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Quantem Bunbury Terminal Development

DWER Native Vegetation Clearing Permit Application – Supporting Documentation

Quantem

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Appendices

1 Introduction

1.1 Background

Quantem (Proponent) is a private company and operator of bulk liquid storage and handling facilities in Australia and New Zealand. The Proponent is requiring the construction of a bulk liquid storage facility within the Bunbury Port in Western Australia (Project).

The proposed Project will comprise both existing tanks relocated from the GrainCorp Fremantle Terminal and new storage tanks. Project relocation is due to end of lease agreement with Fremantle Ports.

This application relates to clearing of 4.35 ha for the construction and installation of:

- 21 tanks with a total Storage Capacity of 26,858 m3 for storing tallow, methanol, caustic soda and solvents
- Pipeline Corridor running from the Project Boundary to Berthing Station 8.
- Site transformer(s) and switch room, electric steam boiler, export pumps and metered truck load out gantry, load in facility with weigh bridge
- Fire water tanks, fire and foam pump containers, nitrogen generation skid, air compressor and maintenance shed, IBC and drum storage shed, possible solar panel array
- Administration buildings (i.e., office block, driver's office)
- On site drainage, waste, and stormwater management systems

Clearing approvals is being sought for the whole Project Development Envelope (PDE) or Clearing Permit Application Area covering a total of 4.35 ha which includes the Pipeline Corridor Development Envelope and bulk liquid storage infrastructure Development Envelope.

1.2 Purpose and Scope

Provisions under the *Environmental Protection Act 1986* (EP Act) and *Environmental Protection Clearing Regulation 2004* (Clearing Regulations) administered by the Department of Water and Environmental Regulations (DWER) requires that all clearing in Western Australia be undertaken under an approved Native Clearing Permit (NVCP) unless clearing is exempted under the *Environmental Protection (Clearing of native Vegetation) Regulations 2004*.

Initial discussions with DWER- Clearing Permit application advised that:

- No exemptions apply for the site
- Clearing Referrals do not apply to the site
- A Native Clearing Permit must be submitted

Therefore, this report has been developed to support a Native Clearing Permit Application of type *"Purpose"* provided that the land is being leased from the Southern Ports Authority.

This report has been developed in accordance with the NVCP application form *"Application for new permit or referral to clear native vegetation".*

1.3 Proponent and Owner Details

Land ownership and land lease details have been provided in **Error! Reference source not found.** below.

Table 1-1. Land ownership details

Subject	Description
Lot address	Lot 963 Estuary Drive, Vittoria, Bunbury Lot 963 On Plan 220558
Common name of the site	Bunbury Ports
Current certificate of title	TBC - Land access agreement still under negotiation
Landowner	Southern Ports Authority
Local Government Authority	City of Bunbury
Coordinates	376456.65 m E, 6312500.66 m S
Land Zoning	GBRS Category Port Installations; City of Bunbury LPS 8

Proposed project footprint currently lies above Alcoa's leased land. Therefore, the following points are to be noted:

- Processes are currently in place for Alcoa to relinquish their tenure for Quantem to lease the land.
- As per DWER Clearing Permit System and Map Viewer (DWER, 2022), Alcoa has an active clearing permit - CPS 7825/1 (Purpose type) subject to expiry on 24/02/2023 which crosses part of the footprint. However, given that it is a Purpose Permit, upon relinquishment of the tenure, it has been assumed that CPS 7825/1 would be void.

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Legend

Project Development Envelope (4.35ha)

Notes: Esri, HERE, Garmin, Foursquare, METI/ NASA, USGS, Esri, Geoscience Australia, NASA, NGA, USGS

Date: 28/10/2022 Version: 1

Author: PVC File: P521420_ProjectDevelopmentEnvelope.aprx

A4 scale: 1:3,500

0 50 100 Metres

Job No: P521420

Coordinate System: GDA 1994 MGA Zone 50

Quantem Bunbury Terminal

Figure 1-1. Project Development Envelope

1.4 Environmental Assessment

Various environmental studies were commissioned by specialist consultants to support the whole suite of approvals including planning and environmental. The environmental studies included desktop assessments as well as a site visit.

To support the NVCP Application, a Biodiversity Survey was undertaken as described below. A copy of the report has been appended in Appendix Appendix A – *Flora, Vegetation and Fauna Assessment – Part Lot 963 Estuary Drive,* Vittoria .

Ecology Specialist: **Emerge Associates in August 2022**
Title of Survey: Flora, Vegetation and Fauna Assessment – Part Lot 963 Estuary Drive, Vittoria
Report Ref: EP22-080(01)—002 SKP
Description: Scope of works were undertaken in accordance with the EPA Technical Guidance: Flora and Vegetation Surveys for Environmental Impact Assessment (EPA, 2016a). Assessment included a desktop investigation followed by a site visit. Investigation was undertaken during the Spring Season which is the recommended season to undertake surveys in that area. Clearing Principles Assessment was also undertaken by Emerge Associates to support this application.

1.5 Regulatory Approvals

Other Environmental and Planning Approvals required to support this project has been provided in Table 1-2 below.

Table 1-2. Environmental and Planning Approvals

Act	Approvals	Description
Environmental Protection Act 1986	Part IV Approvals	An assessment against the EPA Key Environmental Factors were undertaken to determine the Environmental Approvals Strategy for this Project. No Significant Impacts to any Key Environmental Factors were determined as part of the assessment.
	Part V – Prescribed Premises	Initial scoping meeting with DWER – Environmental Regulations determined that a Works Approval with registration pathway would be required for this project. A Works Approval Application has been developed and will be submitted. Engagement with DWER Part V team also occurred.
Mining Act 1978	Mining Proposal/Mine Closure Plan	Not applicable as project is not over mining tenement.
Rights in Water and Irrigation Act 1914	Construction of bores and Licence to abstract water.	Not required as part of this application.
Environmental Protection and Biodiversity Conservation Act 1986	Commonwealth Approvals	An assessment against the EPBC Significant Guidelines 1.1 and 1.2 was undertaken given that Black Cockatoos were identified during the flora survey. The assessment determined no Significant Impacts to MNES and therefore a referral would not be required. Refer to Appendix E for detailed assessment.
Port Authorities Act 1999 (WA)	Development Approvals	Development Approvals have been prepared and will be submitted to the Southern Ports Authority.
Dangerous Goods Safety Act 2004	Dangerous Goods and Major Hazard Facility	Project does not trigger Major Hazard Facility Status. Dangerous Goods Licence will be prepared and submitted to DMIRS.

2 Proposed Clearing

2.1 Clearing Activities

Clearing activities proposed as part of this project has been provided in Table 2-1 below.

Table 2-1. Site details

Property	Description
Clearing Permit Application Area or Project Development Envelope (PDE)	4.35 ha
Amount of vegetation to be cleared (Native)	0.79 ha
Purpose of Clearing	Construct bulk liquid storage facility and pipeline corridor
Final land use post clearing	Bulk liquid storage facility and pipeline corridor
Method of clearing	Mechanical clearing
Timeframe of clearing	Upon approval of NVCP and Works Approval Application
Post operational land use	Industrial

2.2 Avoidance and Mitigation

Project design took into consideration avoidance and mitigation measures to minimise clearing of native vegetation. However, given the extent and size of operations and limited availability of space, all of the vegetation within the PDE would be removed given that all of the proposed infrastructure are critical to support the operations and proposed infrastructure would cover the whole footprint. Additionally, the PDE has been designed to fit all of the infrastructure without seeking additional extra footprint.

Consideration should be given that the whole project area is located within the Bunbury Ports which is a largely cleared industrial area with limited availability of land to conduct industrial activities.

3 Existing environment

3.1 Climate

Bunbury experiences a Mediterranean climate characterised by mild, wet winters and warm to hot, dry summers. The historical data from the Bureau of Meteorology (BOM) Bunbury Weather Station (ID 9965) shows that the regional area receives an annual mean rainfall of 728.6 mm with the highest rainfall being during the winter months (Bureau of Meteorology, 2022). The mean maximum temperature is 23.2°C, and the mean minimum is 11.1°C. Figure 3-1 summarises the climate data for the area.

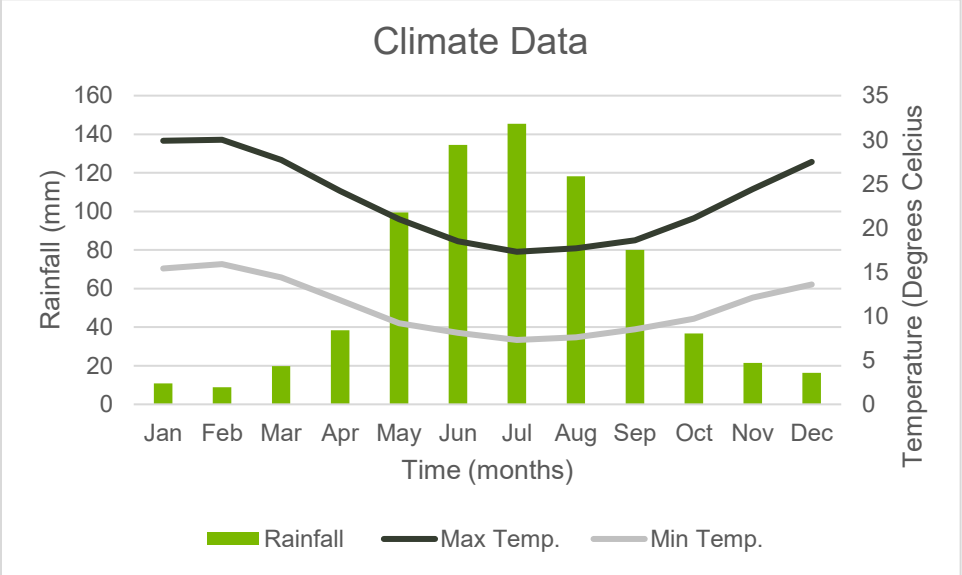


Figure 3-1. Average rainfall and temperature data (Station ID 9965)

3.2 Heritage

A desktop search using the Aboriginal Heritage Inquiry System (AHIS) identified the development site was historically surveyed and that no registered heritage sites or other heritage sites were identified.

Refer to Appendix Appendix C – Heritage Surveys for searches.

Project is located within the Southwest Native Title Settlement Group. Given that site is being leased from the Southern Ports Authority (SPA) who hold principal agreement to disturb the site with the Native Title Group, lease agreement and negotiation would consider Native Title implications and does not form part of this approvals.

3.3 DWER ESA

The *Guidance for the Assessment of Environmental Factors – Separation Distances between Industrial and Sensitive Land Uses No. 3* (EPA, 2005) identifies that bulk chemical storage facilities should consider a buffer of 500 m to 1000 m.

Error! Reference source not found. summarises other DWER sensitive receptors around the project area (as per the *Guidance for Environmental siting - Part V, Division 3, Environmental Protection Act 1986* (DWER, 2016)).

Table 3-1. DWER sensitive receptors - Guidance for Environmental siting (DWER, 2016)

GIS dataset title	Relevant department	Description	Occurs within buffer* of 500 to 1000m of project site	GIS dataset reference
Ramsar sites in Western Australia	Department of Biodiversity, Conservation and Attractions (DBCA)	Wetlands recognised through the Ramsar Convention as internationally important.	None	https://catalogue.data.wa.gov.au/dataset/ramsar-sites accessed 23/09/2022
Important wetlands – Western Australia	Department of Agriculture, Water and the Environment (DAWE) (Cth)	Nationally significant wetlands identified in *A directory of important wetlands in Australia*.	None	https://catalogue.data.wa.gov.au/dataset/directory-of-important-wetlands-in-western-australia accessed 23/09/2022
Geomorphic Wetlands Swan Coastal Plain (management)	DBCA	This dataset has the location, boundary, geomorphic classification (wetland type) and management category (Conservation, Resource Enhancement or Multiple Use) of wetlands on the Swan coastal plain.	Preston River runs 230 m to the south-east of the Project boundary and is classified as a Conservation Management Category wetland. The river is also a registered aboriginal heritage site (Reg. ID 16713). The Preston River connects to the Vittoria Bay or Collie River Waugal Aboriginal Site # 16713 which is classified as a Conservation Management Category Wetland. The site # 16713 polygon is approximately 257 m to the project boundary. Approximately 240 m east to the project and extending north is the Leschenault Estuary, which is the 'conservation' wetland -Feature ID: 15513. Approximately 53 m South to Southeast of the Project is a Multiuse Management Wetland polygon (Feature ID: 1052). The wetland is an estuary peripheral wetland type and basin landform type. Approximately 94 m North of the Project boundary is another Multiuse Management Wetland polygon (Feature ID: 15505). The wetland is an estuary peripheral wetland type and basin landform type. There are no wetlands located within the Project Development Envelope.	https://catalogue.data.wa.gov.au/dataset/geomorphic-wetlands-swan-coastal-plain accessed 23/09/2022

GIS dataset title	Relevant department	Description	Occurs within buffer* of 500 to 1000m of project site	GIS dataset reference
Parks and Wildlife Managed Lands and Waters	DBCA	Parks and Wildlife (DBCA) managed lands and waters in Western Australia including national parks, nature reserves, conservation parks, ex-pastoral leases, freehold land the department manages or has an interest in, miscellaneous reserves, marine parks, marine nature reserves, marine management areas, section 5(1)(g) reserves, state forest and timber reserves.	None	https://catalogue.data.wa.gov.au/dataset/dbca-legislated-lands-and-waters accessed 23/09/2022
Bush Forever: Regional open space or proposed regional open space	Department of Planning, Lands and Heritage (DPLH)	Bush Forever provides a policy framework to ensure bushland protection and management in the Perth metropolitan area is addressed and integrated with broader land use planning and decision-making.	None	https://catalogue.data.wa.gov.au/dataset/bush-forever-areas-2000-dop-071 accessed 23/09/2022
Regional Parks	DBCA	This refers to eight regional parks that make up most of the land reserved for parks and recreation in the metropolitan area. The current land tenure arrangements within the regional parks are complex, with a number of different landholders of both crown and private land.	Kalgulup Regional Park polygon lies approximately 444 m from the Project boundary.	https://catalogue.data.wa.gov.au/dataset/regional-parks accessed 17/10/2022
Waterways Conservation Areas	Department of Water and Environmental Regulation (DWER)	Management areas as declared under the *Waterways Conservation Act 1976*.	The Project falls within the Leschenault Inlet Management area.	https://catalogue.data.wa.gov.au/dataset/waterways-conservation-act-management-areas accessed 23/09/2022
Drinking Water Source Areas	DWER	Public water source areas proclaimed under the *Metropolitan Water Supply, Sewerage and Drainage Act 1909* and	None within 1000 m	https://catalogue.data.wa.gov.au/dataset/public-drinking-

GIS dataset title	Relevant department	Description	Occurs within buffer* of 500 to 1000m of project site	GIS dataset reference
		the *Country Areas Water Supply Act 1947.*		water-source-areas accessed 23/09/2022.
Hydrography WA 250K – Surface Water Polygons (GA 2015)	DWER	Western Australia's major streamlines, coded with a hierarchy and named. The dataset includes many streams in addition to the detailed hydrography in areas where its data is limited (e.g. Eastern Wheatbelt and Western Plateau). Dataset is designed to evolve as more information becomes available.	Refer to inland waters	https://catalogue.data.wa.gov.au/dataset/hydrography-linear-hierarchy accessed 23/09/2022.
Acid Sulphate Soils Risk Map, Swan Coastal Plain	DWER	Map of the risk of land development activities disturbing acid sulphate soil (ASS) materials, based on the likelihood of ASS materials occurring within soil profiles.	The 'Acid Sulphate Soils Risk Map, Swan Coastal Plain' dataset does not identify ASS in the area. See section 3.5 Acid Sulphate soils for analysis of acid sulphate soils within the Project boundary. There is identified ASS as per sampling completed, however, ASS was not identified on soil profiles likely to be disturbed as part of this Clearing Permit.	https://catalogue.data.wa.gov.au/dataset/acid-sulphate-soil-risk-map-swan-coastal-plain-dwer-055 accessed 23/09/2022.
Contaminated Sites – Reported Sites	DWER	This database holds information on confirmed contaminated sites (those classified 'contaminated – remediation required', 'contaminated – restricted use' and 'remediated for restricted use'). The Reported Sites Register has information on all other reported sites.	Project site is deemed as "Contaminated". Site has been reported to DWER under the *Contaminated Sites Act 2003.* Southern Ports Authority and DWER are working on Contaminated Sites issues and concerns. Site Contamination does not form part of this assessment.	https://catalogue.data.wa.gov.au/dataset/contaminated-reported-sites-dwer-059 accessed 23/09/2022.

3.4 Soil and Water Sampling Plan

The site is located the Swan Coastal Plain 2 (SWA2 – Swan Coastal Plain subregion) of Western Australia (Mitchell, Williams, & Desmond, 2002). The development area was underlain partially with fill around the 1960s-1970s, which was likely comprised dredge spoil sourced from the dredging of the Bunbury Port.

An Environmental Baseline Assessment (EBA) was commissioned by Quantem prior to signing a lease agreement with SPA where a total of nine boreholes were drilled across the site. Soil profiles were logged, and discrete samples collected from various depths. Two of the boreholes (EMW1 and EMW2) were advanced to 5 meters below ground level (mbgl) and then converted to groundwater monitoring wells. The wells were screened from 2 mbgl to 5 mbgl. Boreholes EBH01 – EBH07 were advanced to a maximum depth of 3 mbgl for the collection of soil samples before subsequent backfilling. A sampling and analysis summary for each soil sample collected is presented in Table 3-2.

Table 3-2. Primary Soil Samples and Analysis

Sample ID	Sample Depth (mbgl)	Sample ID	Sample Depth (mbgl)	Analyses
EBH01_0-0.5	0 – 0.5	EBH06_2.5-3.0	2.5 – 3.0	Full WA Waste Classification Suite Full PFAS[1] 28 Analytes Asbestos
EBH01_2.5-3.0	2.5 – 3.0	EBH07_0.5-1.0	0.5 – 1.0	
EBH02_0-0.5	0 – 0.5	EBH07_2.5-3.0	2.5 – 3.0	
EBH02_2.5-3.0	2.5 – 3.0	EMW1_0-0.5	0 – 0.5	
EBH03_0.5-1.0	0.5 – 1.0	EMW1_3-3.5	3.0 – 3.5	
EBH03_2.0-2.5	2.0 – 2.5	EMW1_4.0-4.5	4.0 – 4.5	
EBH04_0-0.5	0 – 0.5	EMW2_0-0.5	0 – 0.5	
EBH04_2.5-3.0	2.5 – 3.0	EMW2_3-3.5	3.0 – 3.5	
EBH05_0-0.5	0 – 0.5	EMW2_4.5-5.0	4.0 – 4.5	
EBH06_0.5-1.0	0.5 – 1.0	-	-	

[1] Perfluoroalkyl and Polyfluoroalkyl Substances

No significant impacts or concerns were identified for groundwater and soil from clearing activities. Further environmental baseline information has been provided in Appendix D.

3.5 Acid Sulphate soils

An initial desktop review of the Australian Soil Resource Information System indicated the site is located within an area of low probability of ASS risk.

A total of 19 primary soils samples were collected during the investigation. The samples were analysed for indicative screening tests including field pH and pH_{FOX} followed by Suspension Peroxide Oxidation Combined Acidity and Sulphur (SPOCAS) suite. Results were screened against the criteria in *Identification and investigation of acid sulfate soils and acidic landscapes* (DWER, 2015).

Within the soil samples analytical data indicated presence of sulphides and would need some management during construction. The groundwater of the site was noted at approximately 3mbgl at select locations.

No ASS concerns were identified within the upper soil profile. Ground disturbance activities associated with this project are constrained with the upper soil profile which does not present any ASS risks.

Further excavational works, if required further below the upper soil profiles where ASS can potentially be disturbed which does not form part of this activity type, would be managed under Part V Works Approval Application.

3.6 Vegetation and flora

An ecology survey was completed across the application area and immediately adjacent area on 18 August 2022, with the full results presented within Appendices Appendix A – *Flora, Vegetation and Fauna Assessment – Part Lot 963 Estuary Drive,* Vittoria .

Additionally, Emerge Associates conducted desktop database searches for threatened and priority flora, fauna, and ecological communities recorded within a 10km radius of the project using the *Protected Matters Search Tool* (Department of Agriculture, Water and the Environment (DAWE) , 2022), *NatureMap* (Department of Biodiversity, Conservation and Attractions (DBCA), 2022), and DBCA's threatened and priority flora, threatened and priority ecological communities', and conservation significant fauna databases and literature references.

3.6.1 Regional Vegetation

The proposed development site is located within the Swan Coastal Plain IBRA region (Department of Agriculture, Water, and the Environment, 2012). The Swan Coastal Plain comprises a low laying coastal plain that is covered mostly with woodlands (Mitchell, Williams, & Desmond, 2002). The development site's corresponding phytogeographical region per Beard's Natural Region is the Southwest Forest Region – Drummond (Darling–Drummond) (Beard, Beeston, Harvey, Hopkins, & Shepherd, 2013).

Within the 5km buffer around the development site covers 6 vegetation complexes as per the DBCA Vegetation Complexes - Swan Coastal Plain (DBCA-046) dataset (Heddle, Loneragan, & Havel, 1980; Department of Biodiversity, Conservation, and Attractions, 2018). These vegetation complexes include:

- Coastal Dune Complex – Low Closed Forest and Closed Scrub (System 6 Mapping unit no. 55)
- Woodland to tall woodland and open forest (System 6 Mapping unit no. 56)
- Closed scrub fringing woodland and open forest (System 6 Mapping unit no. 57)
- Open woodland (System 6 Mapping unit no. 42)
- Open forest and woodland (System 6 Mapping unit no. 49)
- Fringing woodland with localised occurrence of low open forest (System 6 Mapping unit no. 33)

3.6.2 Vegetation

During the survey, seven plant communities were identified within the site as represented in Table 3-3 below.

Table 3-3. Description and extent of plant communities identified within the site.

Plant community	Description
AHc	Open shrubland to shrubland of *Acacia* spp. and *Hibbertia cuneifolia* over grass and forbland of dense pasture weeds.
As	Open shrubland to shrubland of *Acacia saligna* over grass and forbland of dense pasture weeds and bare ground.
BcGtSp	Sedgeland of *Bolboschoenus caldwellii* and *Gahnia trifida* over forbland of *Senecio pinnatifolius* over dense pasture weeds in shallow water.
Co	Open woodland of *Casuarina obesa* over grass and forbland of dense pasture weeds.
EgA	Planted rows of *Eucalyptus gomphocephala* trees over shrubland of *Acacia* spp. and *Hibbertia cuneifolia* over dense pasture weeds or bare ground.
T	Grassland of *Typha* sp. in sumps with standing water.
Non-native	Heavily disturbed areas comprising weeds with occasional native shrubs and forbs and planted non-native vegetation.

The condition of all the plant communities was mapped as being in a 'degraded' condition due to the high weed cover, high level of historical disturbance, and low native species diversity. The remaining areas were mapped as being 'completely degraded' due to be being dominated by non-native species such as pasture grasses, and planted shrubs and trees.

The field survey identified no TECs or PECs that occur within the site. The presence of tuart trees within a plant community of planted rows of *Eucalyptus gomphocephala* trees over shrubland of *Acacia* spp. and *Hibbertia cuneifolia* over dense pasture weeds or bare ground was recorded but however after doing further assessment against the Commonwealth guidelines, the trees were de-risked after being assessed against the TEC criteria (see table below).

Table 3-4. TEC Assessment

Criteria	Requirements for meeting criteria	Site implications
1. Must meet key diagnostic characteristics	▪ Located in appropriate bioregion and landform ▪ At least 2 living established *E. gomphocephala* trees with DBH≥ 15cm present in canopy layer and with <60 m between the outer edges of canopies^ ▪ Vegetation structure is a woodland, forest, open forest, open woodland, or mallee (various forms)	▪ Site is located in appropriate bioregion and landform ▪ The patch contains more than two living established *E. gomphocephala* trees with DBH≥ 15cm present in canopy layer and with <60 m between the outer edges of canopies ▪ Vegetation within the patch comprises a woodland to open woodland structure.
2. Must meet size threshold	▪ A patch must be larger than 0.5 ha[#]	▪ The patches are >0.5 ha.
3. Must meet condition thresholds	▪ Patches >5 ha: no condition threshold ▪ Patches ≥0.5 – <2 ha: 'very high' or 'high' condition † ▪ Patches ≥2 – ≤5 ha: 'very high', 'high' or 'moderate' condition †	▪ The patches comprise 0.65 ha and 2.29 ha and so are subject to condition thresholds. ▪ The patches do not meet the condition thresholds.
4. Must incorporate surrounding context	▪ Breaks (e.g., tracks, cleared areas) < 30 m do not separate vegetation into separate patches ▪ The site should be thoroughly sampled in the appropriate season. ▪ Survey timing should be appropriate ▪ Surrounding environment should be considered (e.g., connectivity, conservation values, fauna habitat)	▪ Breaks such as tracks exist within each of the patches. ▪ The survey timing was sufficient to determine whether the patch represents the TEC.
Result	The site does not support the tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain TEC.	

^Includes dead trees. Where species of dead tree is unclear it is assumed to be E. gomphocephala if its canopy is within 60 m of an identified E. gomphocephala tree. [#] Note, that a patch comprises a 30 m buffer around the canopy of each E. gomphocephala canopy tree, may extend beyond a lot boundary and may include areas of bare ground, waterbodies and hardscape.

**Using the condition scale provided in Approved Conservation Advice (incorporating listing advice) for the Tuart (Eucalyptus gomphocephala) woodlands and forests of the Swan Coastal Plain ecological community (Department of Environment and Energy, 2019).*

3.6.3 Flora

A total of 20 native (including 4 planted) and 35 non-native (weed) species were recorded during the field survey. There were no threatened or priority flora species identified within the site. These species are listed within Appendices **Error! Reference source not found.**.

There were two species recorded within the site which are listed as a declared pest per the *Biosecurity and Agricultural Management Act 2007* (BAM Act), *Asparagus asparagoides* (bridal creeper) and *Gomphocarpus fruticosus* (narrowleaf cotton bush). Bridal creeper, identified as a weed of national significance (WoNS), was identified within the site.

3.7 Fauna and Fauna Habitat

The fauna habitat values within the site have been compromised by the removal of most of the native vegetation and high level of historical disturbance. Fauna habitat values for ground dwelling species are considered to be minimal due to lack of remnant native understory vegetation.

The Carnaby's black cockatoo (*Zanda latirostris*), which is a threatened fauna species, was recorded within the site boundary. The 5 individuals were observed resting in a *Casuarina obesa* tree during the survey. No other threatened or priority fauna species were recorded in the site. The site occurs within the known range and breeding range of forest red-tailed black cockatoo and Baudin's cockatoo and so these species may occur.

One black cockatoo habitat tree was recorded in the northern portion of the site. This tree does not currently contain any hollows suitable for black cockatoo breeding. Some of the trees within the site, such as the tuarts and *Eucalyptus* sp., would provide foraging and roosting habitat for black cockatoos. However, since the small size of patches of this vegetation (<1 ha), it would not be considered a high value foraging resource for black cockatoos. Overall, black cockatoo habitat within the site is limited in quantity and quality.

A detailed MNES assessment against the Commonwealth Significant Guidelines 1.1 & 1.2 was done by Emerge Associates (Emerge Associates, 2022). Based on their assessment, the Proposed Action is not considered likely to represent 'significant impacts' to Carnaby's cockatoo, Baudin's cockatoo, or forest red-tailed cockatoo (see Appendix *Appendix E – Technical Assessment against MNES Significant Impact Guidelines Part Lot 963 Estuary Drive, Vittoria*.

Emerge indicated that a referral is not likely to be required for this project.

Heritage List (DPLH-090)	
Place No.	Place Name
344	Leschenault Homestead
348	St Patrick's Anglican Church (fmr) & War Memorial, Rathmines
2921	Boarding House (fmr)
3285	Cli f on Residence , Rathmines
3310	Thomas Tro t Co t age
5633	Wreck Site - Carbet Castle
5658	Wreck Site - Annie M Young
5678	House, Shed & Windmill, Bunbury
5686	House
5718	Parade Hotel
5722	House
5724	House
6592	House & Windmill
6593	House
6603	House
10079	Buswell Co t age

Heritage Council WA - Local Heritage Survey (DPLH-008)	
Place No	Place Name
344	Leschenault Homestead
348	St Patrick's Anglican Church (fmr) & War Memorial, Rathmines
2921	Boarding House (fmr)
3285	Cli f on Residence , Rathmines
3310	Thomas Tro t Co t age
4234	Rathmines Primary School (fmr)
4817	House
5606	Leschenault Co t age - Site
5631	Woodchip Loader
5633	Wreck Site - Carbet Castle
5637	Turkey Point Tearooms & Reserve
5658	Wreck Site - Annie M Young
5678	House, Shed & Windmill, Bunbury
5686	House
5698	S t rling Street Heritage Precinct
5718	Parade Hotel
5722	House
5723	House site
5724	House
6592	House & Windmill
6593	House
6603	House
10079	Buswell Co t age

Heritage Council WA - State Register (DPLH-006)	
Place Number	Place Name
344	Leschenault Homestead
348	St Patrick's Anglican Church (fmr) & War Memorial, Rathmines
2921	Boarding House (fmr)
3285	Cli f on Residence , Rathmines

Legend

- Buffer Areas Centre Point
- Project footprint
- Buffer Areas
- Bush Fire Prone Areas (OBRM-001)

Clearing Instruments Activities (Areas Approved to Clear) (DWER-076)

- CPS 7825/1

Heritage List (DPLH-090)

- Heritage List

Aboriginal Heritage Places (DPLH-001)

- Registered Site
- Other Heritage Place

Heritage Council WA - Local Heritage Survey (DPLH-008)

- Heritage Survey

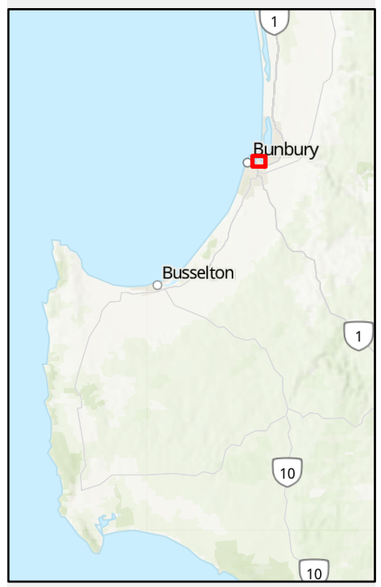
Heritage Council WA - State Register (DPLH-006)

- Individual Place

Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)

- Conservation
- Multiple Use
- Not Assessed

Notes: Esri, HERE, Garmin, FAO, NOAA, USGS, Esri, USGS



Date: 15/09/2022 Version: 1

A3 scale: 1:12,500

0 250 500 Metres

Job No: P521420

Coordinate System: GDA 1994 MGA Zone 50

Author: PVC

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Quantem Bunbury Terminal

Figure 3-2. Environmental constraints

4 Stakeholder Engagement

4.1 DWER – Environmental Regulations

A formal scoping meeting occurred with DWER – Environmental Regulations on 2 September 2022 to discuss the project. Advice received during the scoping meeting included:

- Works Approval with Registration Pathway would be the proposed approach
- DWER did not express significant concerns in regard to the emissions and discharges relating to the project

4.2 DWER – Clearing Regulations

An informal meeting occurred with a DWER Clearing Regulations representative in August 2022 where advice was sought on the following:

Aurecon: Would Clearing Permit exemption apply for this Project?

DWER: No exemption would apply for the Project.

Aurecon: Would a formal scoping meeting be required for the Project?

DWER: No formal meeting required.

Aurecon: Would the Project be eligible for the new NVCP Referral pathway?

DWER: No, Clearing Footprint too large for the referral to apply. Proponent to submit a normal NVCP Application

4.3 Southern Ports Authority

Various meetings have been held thus far between the Proponent and Southern Ports Authority in regard to the Development Application and lease agreements. Engagement is still ongoing.

5 Environmental Management and Rehabilitation

5.1 Environmental Management

Environmental management measures will be in place during clearing operations as summarised in Table 5-1 below. Quantem is committed to implementing required environmental management measures to mitigate the potential environmental impacts associated with clearing activities.

To ensure the below environmental management controls are appropriately implemented, all contractors will be required to complete a site induction which will cover the below risks and measures as a minimum.

Table 5-1. Environmental Management Controls

Aspect	Risk	Measure
Clearing operations	Clearing outside proposed project boundary	Ensure project boundary is clearly demarcated with pegs and spotter is used where required during clearing operations.
	Non – authorised disturbance	Approved clearing boundary demarcated. Traffic management plan to be communicated via inductions to all personnel to ensure that vehicles drive over approved areas only.
	Poor disposal of cleared waste	Waste generated as part of the clearing operations to be disposed appropriately to the nearest landfill.
	Hydrocarbon spills or leaks	Service logs to be maintained. All vehicles coming to site be checked for hydrocarbon leaks.
	Non authorised clearing techniques	Only mechanised clearing methodology to be used.
Weeds	Introduction of weeds	All vehicles accessing the project site is required to undergo weed hygiene protocols which includes: Vehicles checked for weeds, soil and organic matter prior coming to site. Vehicles to provide weed hygiene certificates prior coming to site.
	Declared Weeds	Where declared weeds as identified in Section 3.6 are recorded on site, eradication measures such as chemical spraying or mechanical removal be undertaken. Topsoil stripped from these areas be disposed offsite and not to be used for rehabilitation purposes. Care in handling and disposal of organic matter comprising declared weeds to minimize risk of seed dispersal in the area.
Hydrology	Hydrocarbon spills or leaks into adjacent wetland/waterway features arising from machinery used for clearing operations	A spill kit will be kept on site for potential chemical or fuel spills. The spill kit recommended to be appropriately sized for the volume of substances at the work site. All staff are to be made aware of the location of the spill kits and trained in its use. Contaminated material including spoils to be disposed offsite to approved landfill facility so that contaminated topsoil is not used during rehabilitation purposes.
		Service logs to be maintained. All vehicles coming to site to be checked for hydrocarbon leaks.
		Care to be taken while refuelling machinery to prevent potential spills or leaks.

Aspect	Risk	Measure
Land degradation	Excessive erosion leading to dust emissions from cleared areas	Clearing activities would occur progressively to minimise exposure of cleared surfaces to wind erosion. Where required, dust suppression activities are to be undertaken.
Fauna	Presence of fauna during clearing works	Ensure suitably qualified wildlife handler/spotter is on call during clearing works.
Topsoil	Topsoil stockpiling	Suitable topsoil for rehabilitation purposes would be stripped and stockpiled. Topsoil stockpile would be GPS coordinated and saved in Quantem EMS system.
Noise and vibration	Disturbance to surrounding receivers	Notification to surrounding receivers of upcoming clearing work.
Air quality	Excessive dust emissions from clearing of vegetation and disturbance of soil from machinery.	Dust suppression activities during clearing operations.

5.2 Rehabilitation

Notably, rehabilitation of the development site will occur in accordance with the Southern Ports Authority guidance and to the contractual agreement between Southern Ports and the Port user (Southern Ports Authority, 2021). At this stage, rehabilitation requirements are unsure provided the long life of the project. Should DWER require a decommissioning and rehabilitation plan, this could be provided at least 5 years prior to end of life of operations.

5.2.1 Progressive rehabilitation

Not applicable for this project given that all infrastructure would be required to support continuous use of storage facility.

5.2.2 Rehabilitation during construction

Temporary construction areas/infrastructure used to support construction activities would be decommissioned, waste sent to closest approved landfill, area not to be used for operations ripped and seeded with seeds of local provenance.

5.2.3 Decommissioning rehabilitation plan

Post operational activities, the following decommissioning activities would occur:

- All equipment would be decommissioned and either sold to a third party or disposed to the closest approved landfill
- Soil investigation would occur and data compared to baseline data. If significant pollution is determined, either compensation would be provided to SPA as site can be remediated as part of their overall detailed site investigation assessment or Quantem will undertake remediation as required.
- Site will either be rehabilitated which includes ripping and seeding unless SPA lease the land to another proponent.

Decommissioning and Rehabilitation activities would occur in accordance with SPA requirements under the *Ports Authority Act 1999* and is not expected to be covered under DWER Part V- Clearing Regulations.

At this stage, detailed rehabilitation requirements are unsure provided the long life of the project. Should DWER require a decommissioning and rehabilitation plan, this could be provided at least 5 years prior to end of life of operations.

6 Assessment against the Clearing Principles

Under Section 51C of the EP Act, clearing of native vegetation is an offence unless a clearing permit has been obtained or an exemption applies. When assessing clearing permit applications, DWER has regard to the ten clearing principles contained in Schedule 5 of the EP Act so far as they are relevant to the matter under consideration.

To support the associated clearing permit application, an assessment against the ten clearing principles have been undertaken as shown in Table 6-2. The assessment was undertaken using the following assessment categories:

- Not at variance – there is enough data to provide certainty
- Not likely to be at variance – there is an element of uncertainty
- May be at variance – there is insufficient data available to fully assess the impacts
- At variance – there are known impacts or significant risk of impact

All of the Clearing Principles were assessed as “Not at Variance” as summarised in the Table 6-1 below.

Table 6-1. Summary of response to each clearing principle.

Clearing principle	Description	Response to clearing permit principle
(a)	Native vegetation should not be cleared if it comprises a high level of biological diversity.	Not at variance
(b)	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	Not at variance
(c)	Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	Not at variance
(d)	Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.	Not at variance
(e)	Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	Not at variance
(f)	Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	Not at variance
(g)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Not at variance
(h)	Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	Not at variance
(i)	Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	Not at variance
(j)	Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	Not at variance

Table 6-2. Assessment against the ten principles of the EP Act Schedule 5 for clearing native.

Principle	Assessment	Conclusion
Principle (a) – Native vegetation should not be cleared if it comprises a high level of biological diversity.	The native vegetation present within the application area extends over 0.79 ha (18% of the application area). This vegetation is in 'degraded' condition according to the Keighery scale (Keighery, 1994), indicating it has a 'severely impacted vegetation structure and very low native plant species diversity. The remainder of the application area comprises non-native plant community and cleared areas, which extend over 3.55 ha (82% of the total). The 3.55 ha refers to the Project site only and there is no native vegetation within the pipeline corridor. The non-native plant community is dominated by non-native species, with scattered native plants. A total of 20 native (including four planted) and 35 non-native (weed) species were recorded in the field survey undertaken within the application area and immediately adjacent area. No threatened or priority ecological communities were identified within the application area, nor were any threatened flora species. The vegetation within the application area is consistent with the vegetation which surrounds the application area, being all located on reclaimed land and dominated by non-native vegetation. Based on the above, the application area is not considered to represent high floral diversity. In addition, due to the small size, degraded nature of the application area and lack of connectivity to areas of intact native vegetation, the application area is considered to provide limited fauna habitat.	The native vegetation within the application area is not considered to comprise a high level of biological diversity, and the proposed clearing is not at variance to principle (a).
Principle (b) – Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.	A review of the Protected Matters Search Tool (DAWE 2021) and NatureMap (DBCA 2021) indicates that several conservation significant fauna species are known to occur within the broader area. A review of the Atlas of Living Australia (Atlas of Living Australia (ALA), 2021) indicates that there are no records of conservation significant species within or adjacent to the application area. The application area occurs within the known range and breeding range of Carnaby's black cockatoo (*Zanda latirostris*), *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) and *Zanda baudinii* (Baudin's cockatoo). One threatened fauna species, Carnaby's black cockatoo, was recorded within the application area. Five individuals were observed resting in a Casuarina obesa tree during the survey. Black cockatoo breeding habitat within the application area consists of one habitat tree[1] which occurs in the northern portion. This tree is a native species *Eucalyptus gomphocephala* (tuart) and is likely planted. The tree does not currently contain any hollows suitable for black cockatoo breeding. Black cockatoo foraging habitat within the application area consists of scattered trees such as native tuarts and *Acacia saligna* (orange wattle) and non-native *Eucalyptus* sp., *Melia azedarach* (white cedar) and *Olea europea* (olive). Most of these species are foraged on by black cockatoos but are not considered primary food sources. Due to the small size of this vegetation (<0.5 ha) and that they are secondary food sources for black cockatoos, it would not be considered a high value foraging resource for black cockatoos.	Clearing within the application area is not considered to be at variance with Principle (b).

Principle	Assessment	Conclusion
	Some of the trees within plant community EgA in the application area may provide roosting habitat for black cockatoos. No evidence of roosting was observed within the application area during the field survey. Fauna habitat values within the application area have been compromised by the removal of most of the native vegetation and high level of historical disturbance. Given the small size of the application area, and its location within a highly disturbed and fragmented landscape, it is considered unlikely that any conservation significant fauna would utilise the application area to any material or significant degree. Based on the small extent of vegetation proposed to be cleared, the removal of vegetation within the application area is unlikely to have a significant impact on a habitat for fauna indigenous to Western Australia. [1] 'Black cockatoo habitat trees' are defined as native *Eucalyptus* sp./*Corymbia* sp. known to support black cockatoo breeding with a diameter at breast height of at least 500 mm.	
Principle (c) – Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No occurrences of rare (threatened) flora were recorded and no suitable habitat for threatened flora was identified within the application area. The flora and vegetation survey over the application area was undertaken in August during which most of the threatened flora species known to occur in the wider local area would have either been flowering or detectable (perennial species). As such most of these species would likely have been visible at the time of the survey.	The proposed clearing is therefore not at variance with Principle (c).
Principle (d) – Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a threatened ecological community.	The vegetation within the application area is not representative of any threatened or priority ecological communities, nor are any considered likely to occur within the application area.	The proposed clearing is therefore not at variance with Principle (d).
Principle (e) – Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.	Regional vegetation mapping shows that the application area is located within the 'Quindalup' and 'Yoongarillup' vegetation complexes. The 'Quindalup' vegetation complex is described as coastal dunes consisting mainly of two alliances - the strand and foredune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of *Melaleuca lanceolata*, *Callitris preissii* and closed scrub of *Acacia rostellifera*. The 'Yoongarillup' vegetation complex is described as comprising woodland to tall woodland of *Eucalyptus gomphocephala* (tuart) with *Agonis flexuosa* (peppermint) in the overstorey, sometimes with *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) (Heddle, Loneragan, & Havel, 1980). The 'Quindalup' complex was determined to have 60.49% of its pre-European extent remaining, with 9.84% protected for conservation purposes (Government of Western Australia, 2018). The 'Yoongarillup' complex was determined to have 35.81% of its pre-European extent remaining, with 14.14% protected for conservation purposes (Government of Western Australia, 2018). The application area comprises an artificial landform and has been subject to intensive historical disturbance. The vegetation within the application area is in 'degraded' and 'completely degraded' condition, indicating it is not	The vegetation in the application area does not represent significant remnant native vegetation and a high percentage of native vegetation remains within the relevant complexes. Therefore, clearing is not considered to be at variance with Principle (e).

Principle	Assessment	Conclusion
	intact native vegetation. Therefore, the vegetation within the application area does not meet the above descriptions of the 'Quindalup' or 'Yoongarillup' complexes and so does not represent these complexes.	
Principle (f) – Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.	A review of the Wetlands of the Swan Coastal Plain dataset (Department of Biodiversity, Conservation and Attractions (DBCA), 2017) indicates that no wetland features occur within the application area. One 'conservation' wetland (UFI 15513, Lechenault Estuary) occurs approximately 240 m to the east of the application area and extends to the north and south. Two 'multiple use' wetlands also occur close to the application area: UFI 1052 lies approximately 70 m to the south and UFI 15505 which occurs approximately 100 m to the north-east. A review of the Department of Water and Environmental Regulation (DWER) hydrography dataset does not show any watercourses within the application area (Department of Water and Environmental Regulation (DWER), 2018). The southern-most portion of the application area comprises a man-made sump and contains plant community T in degraded condition. This area is not considered to comprise an intact wetland area but is comparable with the multiple use wetland present to the south of the railway track.	The proposed clearing is not at variance to Principle (f) as there are no watercourses or wetlands present within the application area.
Principle (g) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.	Soil landscape mapping indicates that the application area is mapped within an area described as comprising 'disturbed soils and landfill' (Department of Primary Industries and Regional Development (DPIRD), 2019). Due to the features of these soils, the key risk for land degradation is wind and water erosion. The proposed clearing of vegetation is unlikely to cause substantial wind or water erosion within the application area, given the small amount of vegetation to be cleared. Procedures will be undertaken during construction to stabilise the landform to support the proposed infrastructure. In addition, mitigation measures will be employed during clearing, including dust suppression.	The proposed clearing is therefore not at variance to Principle (g).
Principle (h) – Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	The application area is located approximately 240 m from the Lechenault Estuary, which extends extensively to the east. Therefore, the clearing has the potential to impact the environmental values within a conservation area. However, the application area is not located directly adjacent to the conservation area and is not connected through a waterway or vegetated ecological linkage. Weeds (Department of Agriculture, Water and the Environment (DAWE), 2021) are already well established within the application area and between the application area and the estuary. Therefore, removal of native vegetation is unlikely to have an impact on the estuary, such as introducing weeds. Given the application area is located near to the Lechenault Estuary, the proposed clearing has the potential to impact on the environmental values of a conservation area. However, due to the lack of connectivity between the application area and the conservation area, presence of similar weed-dominated vegetation adjacent to the application area and the management measures that will occur during clearing to prevent the spread of weeds and pathogens/disease, there is not likely to be an impact on environmental values associated with the Lechenault Estuary.	The proposed clearing is not considered to be at variance to Principle (h).

Principle	Assessment	Conclusion
Principle (i) – Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.	Due to the small size of the clearing and high level of degradation currently present, it is unlikely that the clearing will cause acid sulphate soil disturbance or other issues that could cause a deterioration in groundwater quality. Similarly, no waterways occur within or adjacent to the application area and so it is unlikely that clearing will impact surface water and associated runoff.	Based on the assessment, the clearing is not at variance to Principle (i).
Principle (j) – Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.	There are no wetland or waterway features within the application area and the application area is not identified as being within a floodplain area (DWER, 2020). Based on this, the proposed removal of native vegetation within the application area is not considered likely to cause or exacerbate the incidence of flooding.	The proposed clearing is not considered to be at variance with Principle (j).

7 Conclusion

The clearing required for this proposal will result in the removal of 4.35 ha of vegetation. The native vegetation that does occur within the clearing footprint is in degraded or completely degraded condition (Emerge Associates, 2022).

Additionally, as the area has been subject to a high level of historical disturbance and is partially underlain by fill, it does not interconnect into surrounding native vegetation communities. Moreover, the appropriate environmental management controls through clearing, construction, and operation to mitigate the potential environmental impacts will be in place to ensure the area does not become more contaminated than it already is. The development has been assessed against the ten clearing principles listed in Schedule 5 of the EP Act determined no significant impact to the project.

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