUNKERS MOVED 5m WESTWARD.

SCENARIO 1 BUNKER LENGTHS	
BUNKER	OVERALL LENGTHS (m)
1 & 2	401.20
3 & 4	396.20
5 & 6	417.20
7 & 8	412.20
9 & 10	407.20
11	372.00
12	324.00
13 & 14	282.00

LEGEND

- UNSEALED PAVEMENT
- ROADWAY PAVEMENT
- BUNKER STORAGE
- BUILDINGS
- STORMWATER DETENTION BASIN
- BOUNDARY
- LINEMARKING

50 25 0 50 100
SCALE BAR (m)

When sheet printed full size, the scale bar is 100mm.
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INFORMATION ISSUE
NOT FOR CONSTRUCTION

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A	28.06.21	FOR INFORMATION	TD	TD	KW

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PENINSULA PORTS
PORT SPENCER GRAIN EXPORT FACILITY, S.A.
CIVIL WORKS
OVERALL SITE PLAN - (SCENARIO 1)

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Project Number
Sheet No.
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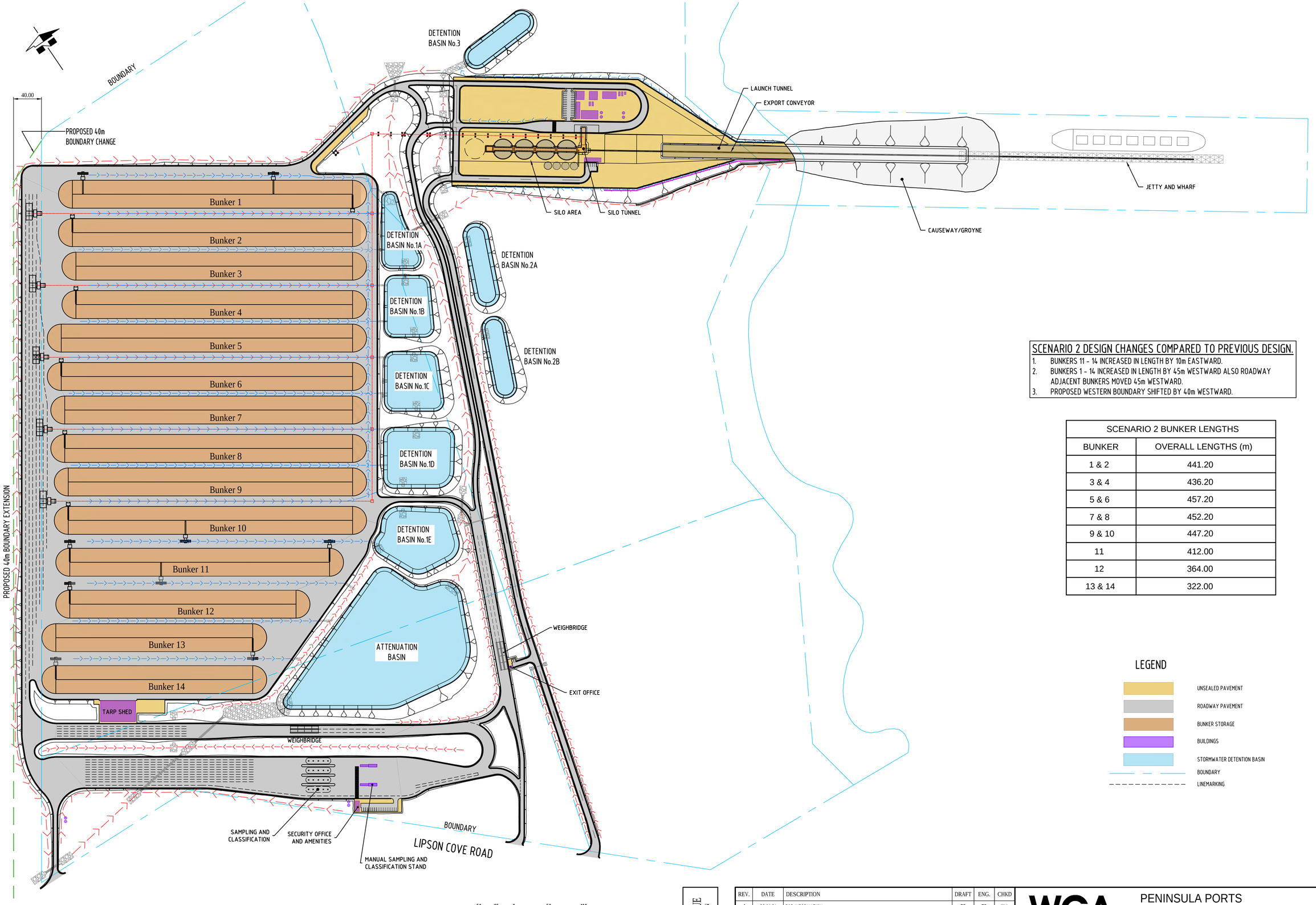

SCENARIO 2 DESIGN CHANGES COMPARED TO PREVIOUS DESIGN.

1. BUNKERS 11 - 14 INCREASED IN LENGTH BY 10m EASTWARD.
2. BUNKERS 1 - 14 INCREASED IN LENGTH BY 45m WESTWARD ALSO ROADWAY ADJACENT BUNKERS MOVED 45m WESTWARD.
3. PROPOSED WESTERN BOUNDARY SHIFTED BY 40m WESTWARD.

SCENARIO 2 BUNKER LENGTHS	
BUNKER	OVERALL LENGTHS (m)
1 & 2	441.20
3 & 4	436.20
5 & 6	457.20
7 & 8	452.20
9 & 10	447.20
11	412.00
12	364.00
13 & 14	322.00

LEGEND

- UNSEALED PAVEMENT
- ROADWAY PAVEMENT
- BUNKER STORAGE
- BUILDINGS
- STORMWATER DETENTION BASIN
- BOUNDARY
- LINEMARKING

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CIVIL WORKS
OVERALL SITE PLAN - (SCENARIO 2)

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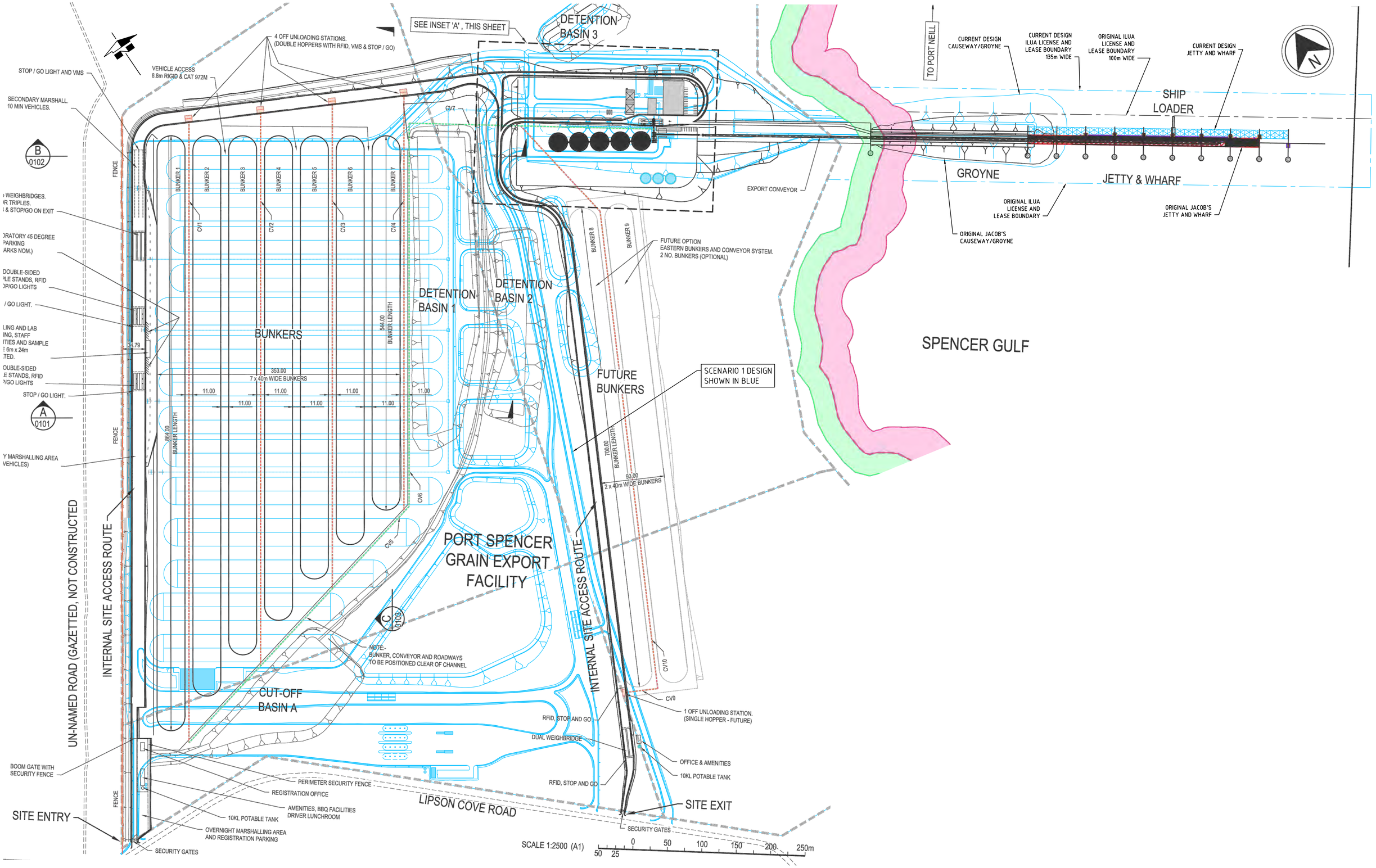

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SCENARIO 1 V ORIGINAL JACOB'S DESIGN ©

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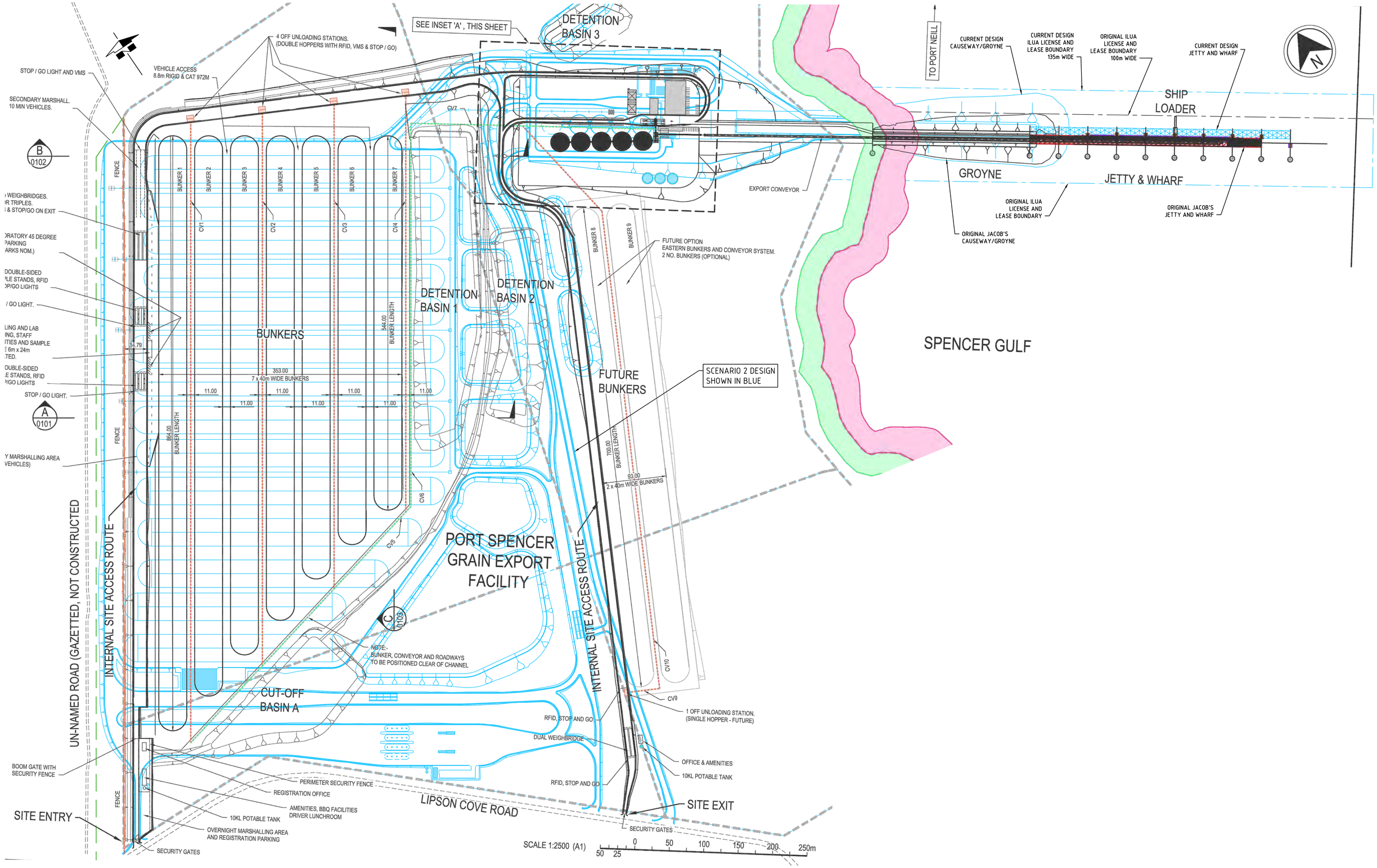

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