

Department of Water and Environmental Regulation
Locked Bag 10
JOONDALUP DC WA 6919

Email: info@dwer.wa.gov.au

23 June 2021

Dear Sir/Madam

Re: Aqwest Water Resource Recovery Scheme – Recycled Water Treatment Plant, Assessment of the Ten Clearing Principles under Schedule 5 of the Environmental Protection Act 1986

Aqwest proposes to construct a water resource recovery facility, referred to as the Aqwest Water Resource Recovery Scheme (the Proposal), to supply recycled wastewater for use to irrigate public open spaces and major infrastructure projects in Bunbury. Aqwest will build and operate a new recycled water treatment plant (the Plant), which will source water for the scheme from the adjacent Water Corporation Bunbury Wastewater Treatment Plant, managed by the Water Corporation, in the suburb of Usher, Bunbury WA. This native vegetation clearing permit (NVCP) application covers the area required for the construction of the new recycled water treatment plant (the NVCP application area).

The Proposal which has received funding as part of the State Government’s WA Recovery Plan, will alleviate the use of high-quality potable water from the Yarragadee Aquifer, for these purposes. This innovative project will, in part, address the impact that climate change is having on water sources by protecting the sustainability of the Yarragadee Aquifer and its ongoing supply of potable water to homes in Bunbury.

Construction of the Plant is part of the overall Proposal to treat and distribute recycled wastewater in the Bunbury region. Further stages of the Proposal include of the construction of distribution pipelines to supply treated wastewater for irrigation for local sporting facilities (Stage 1) and local infrastructure projects (Stage 2). The final route and method of construction for the distribution pipelines is currently being designed and further approvals will be sought for these stages at a later time.

This letter has been prepared in support of an application for a NVCP under Section 51E of Part V of the EP Act, for construction of the Plant which forms part of the larger Proposal. See Figure 1 for extent of the NVCP application area. Construction of the Plant will include earthworks, construction of treatment plant infrastructure, fencing, lighting, roads, drainage and buried pipelines.

The NVCP application area covers 2.847 ha, of this 2.184 ha is native vegetation, with the remaining area being completely degraded existing cleared areas. Due to the layout and design of the Plant footprint not being finalised at this time, this application covers the 2.184 ha of native vegetation in the NVCP application area. The likely final clearing footprint will be 1.5 ha, with some portions of this area to include trenching for buried pipelines and batter slopes, which will be revegetated or allowed to return to native vegetation following construction.

Avoidance of native vegetation clearing was a key consideration in the preparation and planning of the Proposal alignment and infrastructure areas. Several site and layout options were explored, with the pipe route and infrastructure footprint with the lowest potential to impact on environmental factors selected as the preferred, following biological surveys and consultation with Department of Biodiversity Conservation and Attractions (DBCA) amongst other stakeholders.

The following relevant investigations have been undertaken for the purpose of the Proposal:

- Attachment 12537061-00000-EN-RPT-006- Bunbury Water Resources Recovery Scheme Flora and Vegetation Survey (GHD, 2021)
- Attachment 12537061-00000-EN-RPT-005- Bunbury Water Resources Recovery Scheme Fauna Assessment (Biota Environmental Services, 2021).
- Attachment 12537061-00000-EN-RPT-004- Report of an Aboriginal Archaeologic Heritage Survey for Two Proposed Waste Water Pipeline Routes (Brad Goode & Associates, 2020)
- Attachment 12537061-00000-EN-RPT-007-Phytophthora Dieback Occurrence Survey-Bunbury Water Resource Recovery Scheme (Great Southern Bio Logic, 2020)

Schedule 5 of the EP Act defines Ten Clearing Principles for native vegetation. These principles aim to ensure that all potential impacts resulting from removal of native vegetation can be assessed in an integrated way.

Clearing required for construction of the Plant has been assessed against the Ten Clearing Principles, in accordance with the DWER’s A Guide to the Assessment of Applications to Clear Native Vegetation (DER, 2014) to determine whether the application is at variance.

The assessment has been based on clearing of up to 2.184 ha of native vegetation within the NVCP application area. The assessment indicates that clearing of the NVCP application area may be at variance with principles (b) and (d) and is not considered likely to be at variance with the other principles.

Clearing required for construction of the Plant is also being referred to Department of Agriculture, Water and Energy under the EPBC Act.

A separate application to clear native vegetation will be prepared for the pipeline network as the location of the pipelines has not been finalised.

Limitations and assumptions

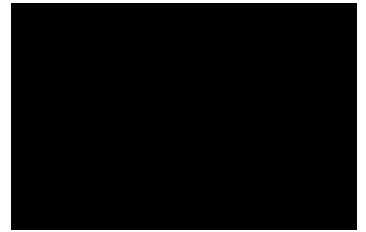
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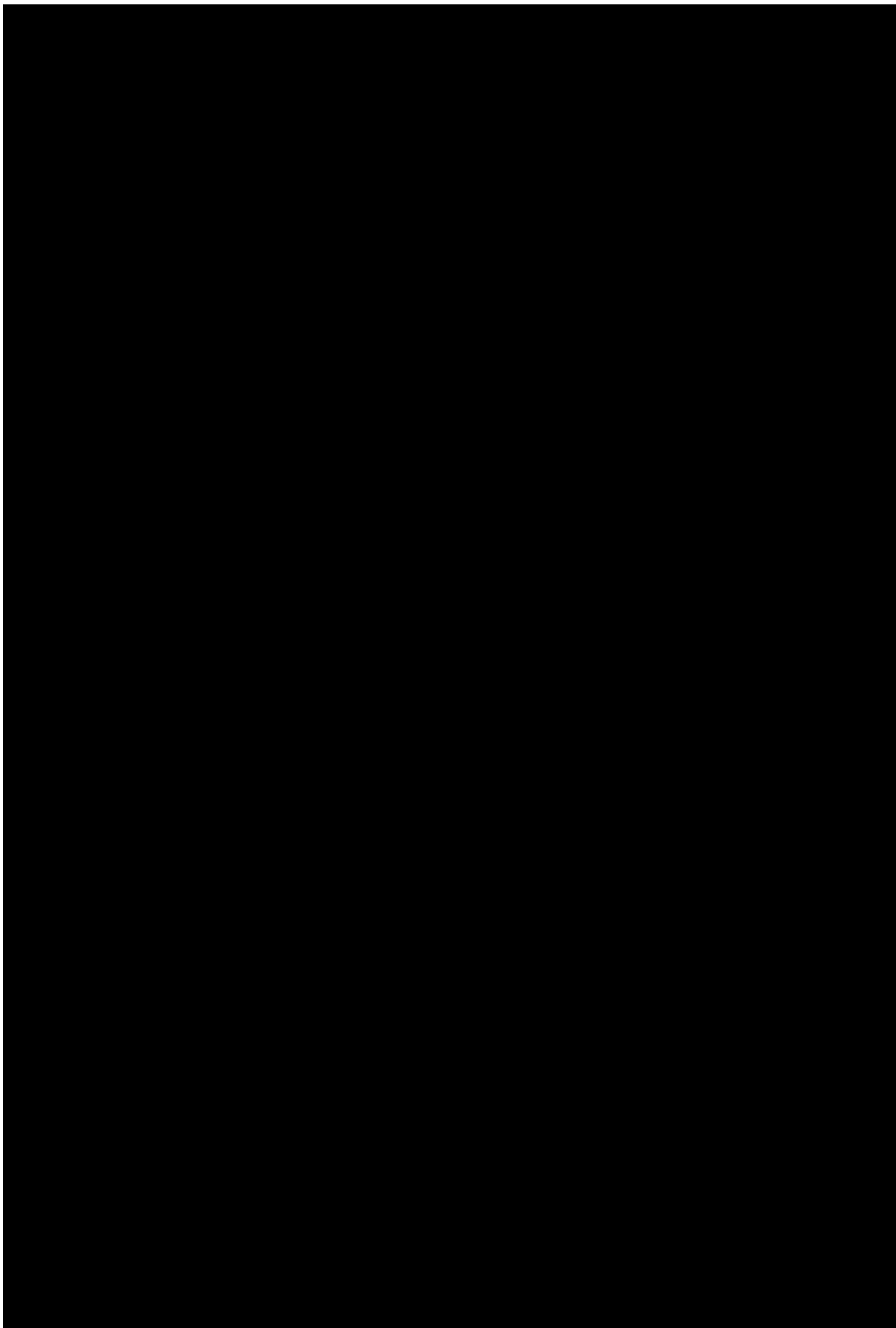
Yours faithfully

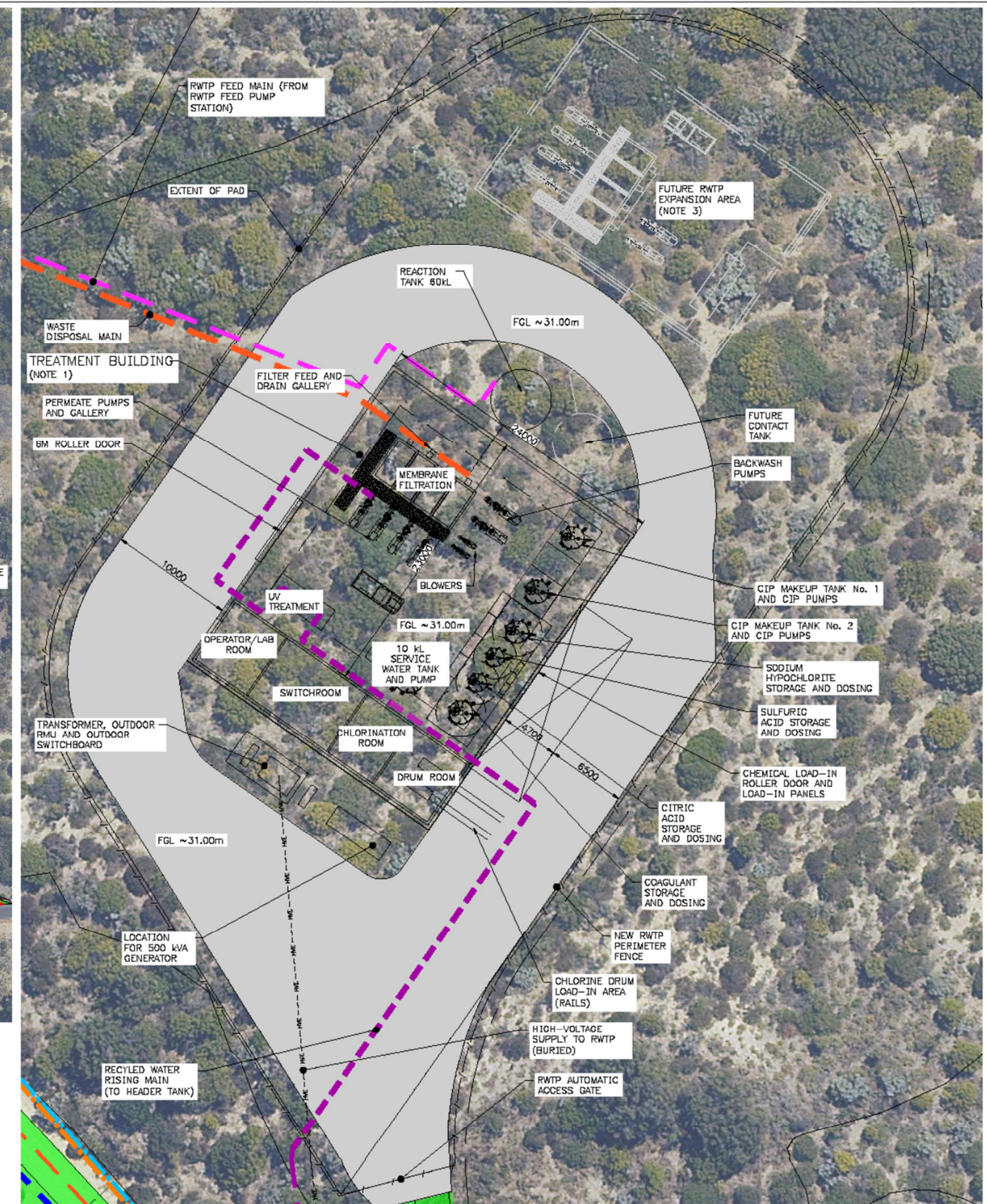
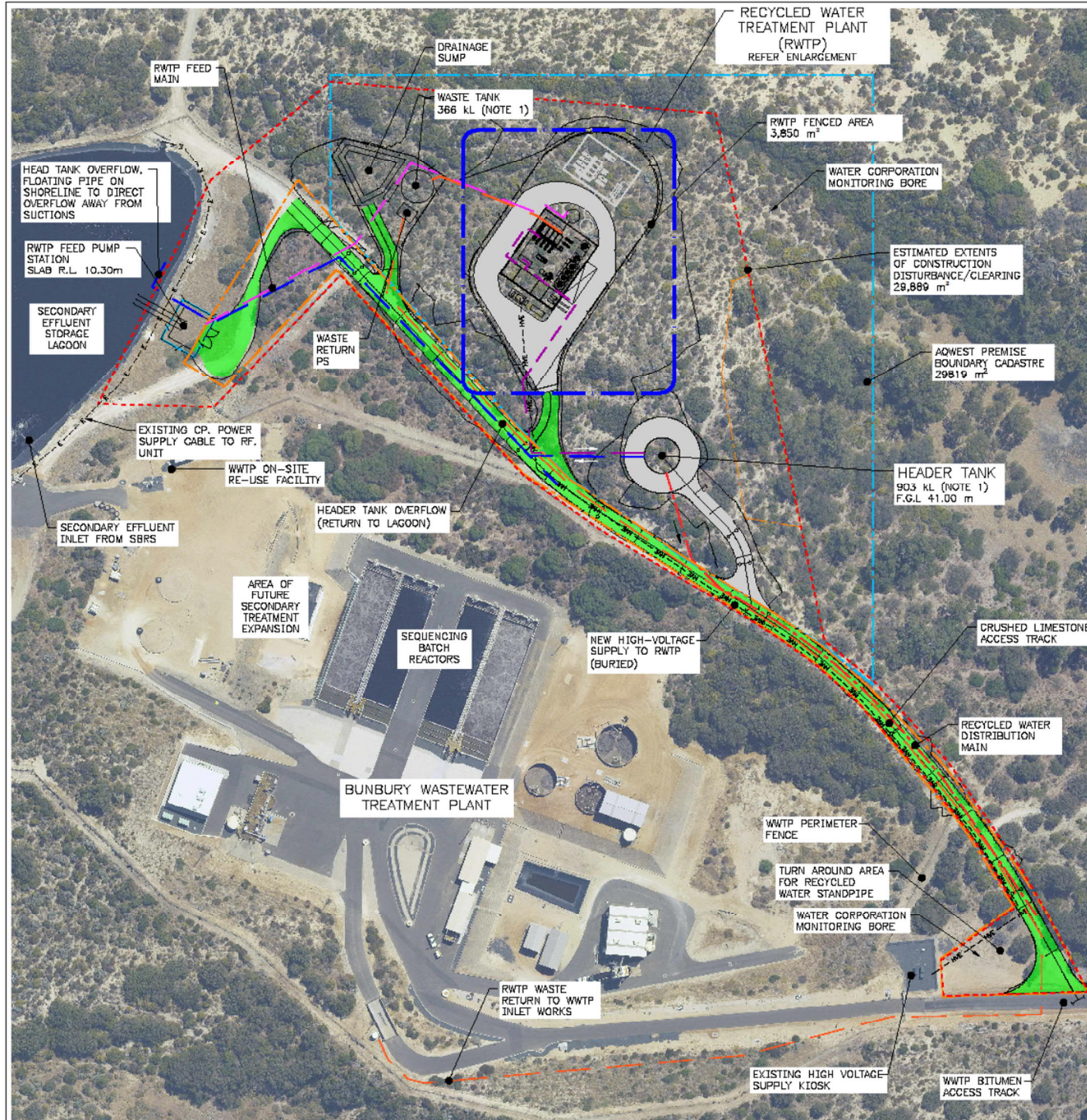


General Manager Water Services



Attachment 1 – Letter of Authority





- LEGEND**
- RWTP FEED MAIN (PFD STREAM 1)
 - HEADER TANK OVERFLOW (N/A)
 - RECYCLED WATER DISTRIBUTION MAIN (7)
 - WASTE RETURN MAIN (12)
 - FENCE
 - HIGH VOLTAGE ELECTRICAL CABLE (BURIED)
 - ESTIMATED CLEARING/DISTURBANCE EXTENTS DURING WORKS
 - SHARED ACCESS AND SERVICE CORRIDOR
 - SUGGESTED AQWEST PREMISES BOUNDARY
 - BITUMEN
 - CRUSHED LIMESTONE
 - EXISTING CONDUIT

PLAN
SCALE 1:1000

NOTES:

- ALL EQUIPMENT AND PLANT FOOTPRINTS ARE INDICATIVE ONLY AND ARE SUBJECT TO CONSEQUENT DETAILED DESIGN.
- LAYOUT ACCOMPANIES PROCESS FLOW DIAGRAM SK005 REV D, SK006 REV D AND SK007 REV D.
- FUTURE EXPANSION AREA SHOWN PROVIDES FOR FILTRATION AND UV EXPANSION OF 5.6 ML/d PRODUCT FLOW. ALL CHEMICAL AND STORAGE AND DOSING CONSTRUCTED INITIALLY SHALL PROVIDE FOR EXPANSION.

5 4 3 2 1 0 5 10 m (1:200)
 10 5 0 10 20 30 40 50 60 70 m (1:1000)

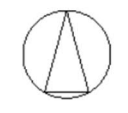
PLAN
SCALE 1:200

PRELIMINARY

J	RWTP LAYOUT REFINED FOR MEMBRANE SELECTION	SMT	RG	RG	08/21	
I	PREFERRED MEMBRANE VENDOR INCORPORATED	SMT	RG	RG	05/21	
H	EARTHWORKS AND SHED AMENDED	RG	RG	RG	06/21	
G	CADASTRE AMENDED, DRAINAGE SUMP AND BATTERS ADDED	RG	RG	RG	04/21	
F	FINALISED RWTP FEED PS LOCATION	RG	RG	RG	12/20	
No	Revision	Note: * Indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date

Plot Date: 11 June 2021 - 3:52 PM

Call File No: C:\Users\stully\AppData\Local\Autodesk\AutoCAD Plant 3D\CollaborationCache\Bunbury WRRS\Other\DWG\12537061 - SK001 - Bunbury RWTP Concept Layout.dwg



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Drawn	S.TULLY	Designer	R.GRLJUSICH
Drafting Check		Design Check	
Approved (Project Director)		Date	
Scale	AS SHOWN	This Drawing must not be used for construction unless signed as Approved	

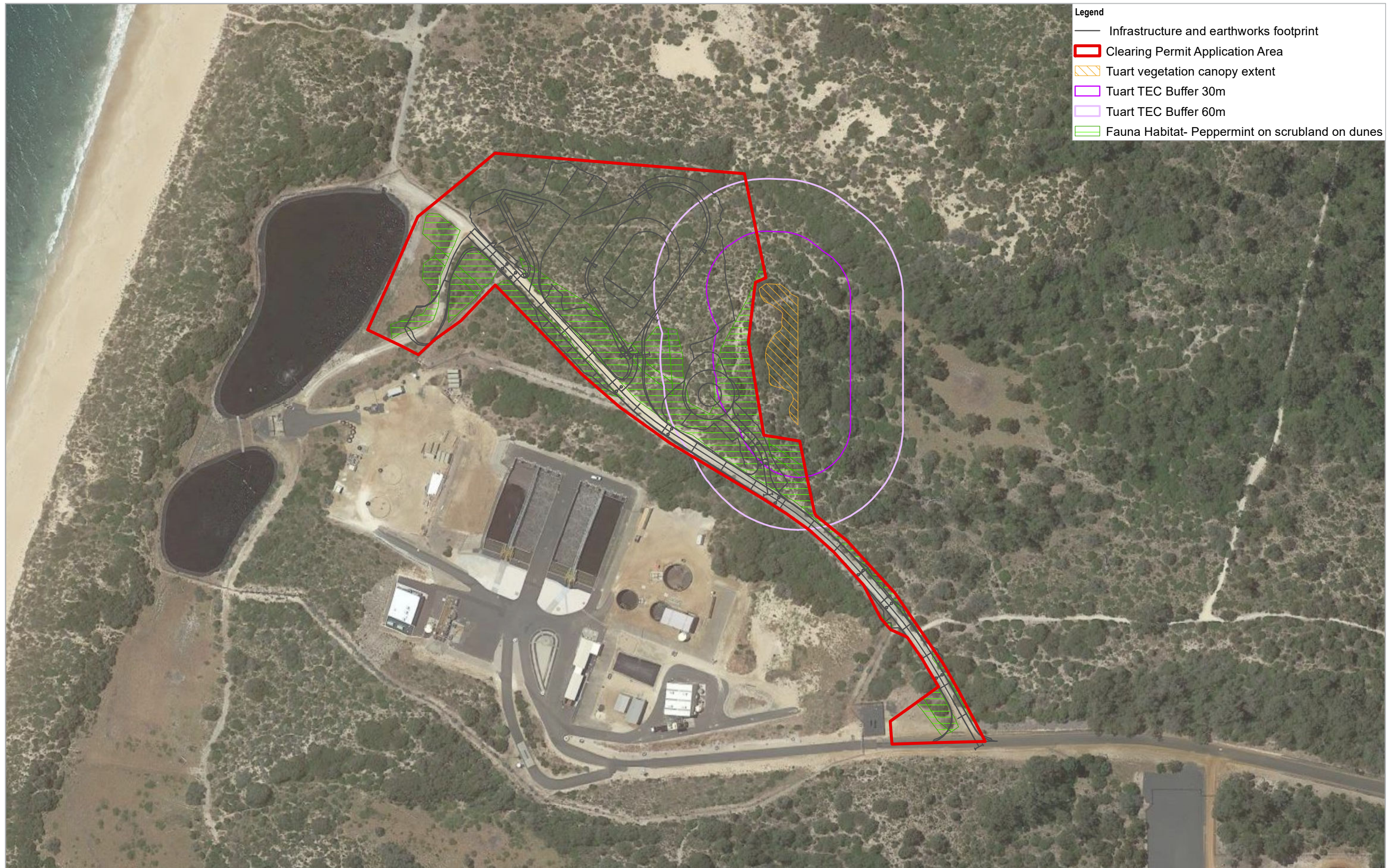
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Project	BUNBURY WRRS
Title	BUNBURY RECYCLED WATER TREATMENT PLANT CONCEPT LAYOUT
Original Issue	A1 ROLL
Drawing No:	12537061 - SK001
Rev:	J



Attachment 2 – Figures

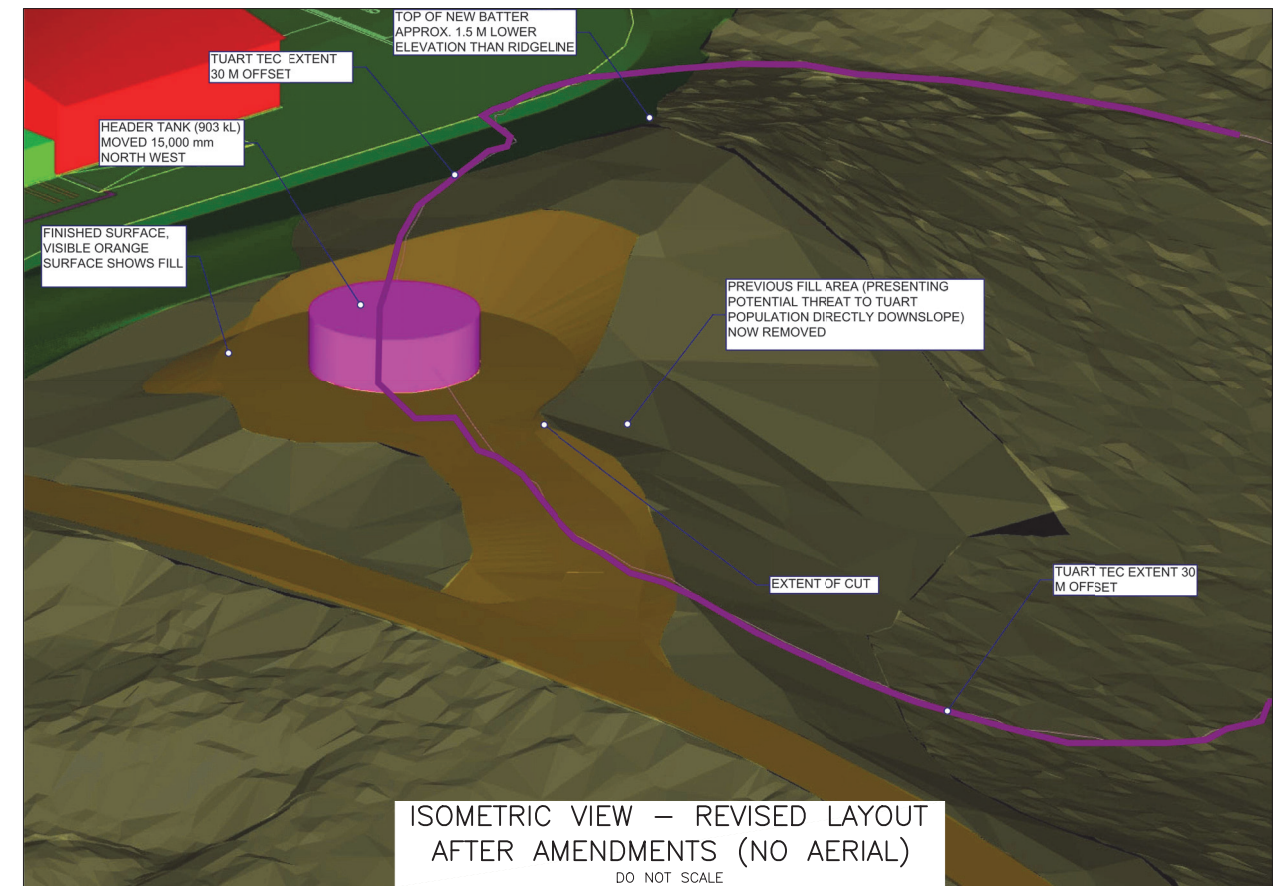
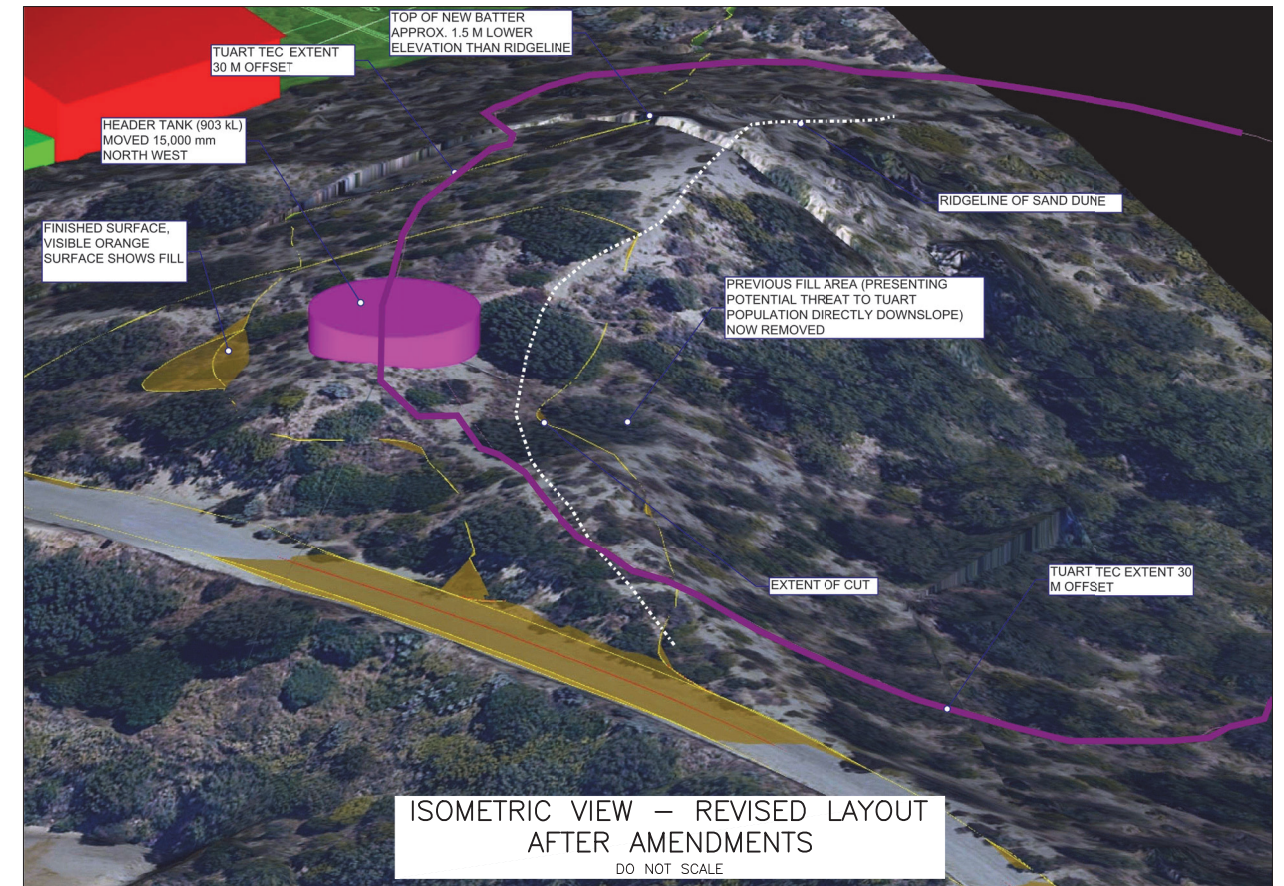
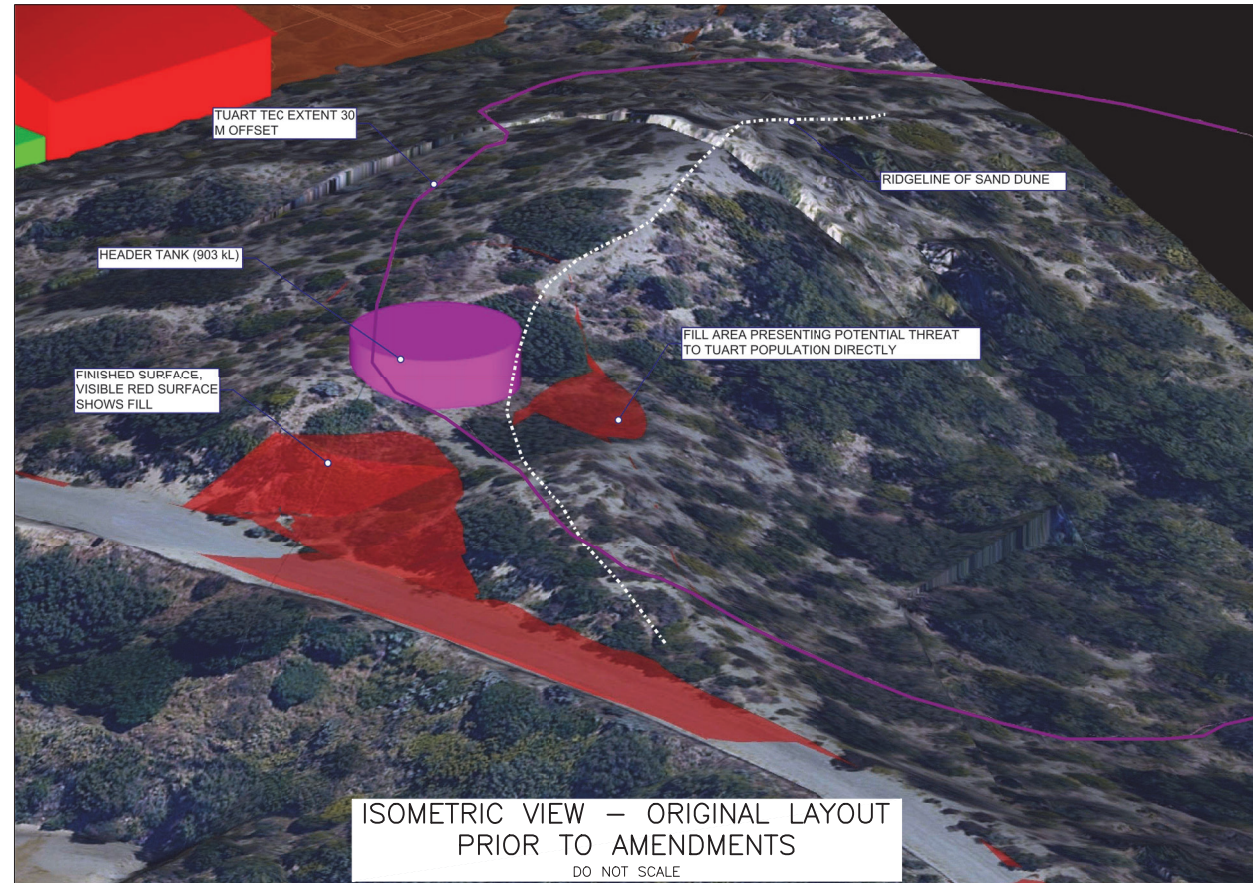
Figure 1: Clearing Permit Application Area

Figure 2: SK009- Revised Design to Accommodate Tuart TEC



- Legend**
- Infrastructure and earthworks footprint
 - Clearing Permit Application Area
 - Tuart vegetation canopy extent
 - Tuart TEC Buffer 30m
 - Tuart TEC Buffer 60m
 - Fauna Habitat- Peppermint on scrubland on dunes

<p style="text-align: center;">Paper Size ISO A3</p> <div style="text-align: center;"> <p>Meters</p> </div> <p style="font-size: small;">Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 50</p>			<p>Aqwest Bunbury Water Resources Recovery Schem</p> <p>Clearing Permit Application Area Treatment Plant</p>	<p>Project No. 12537061 Revision No. 01 Date 11/06/2021</p>
<p>C:\Users\afy\Documents\AqWest\GIS\Figure1 Clearing Permit Application Area.mxd Print date: 25 Jun 2021 - 11:47</p>				<p>FIGURE 1 Data source: . Created by: afy</p>



PRELIMINARY

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Job Manager	Project Director	Date



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Drawn	
Drawn Check	
Appr (P/C)	
Date	
Scale	

Client	AQWEST
Project	BUNBURY WRRS
Title	BUNBURY RECYCLED WATER TREATMENT PLANT REVISED DESIGN TO ACCOMODATE TUART TEC EXTENT
Original Size	A1
Roll	
Drawing No:	12537061 - SK009
Rev:	A

Attachment 3 – Assessment Against the Ten Clearing Principles

Principle	Assessment	Outcome
<p>A Native vegetation should not be cleared if it comprises a high level of biological diversity.</p>	<p>The NVCP application area includes 2.184 ha of native vegetation as described in the Flora and Vegetation Survey report (GHD, 2021), consisting of vegetation unit:</p> <ul style="list-style-type: none"> A1 – <i>Agonis flexuosa</i> Low Open-woodland over <i>Acacia cochlearis</i>, <i>Alyxia buxifolia</i>, <i>Diplolaena dampieri</i> Low Open-scrub – 2.184 ha (Good to Excellent condition) <p>A total of 294 flora taxa (including subspecies and varieties) representing 67 families were recorded from the entirety of the Proposal survey area. This total comprised 229 native taxa and 65 introduced flora taxa (GHD, 2021). For the three quadrats used to describe the vegetation within the NVCP application area (vegetation unit A) a total of 53 species were recorded.</p> <p>A desktop study (within 10 km of the survey area) returned a total of 202 vertebrate fauna species as having been recorded previously within the local area, consisting of 153 bird, 17 mammals, 22 reptile and 10 frog species. Of these, 190 are native and 12 are introduced (Biota Environmental Services, 2021). The 10 km radius used for the desktop assessment of the fauna assemblage encompasses habitat types, such as marine and freshwater habitats, that did not occur with the survey area. Therefore, specialist species, such as shorebirds, restricted to these habitat types are considered unlikely to occur within the NVCP application area.</p> <p>No conservation significant flora or fauna species were recorded within the NVCP application area.</p> <p>The NVCP application area comprises 2.847 ha (4.5%) of the total 63.97 ha covered by the field surveys, which were undertaken to compile the species diversity statistics provided above. Additionally, the full extent of the field surveys intersected a range of soil types and landforms, whereas the NVCP application area consist of a single land system (Quindalup dunes). As such it is expected that only a minor portion of the total biological diversity described above will occur in the NVCP application area.</p> <p>Given the presence of significant areas of intact coastal native vegetation to the north and south of the survey area, it is considered that the NVCP application area is not likely to comprise a greater diversity than similar areas, either locally or at a bioregional scale. Clearing for the Proposal is not likely to be at variance to this Principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>
<p>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.</p>	<p>The NVCP application area includes 2.184 ha of native vegetation, comprising two habitat types as described in the Fauna Assessment report (Biota Environmental Services, 2021). The habitat types include:</p> <ul style="list-style-type: none"> Peppermint on scrubland on dunes – 0.86 ha Coastal low open heath – 1.37 ha <p>The NVCP application area also includes 0.62 ha that was mapped as Cleared and 0.01 ha mapped as WWTP pond (not included in native vegetation, no modification to habitat proposed) in the Biota Environmental Services (2021) fauna habitat mapping.</p> <p>A desktop study (with 10 km of the survey area) returned a total of 202 vertebrate fauna species as having been recorded previously within the local area, consisting of 153 bird, 17 mammals, 22 reptile and 10 frog species. Of these, 190 are native and 12 are introduced (Biota Environmental Services, 2021).</p> <p>The likelihood of occurrence assessment undertaken by Biota Environmental Services (2021) concluded that of the 37 conservation significant fauna (threatened and priority listed species) identified in the desktop assessment, 22 may or are likely to occur and four species were identified within the broader survey area.</p>	<p>The proposed clearing may be at variance to this principle</p>

Principle	Assessment	Outcome
	<p>Based on the habitat types identified within the NVCP application area it is considered that seven conservation significant fauna species may occur or are considered likely to occur, including: May occur/ Likely to occur:</p> <ul style="list-style-type: none"> • Carnaby's Cockatoo (<i>Calyptorhynchus latirostris</i>) (EN) • Forest Red-tailed Black Cockatoo (<i>Calyptorhynchus banksii</i> subsp. <i>naso</i>) (VU) • Baudin's Cockatoo (<i>Calyptorhynchus baudinii</i>) (EN) • Western Ringtail Possum (<i>Pseudocheirus occidentalis</i>) (CR). • Peregrine Falcon (<i>Falco peregrinus</i>) (OS) • Coastal Plains Skink (<i>Ctenotus ora</i>) (P3) • Quenda (<i>Isoodon fusciventer</i>) (P4). <p>No conservation significant fauna species, or secondary evidence of presence (e.g. scats, chewed nuts) were recorded in the NVCP application area (Biota 2021).</p> <p>Clearing of native vegetation may impact the following conservation significant fauna habitat within the NVCP application area. As per the classification system described in the fauna assessment report (Biota Environmental Services, 2021), habitat suitability was classified as either:</p> <p>Core - Habitat critical to the survival of the species. Secondary - Habitat which may be used on a transitory, dispersing or occasional basis, but does not represent core habitat. Not Habitat - Habitat unlikely to be used by species.</p> <p>Potential clearing of habitat was assessed as including up to:</p> <ul style="list-style-type: none"> • No suitable habitat for Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo • 0.79 ha of secondary class Western Ringtail Possum habitat • 2.184 ha of secondary class Peregrine Falcon habitat (potential foraging visitor) • 2.184 ha core class Coastal Plains Skink habitat • 2.184 ha of secondary class Quenda habitat <p>Each species is discussed in detail below:</p> <p>Black Cockatoos (Carnaby's Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Cockatoo)</p> <p>No suitable black cockatoo foraging or roosting habitat types or trees with a DBH greater than 500 mm were identified within the NVCP application area during the fauna assessment undertaken by Biota Environmental Services (2021).</p>	

Principle	Assessment	Outcome
	<p>Western Ringtail Possum (WRP)</p> <p>The NVCP application area intersects up to 0.79 ha of habitat type Peppermint on scrubland on dunes, which was classified as secondary class habitat. No animals, dreys or scats were recorded in the NVCP application area across two survey events, undertaken by experienced and qualified assessors following a transect spotlighting methodology in spring 2020 and summer 2021. The species was recorded in surrounding areas with 76 individuals being observed from within 100-1000 m to the east and south of the NVCP application area. The majority (62 of 76) of WRP records reported from 100-1000 m to the east and south of the proposed action were recorded in the habitat type Tuart/Peppermint woodland which was classified as Core habitat. This habitat type does not occur in the NVCP application area. The remaining 14 records were recorded in sections of Peppermint on scrubland on dunes habitat that occurs outside the NVCP application area and in close proximity to (less than 40 m distance) habitat type Tuart/Peppermint woodland. See extract of WRP locations below (see Figure 4.6 Biota Environmental Services (2021).</p>  <p>The NVCP application area habitat suitability class for WRP is classified as Medium under the assessment of habitat for the Swan Coastal Plain (Shedley & Williams, 2014). An assessment of habitat extent mapped as Medium quality within a five km radius of the NVCP application area recorded 1819.93 ha of habitat in this or a greater class (Shedley & Williams, 2014). The potential clearing footprint of habitat represents 0.16% of this mapped habitat extent.</p> <p>The NVCP application area has been designed to entirely avoid any direct and indirect impact to the core habitat type Tuart/Peppermint woodland, and all locations where WRP were recorded. The design also minimises impacting areas of Peppermint on scrubland on dunes habitat, with the majority of the footprint located on Coastal low open heath habitat, which was classified as not suitable habitat for the species. Existing roads will be utilised to transport construction equipment to the site. The location of the Plant is not considered likely to significantly impact the WRP population recorded 100 m to the east and south of the Plant.</p>	

Principle	Assessment	Outcome
	<p>In addition to the strategic location of the Plant, the potential for impact to WRP will be further minimised and mitigated through the following clearing and construction management controls:</p> <ul style="list-style-type: none"> • Minimising the potential clearing footprint during the final design of the Plant • Utilising staged directional clearing to direct displaced native fauna to surrounding vegetation • Machinery hygiene measures to prevent introduction of pathogens • Allowing areas of temporary clearing to return to previous condition or be revegetated • Applying relevant operation controls as required to the constructed plant to prevent impact to surrounding fauna habitat. <p>Peregrine Falcon</p> <p>Biota Environmental Services (2021) identified that suitable foraging habitat exists for this species within vegetation communities within the NVCP application area however this species is not common and was not recorded during the field surveys. The habitat within the NVCP application area is not considered to be significant for the species.</p> <p>Coastal Plains Skink</p> <p>The likelihood of occurrence assessment by Biota Environmental Services (2021) indicates that 2.184 ha of core habitat for this species is likely to occur within the NVCP application area. No individuals were identified during the field surveys. The habitat utilised by this species are widespread and well represented in the local area, therefore impact by the proposed clearing is not considered to be significant.</p> <p>Quenda</p> <p>All native vegetation within the NVCP application area is considered to be potential secondary class habitat for Quenda. The habitat utilised by this species are widespread and well represented in the local area, therefore impact by the proposed clearing is not considered to be significant.</p> <p>Conclusion</p> <p>Due to the small extent of potential clearing, the suitability of habitats present, and habitat types impacted being widespread and well represented in the local area it is not considered likely that clearing will result in significant impacts to significant habitat for fauna. However, as the NVCP application area intersects up to 0.86 ha secondary class habitat for Western Ringtail Possum, applying a conservative approach it has been assessed that clearing may be at variance to this principle. As this species is listed under the EPBC Act, clearing required for construction of the Plant is also being referred to Department of Agriculture, Water and Energy.</p>	
<p>C Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.</p>	<p>The desktop assessment identified no previous records of conservation listed flora species within the NVCP application area (GHD, 2021). No EPBC Act or BC Act listed flora were identified during field surveys of the NVCP application area. The desktop assessment for the entire biological survey area identified a possible likelihood of occurrence for seven EPBC Act or BC Act listed (rare) flora (GHD, 2021). The likelihood of occurrence based on habitat present and survey effort within the NVCP application area is discussed for each of these species below:</p> <p><i>Austrostipa bronwenae</i> EPBC Act – Endangered / BC Act – Endangered and <i>Austrostipa jacobsiana</i> EPBC Act – Critically Endangered / BC Act – Critically Endangered</p> <p>The post survey likelihood for <i>Austrostipa bronwenae</i> and <i>Austrostipa jacobsiana</i> is assessed as unlikely to occur in the survey area when considering that suitable survey effort using transects covering all potential habitats were undertaken. Both species are associated with wetland habitats which do not occur within the NVCP application area (TSSC 2017, TSSC 2018).</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>

Principle	Assessment	Outcome
	<p><i>Caladenia huegelii</i> EPBC Act – Endangered / BC Act – Critically Endangered No suitable <i>Caladenia huegelii</i> habitat, was identified within the NVCP application area. The post survey likelihood for <i>Caladenia huegelii</i> is unlikely to occur in the NVCP application area. <i>Caladenia huegelii</i> habitat consists of mixed woodlands of Jarrah, Marri and Banksia with a dense shrubby understorey occurring on grey-white sands, usually associated with the Bassendean sand dune system (DEC,2009). Vegetation in the NVCP application area occurs on a Quindalup sand dune system in association with <i>Agonis</i> and <i>Acacia</i> dominated vegetation.</p> <p><i>Diuris drummondii</i> (Tall Donkey orchid). EPBC Act/ BC Act – Vulnerable No suitable <i>Diuris drummondii</i> habitat, such as low-lying depressions or swamps, were identified within the NVCP application area (DEWHA,,2008a). The post survey likelihood for occurrence concludes that this species is unlikely to occur in the NVCP application area when considering that suitable survey effort covering all potential habitats was undertaken during the preferred survey timing for species detection.</p> <p><i>Drakaea elastica</i>. EPBC Act – Endangered / BC Act – Critically Endangered and <i>Drakaea micrantha</i>. EPBC Act – Vulnerable / BC Act – Endangered No suitable <i>Drakaea elastica</i> and <i>D. micrantha</i> habitat, such as winter wet swamps (DEWHA, 2008b), were identified within the NVCP application area. The post survey likelihood for both <i>Drakaea elastica</i> and <i>D. micrantha</i> concludes that these species are unlikely to occur in the NVCP application area when considering that suitable survey effort covering all potential habitats was undertaken during the preferred survey timing for species detection. While the species may not flower each year, targeted surveys for the presence of the <i>Drakaea</i> leaf were undertaken. No individuals were identified during the targeted surveys (GHD, 2021).</p> <p><i>Eleocharis keigheryi</i> (Keighery’s Eleocharis). EPBC Act/ BC Act – Vulnerable No suitable <i>Eleocharis keigheryi</i> habitat, such as claypans (DEWHA, 2008c), were identified within the NVCP application area. The post survey likelihood for <i>Eleocharis keigheryi</i> is unlikely to occur in the survey area when considering that suitable survey effort covering all potential specific claypan habitats has been undertaken during the preferred survey timing for species detection (GHD, 2021).</p> <p>Conclusion Based on the likelihood of occurrence assessment, habitat present and given the survey effort it is considered unlikely that the NVCP application area contains or comprises a habitat for rare flora species. Clearing for the Proposal is not likely to be at variance to this Principle.</p>	
<p>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.</p>	<p>The GHD (2021) field surveys identified six conservation significant ecological communities listed under the EPBC Act and/ or <i>Biodiversity Conservation Act 2016</i> (BC Act) within the greater survey area.</p> <p>During the field surveys it was identified that a section of vegetation (sub-unit A3), which lies outside the east boundary of the NVCP application area is consistent with the following communities:</p> <ul style="list-style-type: none"> • Tuart (<i>Eucalyptus gomphocephala</i>) woodland and forests of the Swan Coastal Plain TEC listed under the EPBC Act (Critically Endangered) (the Tuart TEC) • Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the Swan Coastal Plain TEC/ PEC (Priority 3) listed under BC Act/ DBCA priority ratings • Quindalup <i>Eucalyptus gomphocephala</i> and / or <i>Agonis flexuosa</i> woodlands (SCP30b) (Priority 3) listed under BC Act/ DBCA priority ratings. <p>All vegetation within the NVCP application area is mapped as:</p> <ul style="list-style-type: none"> • A1 – <i>Agonis flexuosa</i> Low Open-woodland over <i>Acacia cochlearis</i>, <i>Alyxia buxifolia</i>, <i>Diplolaena dampieri</i> Low Open-scrub 	<p>The proposed clearing may be at variance to this principle</p>

Principle	Assessment	Outcome
	<p>The NVCP application area does not intersect with the Tuart TEC vegetation, however as per the EPBC Approved Conservation Advice (TSSC, 2019) a 30 m patch boundary is applied from the edge of canopy to be included in the patch. Furthermore, the Approved Conservation Advice provides for a further 30 m buffer from the patch boundary (60 m total from Tuart TEC canopy edge) for the purpose of protecting the integrity of the ecological community (TSSC, 2019). The NVCP application area intersects with this 30 m canopy to patch edge boundary (total of 0.31 ha) and the 30 m patch buffer (total of 0.93 ha) (see Figure O1).</p> <p>The NVCP application area and Plant design has been specifically modified to avoid and minimise the risk of impacts to the Tuart TEC vegetation. As discussed, the NVCP application area has been designed to completely avoid directly impacting Tuart TEC vegetation. Design changes have been undertaken to increase the separation between the Tuart TEC and potential infrastructure footprints to a set back of at least 17 meters. In addition, design changes have been undertaken to better utilise the topography of the site to further avoid and minimise the risk of impacts to the Tuart TEC vegetation. The site consists of a moderately sloped west facing vegetated dune, with a defined north-south running ridge and a steeper east facing slope dropping into a dune swale (see Figure O2). The Tuart TEC vegetation is restricted to the east facing slope and the more sheltered dune swale. The infrastructure footprint has been designed to cover only the west facing hill face (see Figure O2). Through this design, the risk of water borne erosion, sediments, weed seeds or soil pathogens entering the Tuart TEC vegetation is greatly decreased.</p> <p>Impacts to the Tuart TEC vegetation will be avoided or minimised through a number of means including:</p> <ul style="list-style-type: none"> • Preventing clearing of Tuart TEC vegetation through site demarcation on relevant drawings provided to the construction contractor, clear communication of the extent of clearing areas and clear marking on site before commencement of works • Utilising design and the topography of the site to separate clearing areas from Tuart TEC vegetation. By ensuring all works are restricted to the west side of the ridge, surface water flows will be directed away from the Tuart TEC vegetation • Avoidance of impacts to Tuart tree rootzone through designing setback from canopy and undertaking excavations at a distance from trees • Local infiltration of storm water on site via vegetated swales or seep drains to maintain water balance dynamics of dune and rear dune swale associated with Tuart vegetation • Prevention of introduction and/or spread of dieback or other soil pathogens in the Tuart TEC through avoidance of clearing or construction in areas up gradient from Tuart TEC vegetation. Construction and operation hygiene controls will be implemented to reduce risk of introduction of soil pathogens • Avoiding fire impacting the Tuart TEC adjacent to the Plant construction through implementation of construction fire risk controls. • Revegetation through natural regeneration or replanting of cleared areas not required for permnant infrastructure e.g. batter slopes from cut and fill and buried pipelines • Preventing and if required treating the introduction and/or spread of weeds including Declared Plants and Weeds of National Significance (WoNS) in the NVCP application area. No Declared or WoNS species were recorded as occurring in the NVCP application area at the time of survey. <p>As such it is considered that although clearing is proposed within the 30 m patch boundary of the Tuart TEC, that the proposed clearing is unlikely to impact on the Tuart TEC vegetation due to the measures discussed above. However, as the NVCP application area intersects up to 0.31 ha of the patch boundary and 0.93 ha of the patch buffer, applying a conservative approach it has been assessed that clearing may be at variance to this principle. As this community is listed under the EPBC Act, clearing required for construction of the Plant is also being referred to Department of Agriculture, Water and Energy.</p>	

Principle	Assessment	Outcome															
<p>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.</p>	<p>Regional vegetation was mapped by Heddle <i>et al.</i> (1980), based on major geomorphic units on the Swan Coastal Plain. The Heddle <i>et al.</i> (1980) mapping indicates the presence of one vegetation complex within the NVCP application area:</p> <ul style="list-style-type: none"> Quindalup Complex: Coastal dune complex consisting mainly of two alliances – the strand and fore-dune alliance and the mobile and stable dune alliance. Local variations include the low closed forest of <i>Melaleuca lanceolata</i> (Rottnest Teatree) – <i>Callitris preissii</i> (Rottnest Island Pine), the closed scrub of <i>Acacia rostellifera</i> (Summer-scented Wattle) and the low closed <i>Agonis flexuosa</i> (Peppermint) forest of Geographe Bay. <p>GoWA (2019) has assessed the current extents of the vegetation complexes against presumed pre-European extents. See below.</p> <table border="1" data-bbox="383 408 1865 730"> <thead> <tr> <th>Vegetation Complex</th> <th>Pre-European extent (ha)</th> <th>Current extent (ha)</th> <th>Proportion Pre-European extent remaining on Swan Coastal Plain (%)</th> <th>Proportion of current extent remaining in all DBCA Managed Lands (%)</th> </tr> </thead> <tbody> <tr> <td>Quindalup Complex (SWA)</td> <td>54,573.87</td> <td>33,011.64</td> <td>60.49</td> <td>10.98</td> </tr> <tr> <td>Quindalup Complex (Shire of Caple)</td> <td>1,355.86</td> <td>738.67</td> <td>54.48</td> <td>1.44</td> </tr> </tbody> </table> <p>The Proposal will result in direct loss of up to 2.184 ha of native vegetation within the NVCP application area. The current extents of the Quindalup Complex are greater than 30% of the pre-European extent remaining on the Swan Coastal Plain and with the Shire of Caple. Therefore, it is considered the proposed clearing is not likely to be at variance to this principle.</p>	Vegetation Complex	Pre-European extent (ha)	Current extent (ha)	Proportion Pre-European extent remaining on Swan Coastal Plain (%)	Proportion of current extent remaining in all DBCA Managed Lands (%)	Quindalup Complex (SWA)	54,573.87	33,011.64	60.49	10.98	Quindalup Complex (Shire of Caple)	1,355.86	738.67	54.48	1.44	<p>The proposed clearing is not likely to be at variance to this principle</p>
Vegetation Complex	Pre-European extent (ha)	Current extent (ha)	Proportion Pre-European extent remaining on Swan Coastal Plain (%)	Proportion of current extent remaining in all DBCA Managed Lands (%)													
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<p>F Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.</p>	<p>The NVCP application area does not intercept any watercourses or wetlands categorised as per the following accessed from Data WA (GoWA, 2021):</p> <ul style="list-style-type: none"> DBCA’s Directory of Important Wetlands in Australia (DBCA-045) Ramsar Sites (DBCA-010) Geomorphic Wetlands, Swan Coastal Plain (DBCA-019) RIWI Act Rivers (DWER-036). <p>The closest Ramsar site, Vasse Wonnerup System, is located approximately 30 km south west of the NVCP application area (GoWA, 2021). In addition, no wetland vegetation types were identified within the NVCP application area during the vegetation and flora survey (GHD, 2021). Therefore, it is considered the proposed clearing is not likely to be at variance to this principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>															
<p>G Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.</p>	<p>Regional geological mapping indicates the NVCP application area is mapped as “<i>Safety Bay Sand: eolian and beach lime sand, slightly lithified</i>” (GoWA, 2021).</p> <p>DWER groundwater salinity mapping indicates that the Proposal Area is located in an area with a TDS concentration of 500-1000 mg/L (GoWA, 2021) which indicates marginal groundwater salinity (DER, 2021).</p> <p>The DPIRD soil salinity risk mapping within the NVCP application area, indicates the soil salinity risk across the NVCP application area from “<3% of map unit has a moderate to high salinity risk or is presently saline” (GoWA, 2021).</p> <p>DPIRD Flood Risk Mapping indicates that the majority of the Proposal Area is mapped as “<3% of the map unit has a moderate to high flood risk” (GoWA, 2021).</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>															

Principle	Assessment	Outcome
	<p>The clearing of vegetation within the NVCP application area has the potential to cause short term impacts during construction. Based on the proposed management actions (including allowing cleared areas not required for final infrastructure to return to vegetation via natural regeneration), clearing is unlikely to cause appreciable deterioration in the quality of the land.</p> <p>A CEMP will be prepared to address issues such as erosion, and ASS management, designed to manage/ minimise, amongst other aspects, land degradation.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	
<p>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.</p>	<p>There are no national parks/ other conservation reserves under DBCA Legislated Lands and Waters (DBCA-011) or Environmentally Sensitive Areas (DWER-046) mapped within the NVCP application area. The closest known reserve (R 41724) is located approximately 8 km north east and the closest Class A national park, Tuart Forest National Park (R 43059), is located approximately 12.5 km to the south. The recently proclaimed Kalgalup Regional Park is located to the north of the NVCP application area. A Redbook Recommended Conservation Reserves 1976-1991 (DBCA-029) site is mapped within lots directly to the north of the NVCP application area.</p> <p>The NVCP application area also intersects two South West Regional Ecological Linkages (SWREL) within the Greater Bunbury Region (Molloy, Wood, Wallrodt, & Whisson, 2009):</p> <ul style="list-style-type: none"> • Maidens/ Preston River Ecological Linkage (East – West Ecological Linkage) • Maidens/ Muddy Lake/ Ludlow Coastal Ecological Linkage (North – South Ecological Linkage). <p>Due to the small area of potential clearing and the separation from nearby conservation areas it is considered the proposed clearing is not likely to be at variance to this principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>
<p>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.</p>	<p>The entirety of the NVCP application area lies within the Bunbury Groundwater Area which is proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> (RIWI Act) (GoWA, 2021).</p> <p>The NVCP application area lies within the Bunbury Water Reserve Public Drinking Water Source Areas (PDWSA) managed under the <i>Country Areas Water Supply Act 1947</i> (CAWS Act) (GoWA, 2021).</p> <p>DPIRD Flood Risk Mapping indicates that the majority of the Proposal Area is mapped as “<3% of the map unit has a moderate to high flood risk” (GoWA, 2021).</p> <p>The clearing of vegetation within the NVCP application area has the potential to cause minor short-term impacts to a limited area during construction. A CEMP will be prepared to address issues such as erosion, contamination and ASS management, designed to manage/ minimise, amongst other aspects, surface and groundwater quality. Infiltration of storm water will be undertaken on site via vegetated swales or seep drains to maintain water balance dynamics of dune</p> <p>Based on the proposed management actions and considering the small area of clearing and the absence of surface water in the area, clearing is unlikely to cause appreciable deterioration in the quality of surface or underground water. Due to the small area of proposed clearing, the small infrastructure footprint and site management of stormwater and runoff the proposed clearing is not expected to significantly impact hydrological regimes. It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>
<p>J Native vegetation should not be cleared if clearing the vegetation is</p>	<p>DPIRD Flood Risk Mapping indicates that the majority of the Proposal Area is mapped as “<3% of the map unit has a moderate to high flood risk” (GoWA, 2021).</p>	<p>The proposed clearing is not likely to be at variance to this principle</p>

Principle	Assessment	Outcome
likely to cause, or exacerbate, the incidence or intensity of flooding.	<p>Appropriate surface water management measures will be implemented as part of the construction. The proposed clearing is not expected to be likely to cause or exacerbate the incidence or intensity of flooding due to the the location of the Plant on a sandy hill and the absence of drainages in the NVCP application area.</p> <p>It is considered that the proposed clearing is not likely to be at variance to this principle.</p>	

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