



1. Application details

1.1. Permit application details

Permit application No.: 7550/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: City of Busselton
Application received: 10 April 2017

1.3. Property details

Property: Roe Terrace Road Reserve - 11370214, Busselton
Frederick Street Road Reserve - 11370193, Busselton
Roe Terrace Road Reserve - 11370224, Busselton
Roe Terrace Road Reserve - 11370054, Busselton
Local Government Authority: BUSSELTON, CITY OF
Localities: BUSSELTON

1.4. Application

| Clearing Area (ha) | No. Trees | Method of Clearing | For the purpose of: |
|--------------------|-----------|--------------------|-------------------------------|
| 0.497 | - | Mechanical Removal | Road construction or upgrades |

1.5. Decision on application

Decision on Permit Application: Refused
Decision Date: 7 March 2019
Reasons for Decision:

The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to principles (d), (e) and (f), may be at variance to principle (a), (c), (g) and (i), and is not likely to be at variance to the remaining principles.

The Delegated Officer determined that the vegetation within the application area comprises of the following:

- the Subtropical and Temperate Coastal Saltmarsh threatened ecological community (TEC);
- a significant remnant of native vegetation in an extensively cleared area;
- vegetation associated with a watercourse; and
- may comprise of a high level of biological diversity and significant habitat for threatened flora.

On 17 January 2018, a Delegated Officer of the Department of Water and Environmental Regulation (DWER) wrote to the applicant, outlining the above mentioned environmental impacts and requested further information on the need for the clearing and opportunities to avoid and minimise the extent of clearing. The Delegated Officer advised that once all of the issues had been addressed, a flora and vegetation survey would be required to determine the presence or absence of conservation significant flora and TEC.

On 27 April 2018, the applicant provided further information regarding the Busselton Strategic Network corridors, minimisation and mitigation measures to address land degradation issues and provided additional advice on each clearing principle.

On 20 November 2018, A Delegated Officer wrote to the applicant and advised that after reviewing the information provided, they remain of the view that the proposed clearing will impact on:

- the Subtropical and Temperate Coastal Saltmarsh threatened ecological community (TEC);
- a significant remnant of native vegetation in an extensively cleared area;
- vegetation associated with a watercourse; and
- vegetation that may comprise of a high level of biological diversity and significant habitat for threatened flora.

The Delegated Officer advised that a flora survey is not considered appropriate given the other outstanding environmental issues and provided 21 days written notice of the intent to

refuse to grant a clearing permit. An extension of time until 31 January 2019 was approved and no response from the applicant has been received.

In making the decision to refuse to grant the clearing permit, the Delegated Officer had regard to the environmental values of the native vegetation outlined under principles (a), (c), (d), (e), (f), (g) and (i), and planning instruments and other relevant matters outlined in this report.

2. Site Information

Clearing Description

The application is to clear 0.497 hectares of native vegetation within the Frederick Street road reserve and Roe Terrace road reserve, Busselton (Figure 1), for road construction. The proposed clearing is part of the 'Strelly-Barlee-West Street Duplication' portion of the City of Busselton's Strategic Network Corridors project.

Vegetation Description

The application area is mapped as Beard vegetation association 676, described as succulent steppe; samphire (Shepherd et al., 2001).

A site inspection of the application area conducted by officers of the former Department of Environment Regulation (DER) (DER, 2017) described the vegetation within the application area as samphire shrubland growing on clay loam overlaid by sand and exposed in some areas (DER, 2017).

The vegetation within the application area has been mapped as the Commonwealth-listed 'Subtropical and Temperate Coastal Saltmarsh' threatened ecological community (TEC).

Vegetation Condition

The application area is determined to be in a Good condition described as: structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

Soil and Landform Type

The application area is mapped within the Vasse Wonnerup very wet saline flats Phase land unit, described as Vasse, estuaries, low lying depressions which are often underwater in winter and saline in summer (Schoknecht et al., 2004).

Comments

The local area considered in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area.

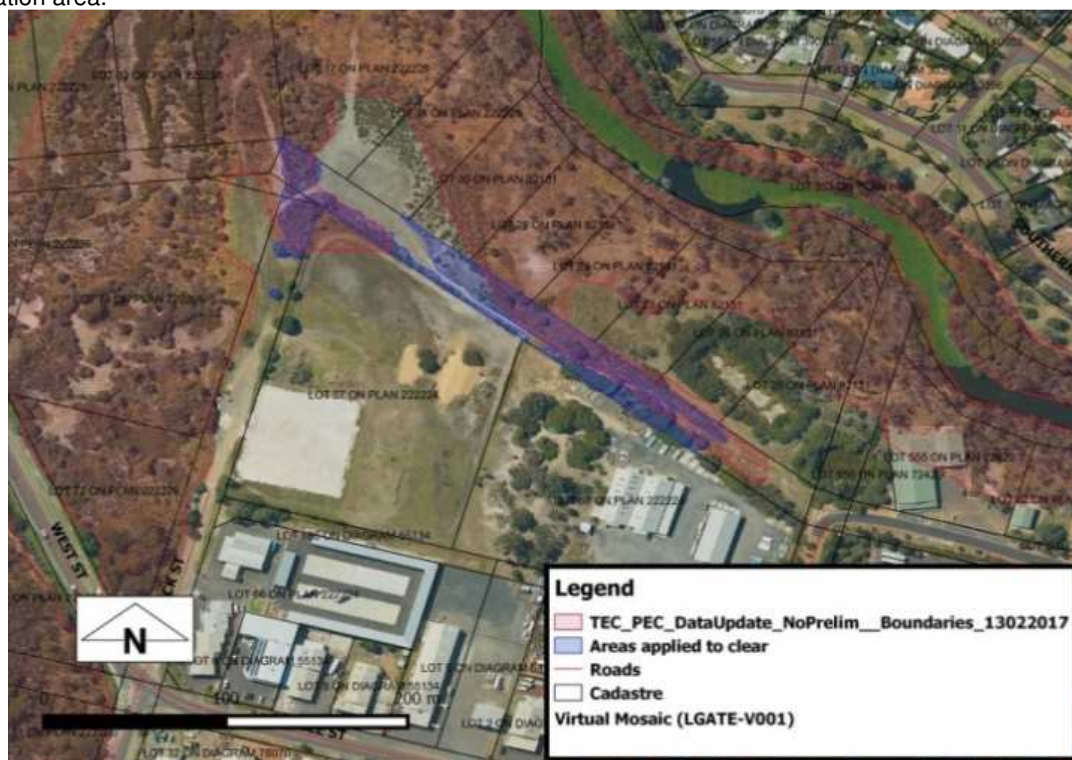


Figure 1: Location of application area.

3. Minimisation and mitigation measures

The applicant has advised that they considered potential road upgrade options that intruded within the adjacent conservation category wetland and discounted the options due to the potential impacts to the wetlands.

The applicant proposes to minimise impacts of the proposed clearing and road development by:

- formalising and stabilising the existing road reserves with either road pavement or landscaped verges, creating a formalised interface with the adjacent wetlands and reducing the erosion and sediment load from the existing informal and degraded land surface;
- the new road will have barrier kerbs, bollards and signage to discourage the existing informal access into the adjacent wetland;
- the new road verges will be landscaped using turf and native species that use minimal fertilisers and replace the existing degraded, weed infested surface;
- stormwater discharge points from the new road will be provided with erosion protection;
- undertaking rehabilitation of 0.5 hectares of vegetation in the adjacent wetlands;
- weed and waste management controls to minimise impact to surrounding vegetation ;
- construction and clearing occurring during summer and autumn during dry ground conditions; and
- implement a Construction Environmental Management Plan (CEMP) including erosion and sediment controls, waste management, and spill response procedures to mitigate impacts to water quality during clearing and construction.

4. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.

Proposed clearing may be at variance to this Principle

As discussed in Section 2, the vegetation within the application area consists of samphire shrubland in good (Keighery, 1994) condition, adjoining the Vasse River. The application area occurs within the flood plain of the Vasse River, 100 meters from the main channel.

As assessed under Principle (b), the application area forms part of a regional ecological linkage (Molloy et al, 2009). Noting the linear shape of the application area, the proposed clearing is not likely to sever the linkage or impact on its core values. Noting the absence of large trees, vegetation type and linear shape of the application area, it is not likely to comprise significant habitat for indigenous fauna, including species of conservation significance.

According to available databases, 46 priority (P) and 16 threatened flora species have been recorded within the local area. Noting the habitats from which these species have been recorded (Western Australian Herbarium, 1998-), and the vegetation and soil types present within the application area, five P2, one P1 and nine threatened flora species may occur within the application area. Threatened flora is assessed in more detail under Principle (c).

As assessed under Principle (d), the application area is mapped as, and is likely to be representative of, the Commonwealth-listed 'Subtropical and Temperate Coastal Saltmarsh' threatened ecological community (TEC).

Given the above, the proposed clearing may be at variance to this Principle.

A flora survey of the application area and adjoining vegetation would be required in order to determine the impacts to conservation significant flora.

(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.

Proposed clearing is not likely to be at variance to this Principle

As discussed in Section 2, the vegetation within the application area consists of samphire shrubland adjoining the Vasse River.

According to available databases, 23 threatened fauna, 18 fauna protected under international agreement, two other specially protected fauna and 10 priority (P) fauna have been recorded within the local area (DBCA, 2007-). A number of these species are associated with marine or estuarine environments.

The DER site inspection noted a high degree of fauna activity within the location, including a disturbed turtle's nest, high density kangaroo population and fauna tracks (DER, 2017).

The vegetation within the application area forms part of a South West Regional Ecological Linkage (Molloy et al., 2009). The vegetation is classified as 1A (highest value vegetation) as it is connected to, and forms part of, a mapped ecological linkage. Ecological linkages have been defined as "a series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape" (Molloy et al., 2009). Given this, it is likely that the application area aids in the movement of indigenous fauna across the landscape. Noting the linear shape of the application area, the proposed clearing is not likely to sever the linkage or its core values.

The water-rat (*Hydromys chrysogaster*) has been recorded approximately 300 meters from the application area. As the application area consists of samphire shrublands, the vegetation within the application area is not likely to provide core habitat for this species.

Noting the absence of large trees, vegetation type and linear shape of the application area, the application area is not likely to comprise significant habitat for indigenous fauna, including species of conservation significance.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing may be at variance to this Principle

According to available databases, 16 rare flora species have been recorded within the local area. Noting the habitats from which these species have been recorded based on Western Australian Herbarium data (1998-) and records from the local area, and noting the vegetation and soil types within the application area, nine rare flora species may occur within the application area.

The habitat type for the nine species that may occur within the application area include:

- species 1 is defined as grey or brown sand, clay loam;
- species 2 has not been defined however the species has been recorded on clay and loam. The species has a restricted distribution of approximately 40 kilometres;
- species 3 is defined as white or grey sand, low-lying situations adjoining winter-wet areas;
- species 4 is defined as winter-wet low-lying areas;
- species 5 is defined as sandy loam, seasonally inundated plains;
- species 6 is defined as white/grey sand, winter-wet flats;
- species 7 is defined as winter-wet flats, clay flats;
- species 8 is defined as gravelly clay, sandy clay, sand, road verges, swamps, creek; and
- species 9 is defined as along riverbanks, sand dunes, plains and ridges, seasonally-inundated areas (Western Australian Herbarium, 1998-).

Given the observed soil and vegetation type of the above-mentioned species, these threatened species may be present within the application area or adjoining vegetation.

Given the above, the proposed clearing may be at variance to this Principle.

A flora survey would be required in order to determine the impacts to threatened flora impacted by the proposed clearing.

(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.

Proposed clearing may be at variance to this Principle

The vegetation within the application area is mapped within the 'Subtropical and Temperate Coastal Saltmarsh' TEC. This TEC is listed as 'vulnerable' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and as a Priority 3 ecological community by the Department of Biodiversity, Conservation and Attractions (DBCA).

The DER site inspection identified that the vegetation within the application area is samphire shrubland, and that the vegetation is in a good (Keighery, 1994) condition (DER, 2017).

The former Department of Parks and Wildlife (Parks and Wildlife) advised that the application area supports samphire vegetation in good (Keighery, 1994) condition that is a Commonwealth-listed TEC, is located within part of a larger 'conservation category' wetland, and provides a buffer to the adjacent TEC and wetland (Parks and Wildlife, 2017a). Parks and Wildlife advised that with these values, the area should not be subject to clearing.

In addition, the proposed clearing is likely to hydrologically isolate an additional 0.40 hectares of adjoining extent of this TEC located on the adjacent Lot 67. Edge effects from the proposed clearing may also lead to degradation of adjoining saltmarsh vegetation through weed invasion (DBCA, 2018).

The applicant advised that given the permanent disconnection to all tidal influence the vegetation within the application area should not be considered to represent the 'Subtropical and Temperate Coastal Saltmarsh' TEC as a key diagnostic characteristic of the TEC is that it occurs in places with at least some tidal connection (City of Busselton, 2018).

DBCA advised that while there are weirs and surge barriers in place that disconnect tidal connection from the area under application, this disconnection is tenuous and could be immediately lost with a change in barrier management and that the disconnection is therefore not permanent. In addition, a key diagnostic character of this TEC includes groundwater tidal influence.

If there is no groundwater tidal influence and the applied area has been disconnected since 1908 (as per the City of Busselton's advice) then it is highly likely the areas of samphire vegetation within the application area would not have persisted for over 100 years on rainfall alone (DBCA, 2018).

Given the above, it is considered for the application area to contain vegetation that represents a TEC and the proposed clearing is at variance to this Principle. The applicant has advised that weed management measures will be undertaken during the proposed clearing to minimise the spread of weeds.

(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.

Proposed clearing is at variance to this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

As indicated in Table 1, the remaining extents of native vegetation within the mapped Beard vegetation association are below the 30 per cent representation threshold. The local area retains approximately 12 per cent native vegetation cover. On this basis the application area is located within an area that has been extensively cleared.

The vegetation within the application area has been mapped within a TEC, forms part of a mapped ecological linkage and may contain conservation significant flora. On this basis the application area is likely to be significant as a remnant of native vegetation in an area that has been extensively cleared.

Given the above, the proposed clearing is at variance to this Principle.

| | Pre-European (ha) | Current Extent (ha) | Remaining (%) | Extent in DBCA-managed lands | | |
|---|----------------------|------------------------|------------------|------------------------------|---------------------|----------------|
| | | | | Extent (ha) | Pre-European (%) | Current (%) |
| IBRA bioregion | | | | | | |
| Swan Coastal Plain | 1,501,221 | 578,432 | 38.5 | 218,946 | 17.7 | 37.8 |
| Beard vegetation association in bioregion | | | | | | |
| 676 | 1,254 | 336 | 26.8 | 72.9 | 7.1 | 21.6 |

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance to this Principle

The application area occurs within the floodplain of the Vasse River (Lower), approximately 100 meters from the main channel. The DER site inspection identified riparian vegetation within the application area (DER, 2017). Digital aerial imagery indicates that portions of the application area are seasonally inundated.

According to available datasets, the application area has been mapped within an estuary-peripheral 'conservation category' wetland and 'multiple use' wetlands.

In Guidance Statement No. 33, the Environmental Protection Authority (EPA) provides the following information in respect to 'conservation category' wetlands (EPA, 2008):

- are defined as wetlands which support a high level of attributes and functions, and are the highest priority wetlands;
- are listed as critical environmental assets;
- have a management objective of preserving and protecting the existing conservation values of the wetlands;
- no development or clearing is considered appropriate; and
- any activity that may lead to further loss or degradation is inappropriate.

Parks and Wildlife advised that it supports the EPA's recommendation in Guidance Statement No.33 that protected wetlands are afforded a 50 metre buffer, and noted that this has not been adhered to in the application (Parks and Wildlife, 2017a). Parks and Wildlife advised that any reduction of the wetland edges will result in secondary degradation of the larger wetland (Parks and Wildlife, 2017a).

The estuary-peripheral 'conservation category' wetland within the application area is hydrologically linked to the internationally important Vasse-Wonnerup System Ramsar site, however the potential impacts of the proposed clearing on this wetland which occurs outside the application area, is considered negligible given the small size of the proposed clearing (DBCA, 2018).

Given the proposed clearing includes the vegetation growing in association with a wetland, the proposed clearing is at variance to this Principle.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing may be at variance to this Principle

As discussed in Section 2, the application area is mapped within the Vasse Wonnerup very wet saline flats Phase land unit (Schoknecht et al., 2004). The land degradation risk categories for this land unit are presented in Table 2.

As assessed under Principle (f), the application area occurs within a wetland system.

Noting the mapped land degradation risks outlined in Table 2, the proposed clearing may cause appreciable land degradation through water erosion, waterlogging or eutrophication. Noting that the application area is subject to inundation, the proposed clearing is not likely to increase the risk of salinity or flooding.

Given the above, the proposed clearing may be at variance to this Principle. The applicant has advised that the following land degradation management measures are proposed;

- Construction and clearing occurring during summer and autumn during dry ground conditions
- Implement a Construction Environmental Management Plan (CEMP) including erosion and sediment controls to mitigate impacts to water quality during clearing and construction.

Table 2: Mapped land degradation risk categories (Schoknecht et al., 2004).

| Risk categories | Vasse disturbed land, urban |
|--------------------------|--|
| Wind erosion | 3-10% of map unit has a high to extreme wind erosion risk |
| Water erosion | >70% of map unit has a high to extreme water erosion risk |
| Salinity | >70% of map unit has a moderate to high salinity risk or is presently saline |
| Subsurface Acidification | 10-30% of map unit has a high subsurface acidification risk or is presently acid |
| Flood risk | >70% of the map unit has a moderate to high flood risk |
| Water logging | >70% of map unit has a moderate to very high waterlogging risk |
| Phosphorus export risk | >70% of map unit has a high to extreme phosphorus export risk |

(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.

Proposed clearing is not likely to be at variance to this Principle

As assessed under Principle (f), the application area occurs within a 'conservation category' wetland and is located within the floodplain of the Vasse River (Lower). An un-named Nature Reserve associated with the Vasse River occurs approximately 300 meters west of the application area.

The 'conservation category' wetland supports representative values of estuary-peripheral wetland areas within the Vasse-Wonnerup suite, a nationally listed TEC, and is hydrologically linked to the internationally listed Vasse-Wonnerup System Ramsar site (Parks and Wildlife, 2017b). However it is considered for the potential impacts of the proposed clearing on this wetland to be negligible given the small size of the proposed clearing (DBCA, 2018).

Noting the above, the proposed clearing is not likely to significantly impact the Vasse River and Vasse-Wonnerup System Ramsar site, as well as the values the nearby Nature Reserve. The proposed clearing is not likely to be at variance to this 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.

Proposed clearing may be at variance to this Principle

As assessed under Principle (f), the proposed clearing occurs within a wetland system. Parks and Wildlife advised that the potential impacts of the proposed clearing on the wetlands includes an increased risk of erosion and sedimentation, and alteration of water quality (Parks and Wildlife, 2017b).

As assessed under Principle (g), the proposed clearing may cause appreciable land degradation through water erosion, waterlogging and eutrophication, however is not likely to increase the risk of salinity. Noting this, the proposed clearing may cause deterioration in the quality of surface water.

Given the above, the proposed clearing may be at variance to this Principle. The applicant has advised that the following land degradation management measures are proposed;

- Construction and clearing occurring during summer and autumn during dry ground conditions
- Implement a Construction Environmental Management Plan (CEMP) including erosion and sediment controls to mitigate impacts to water quality during clearing and construction.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance to this Principle

As assessed under Principle (g), noting that the application area is subject to inundation, the proposed clearing is not likely to increase the risk of flooding.

Noting the extent of the proposed clearing, it is not likely to be of a scale as to cause an increase in the incidence or intensity of flooding.

Given the above, the proposed clearing is not likely to be at variance to this Principle.

Planning instruments and other relevant matters.

The proposed clearing is part of the 'Strelly-Barlee-West Street Duplication' portion of the City of Busselton' Strategic Network Corridors project. The applicant has advised that this portion of the project will not be referred to the Environmental Protection Authority.

Parks and Wildlife advised that the potential impacts of the construction and implementation of a road on the wetlands include (Parks and Wildlife, 2017b):

- alteration of water quality e.g. input of hydrocarbons and other pollutants;
- degradation of wetland vegetation adjacent to the road that is currently being buffered by the existing samphire shrubland; and
- increased incidence of native fauna killed by vehicles.

The applicant has advised mitigation measures as discussed in Section 1.

The application was advertised on DER's website on 1 May 2017 and in *The West Australian* newspaper on the 8 May 2017 with a 21 day public submission period. No public submissions were received.

An Aboriginal site of significance is registered within the western portion of the application area. The applicant is advised to contact the Department of Aboriginal Affairs in relation to their responsibilities under the *Aboriginal Heritage Act 1972*.

5. Applicant's Submission

On 17 January 2018, a Delegated Officer wrote to the applicant, outlining the above mentioned environmental impacts and requested further information on the need for the clearing and opportunities to avoid and minimise the extent of clearing. The Delegated Officer advised that once all of the issues had been addressed, a flora and vegetation survey would be required to determine the presence or absence of conservation significant flora and TEC.

On 27 April 2018, the applicant provided further information regarding the Busselton Strategic Network corridors, minimisation and mitigation measures to address land degradation issues and provided a summary of the applicants response to DWER's preliminary assessment findings.

On 20 November 2018, A Delegated Officer wrote to the applicant and advised that after reviewing the information provided, they remain of the view that the proposed clearing will impact on:

- the Subtropical and Temperate Coastal Saltmarsh TEC;
- a significant remnant of native vegetation in an extensively cleared area;
- vegetation associated with a watercourse; and
- vegetation that may comprise of a high level of biological diversity and significant habitat for threatened flora.

The applicant has not provided any information concerning offsetting the residual impact.

6. Consideration of variances following applicants submission / further information

Upon review of the information provided by the applicant, DWER altered the findings of the original preliminary assessment to at variance to principle (a), (h) and (i) to may be at variance to principle (a) and (i) and not likely to be at variance to (h). The Delegated Officer agreed that impacts to the Vasse-Wonnerup system Ramsar site and the nearby unnamed nature reserve are likely to be negligible.

The Delegated Officer considers that the proposed clearing will impact on:

- native vegetation representative of the 'Subtropical and Temperate Coastal Saltmarsh' threatened ecological community (TEC), listed as vulnerable under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act);
- native vegetation growing in association with a 'conservation category' wetland (CCW) which supports representative values of estuary-peripheral wetland areas within the Vasse-Wonnerup suite;
- a significant as a remnant of vegetation within an extensively cleared are; and
- native vegetation that may contain suitable habitat for a number of threatened and priority flora taxa and contain high biological diversity.

7. References

- City of Busselton (2018) Additional information in relation to clearing permit application CPS 7550/1, received 2 May 2018 (DWER ref: A1666148).
- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Environment Regulation (2017) Site inspection report for clearing permit application CPS 7550/1, undertaken 9 May 2017 (DER ref: A1382639).
- Department of Biodiversity, Conservation and Attractions (DBCA) (2018) Additional TEC and Wetland advice for clearing application CPS 7550/1 (DWER ref: A1705711 and A1708598)
- Department of Parks and Wildlife (2017a) Regional advice received in relation to clearing permit application CPS 7550/1, received 16 June 2017 (DER ref: A1521218).
- Department of Parks and Wildlife (2017b) Wetlands advice received in relation to clearing permit application CPS 7550/1, received 14 June 2017 (DER ref: A1521223).
- Environmental Protection Authority (2008) Environmental Guidance for Planning and Development. Guidance Statement number 33. Published May 2008.
- Government of Western Australia (2016). 2016 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of October 2016. WA Department of Parks and Wildlife, Perth.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*. Western Australian Local Government Association (WALGA) and Department of Environment and Conservation (DEC), Perth.
- Schoknecht, N., Tille, P. and Purdie, B. (2004) Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.
- Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) Native Vegetation in Western Australia, Extent, Type and Status. Resource Management Technical Report 249. Department of Agriculture, Western Australia.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed August 2017).

GIS databases:

- SAC Bio datasets (January 2018)
- Aboriginal sites of significance
- Hydrography linear
- Acid Sulfate Soil Risk Map, Swan Coastal Plain
- Soils, statewide
- Groundwater Salinity, Statewide
- Geomorphic Wetlands, Swan Coastal Plain
- Parks and Wildlife, Tenure
- NLWRA, Current Extent of Native Vegetation
- Pre-European Vegetation