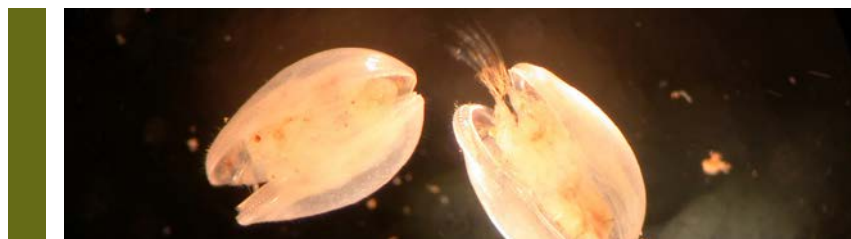




Ashburton Salt Project Claypan Ephemeral Fauna Desktop Review





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Ashburton Salt Claypan Fauna Desktop Review

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1.0 Executive Summary

K+S Salt Australia Pty Ltd (K+S) is evaluating the possibility of developing a greenfield solar salt project (the proposed Ashburton Salt Project), located on the Western Australian coast at a site approximately 40 km southwest of Onslow (hereafter the study area). Biota Environmental Sciences (Biota) was commissioned by K+S to undertake a comprehensive fauna and flora assessment of the study area. This included a desktop review and targeted field sampling for specialist claypan fauna. Sampling of claypan fauna was planned for the 2019 wet season (between February and March) following flooding events, however this was not possible due to insufficient rainfall. As a result, a revised assessment involving only a desktop review was carried out.

Claypans are a type of ephemeral wetland often found in arid or semi-arid regions of the world, which are flooded during rain events and dry up seasonally due to evaporation. The fauna of claypans is usually dominated by either phyllopod crustaceans or opportunistic insects, which have developed specialised methods of coping with the unpredictability of these habitats.

Claypans are scattered through the southern and eastern parts of the study area, and on some of the mainland remnants occurring within the hypersaline salt flats that occupy the central part of the study area. The potential claypan fauna assemblage for the study area was determined based on previous claypan fauna sampling undertaken within 40 km of the study area (the study area locality). The distributions of taxa identified as potentially occurring were then assessed by querying NatureMap, Atlas of Living Australia, Biota's internal database, and other literature sources to determine which taxa may be restricted to the locality of the study area.

The desktop review identified 234 taxa, the majority of which comprised crustaceans, insects and rotifers. Previous work indicates that clear freshwater claypans and turbid freshwater claypans had distinct zooplankton and macroinvertebrate assemblages, but assemblages were similar between individual claypans within each of the two categories.

Claypan zooplankton and macroinvertebrate fauna are generally considered to have good dispersal capabilities and are not prone to high levels of short-range endemism. In keeping with this, the majority of taxa identified as potentially occurring within the study area have wide distributions within Australia, and some also occur internationally.

However, some examples of range-restricted claypan fauna have been documented, and several taxa identified as potentially occurring in the study area are currently known from a relatively restricted area. A total of 33 claypan taxa are restricted to the Pilbara region based on available information, but most were widespread within the region. Six taxa were restricted to the Onslow locality, comprising five crustaceans and one rotifer:

Crustaceans

- *Eocycticus* n. sp. (Class Branchiopoda, Family Cyzicidae);
- *Ozestheria* [*Caenestheria*] n. sp. (Class Branchiopoda, Family Cyzicidae);
- *Diaphanosoma* n. sp. (Class Branchiopoda, Family Daphniidae);
- *Australimnadia multifasciata* (Class Branchiopoda, Family Limnadiidae); and
- *Heterocypris* sp. PSW66 (Class Ostracoda; Family Cyprididae).

Rotifers

- *Lecane* n. sp. PSW031 (Class Monogononta, Family Lecanidae).

Overall, the desktop review indicated that the majority of claypan fauna likely to occur in the study area would be widespread taxa, but there is the potential for some range-restricted taxa, particularly crustaceans, to occur.

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2.0 Introduction

2.1 Project Background

K+S Salt Australia Pty Ltd (K+S) is evaluating the possibility of developing a greenfield solar salt project (the proposed Ashburton Salt Project), located on the Western Australian coast approximately 40 km southwest of Onslow. A study area was identified, including solar salt evaporation and crystallisation ponds and associated infrastructure. This area, combined with an associated access road area, is hereafter referred to as the study area (Figure 2.1).

Biota Environmental Sciences (Biota) was commissioned by K+S to undertake a comprehensive fauna and flora assessment of the study area. This included a desktop review and targeted field sampling for specialist claypan fauna. Sampling was planned for the 2019 wet season following flooding events, but was not possible due to insufficient rainfall. As a result, a revised assessment involving only a desktop review was carried out.

2.2 Claypan Fauna

Claypans are a type of ephemeral wetland often found in arid or semi-arid regions of the world. They are described as “natural, shallow depressions” which are flooded during rain events and dry up seasonally due to evaporation (Hancock and Timms 2002). Structurally, claypans are comprised and named for the impervious clay layer that makes up the base of the pan that restricts runoff and infiltration (Timms 2002). As claypans are naturally filled from rainwater, they are predominantly freshwater systems that are often highly turbid. They often contain either no vegetation or a low density of emergent plants such as *Tecticornia verrucosa*, *Muehlenbaeckia florulenta* and *Agrostis australasica* (Halse et al. 2004).

The fauna of claypans is unique and, depending on the stage of the filling/drying cycle, is usually dominated by either phyllopod crustaceans or opportunistic insects (Hancock and Timms 2002). Both suites of fauna have adapted specialised methods of coping with the unpredictability of these habitats, with most claypan insects having the ability to fly, increasing their range of dispersal in search of suitable habitat. Common claypan crustaceans, such as Fairy Shrimp, Clam shrimp and Shield Shrimp, have adapted to ephemeral pool life by the evolution of not only eggs that are desiccation resistant, but also require a temporary dormant state before hatching after submersion to survive. Due to this adaptation, many claypans will only harbour one generation of most crustacean groups before succeeding to an insect dominated assemblage. This type of succession is reset by the habitat drying out for a time. Claypan fauna have also adapted to cope with these narrow windows of time to grow and reproduce relatively rapidly. Given the specialisation of claypan fauna to these habitats, some taxa may have relatively restricted distributions, and can represent potential short-range endemics (SREs) (after EPA (2016)).

2.3 Scope and Objectives

The original scope of this study was to undertake a desktop review and field survey of claypan fauna occurring in the claypans of the study area. Unfortunately, due to a lack of rainfall during the timeframe of this study, field sampling was not possible. As such, the revised scope comprised only a desktop review, the objectives of which were:

- compile and review existing information regarding zooplankton and macroinvertebrate fauna of claypans within 40 km of the study area to identify the potential species assemblage for the study area;
- determine the distributions of potentially occurring claypan fauna; and
- identify any taxa of conservation significance (either formally listed or range-restricted).

2.4 Purpose of this Report

The purpose of this report is to present information on the potential assemblage of claypan specialised fauna and its conservation significance within the study area. This report is intended to inform and support the environmental impact assessment (EIA) of the proposed Ashburton Salt Project.

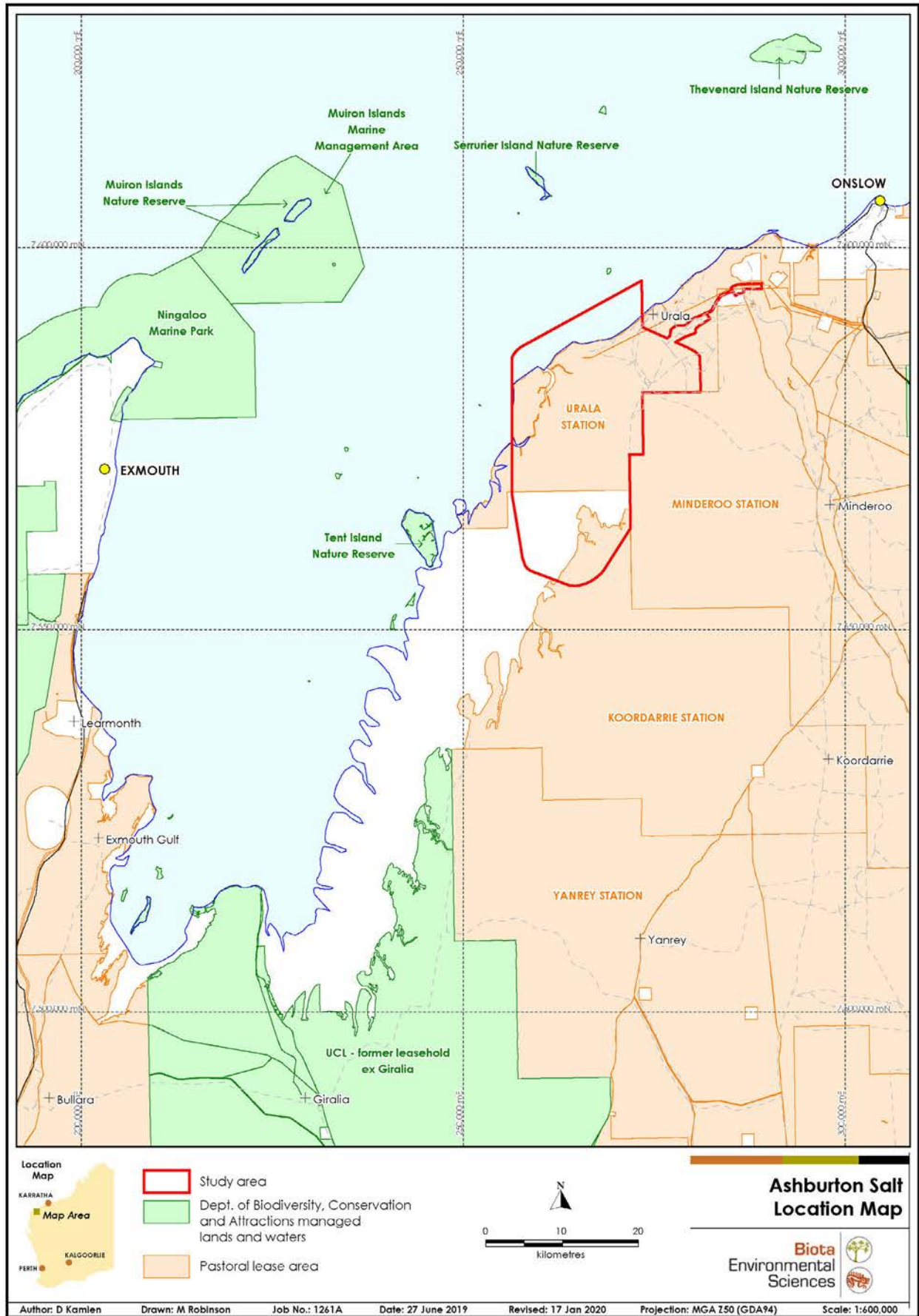


Figure 2.1: Location of the study area within the Onslow locality.

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3.0 Methodology

3.1 Desktop Review

The desktop review collated data from previous sampling undertaken within 40 km of the study area to determine a potential assemblage of taxa. The NatureMap (DBCA 2019), Atlas of Living Australia (ALA 2019), and Biota internal databases, along with publicly available literature, were reviewed to determine the distribution of each identified taxon, in particular whether any taxa were restricted to the study area locality (i.e. within 40 km of the study area). The results were then considered in the context of broader distributional trends within claypan zooplankton and macroinvertebrate fauna.

The results of the desktop review are summarised in Section 4.0. Broader environmental information relevant to the study area is summarised in the accompanying terrestrial fauna report (Biota 2020)

3.1.1 Nomenclature

Where possible, nomenclature used in this report follows that used by the Western Australian Museum (WAM) and the Department of Biodiversity, Conservation and Attractions (DBCA). However, the use of unpublished scientific names for taxa that have not yet been formally described (known as manuscript names) is widespread. Manuscript names consistent with those used by DBCA and WAM have been used where possible, including where multiple different manuscript names have been applied to the same taxon. However, in some instances, taxa with manuscript names applied by other authors could not be matched to DBCA/WAM manuscript names or newly-described taxa. In these cases, the original manuscript name has been used.

Where multiple names were identified for the same taxon, alternate names have been included in brackets or parentheses.

3.1.2 Threatened Fauna Statutory Framework

Native fauna species that are rare, threatened with extinction, or have high conservation value, are specially protected by law under either or both of the State *Biodiversity Conservation Act 2016* (BC Act) and the Federal *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The DBCA also maintains a list of Priority species that have not been assigned statutory protection under the BC Act.

3.2 Study Limitations

3.2.1 Sampling

Sampling was not possible within the study area, as no rainfall events of sufficient magnitude to inundate the claypans occurred during the planned sampling period between February and March 2019. No previous sampling had been undertaken within the study area. As such, the inferences drawn on the claypan fauna within the study area were based solely on the results of sampling previously undertaken in nearby claypans in the locality. The potential species assemblage identified by the desktop review is likely to be a relatively accurate representation of species occurring within the study area. However, sampling of the claypans would better quantify the claypan fauna assemblage present within the study area and validate this. The lack of sampling is therefore considered here to be a limitation.

3.2.2 Identification and Taxonomy

Identification of many invertebrate groups is challenging due to a lack of taxonomic work and/or morphological similarity. In some instances, only specimens of certain life stages or sex are identifiable morphologically. Although the use of genetic sequencing is increasingly mitigating this issue, the level of identification remains a limitation, particularly when collating data from previous work where genetic sequencing was not used. This can result in an overestimate of the number of potentially occurring taxa if specimens are identified to differing taxonomic levels. For example, the unidentified *Macrothrix* sp. recorded by Biota and Timms (2010) could represent *Macrothrix indistincta* that was recorded by Pinder et al. (2010), but these are included in the current review as two taxa. Alternatively, it can also result in an underestimate of the number of potentially occurring taxa if multiple taxa are grouped under a single unidentified higher-level taxon. Taking the previous example, the unidentified *Macrothrix* sp. recorded by Biota and Timms (2010) could alternatively represent multiple *Macrothrix* taxa but is only recorded as one in this review.

Taxonomy and nomenclature are also problematic when compiling previous records from multiple sources as here. Many taxa are still not formally described and are identified using manuscript names only. Multiple manuscript names may be applied to the same taxon by different authors, and it is often not possible to cross-reference different names without expert comparison of specimen material. This may result in an overestimate of the number of potentially occurring taxa if multiple taxon names identified in the desktop review actually refer to the same taxon. It can also make assessing distributions of taxa difficult as the same taxon may be listed under different manuscript names at different locations.

3.2.3 Scope of Report

This report constitutes a desktop assessment of species previously identified in the locality, and therefore potentially occurring within the study area, along with an assessment of their conservation significance. Potential project impacts and management recommendations in regard to fauna habitats and assemblages are not presented in this report and will be addressed in subsequent EIA documentation.

4.0 Results and Discussion

4.1 Claypans of the Study Area

The study area includes an extensive area of claypans and saltpans, extending from close to the coast, inland to the eastern and southern margins of the study area (Figure 4.1). Review of aerial imagery indicates that this system of claypans extends inland 30 – 40 km south and southeast of the study area boundary. Geographical Information System (GIS) mapping of the study area indicates approximately 1,100 claypans occur within the study area, ranging in size from less than 10 m² to 60 ha (Figure 4.1).

A large hypersaline supratidal salt flat, interspersed with vegetated islands (mainland remnants), covers the majority of the study area (Figure 4.1). This supratidal salt flat and adjacent intertidal habitats are described further in the migratory shorebird report for the study area (Biota 2021). A large dune field interspersed with low lying claypans occurs inland (east) of the supratidal salt flat, with large numbers of claypans scattered between the vegetated sand dunes of this hinterland dune field (Figure 4.1). Claypans are also present within the remnant “islands” that occur within the supratidal salt flat

The claypans within the study area are inundated by heavy rainfall events, so most of the claypans in the study area are likely to contain freshwater when inundated, as observed in similar claypans sampled to the immediate east (Biota and Timms 2010). However it is likely that those claypans which are close to the supratidal salt flat may have higher salinity levels. Opportunistic water sampling within two claypans after minor rainfall was conducted by Biota on 14th April 2019 within two sample sites (Figure 4.1). The samples sites ASHW04 and ASHW05 had Total Dissolved Solids (TDS) of 950 and 190 mg/L respectively and Total Suspended Solids (TSS) of 19,000 and 170 mg/L respectively. This indicates that water within ASHW04 was brackish and very turbid (muddy) and ASHW05 was fresh and slightly turbid (opaque).

Previous observations have shown that the claypans can become extensively connected after particularly heavy falls (e.g. Plate 4.1). Claypans surveyed by Biota and Timms (2010) to the east of the study area were broadly classified as clear or turbid, with turbid claypans making up 75 % of the claypans surveyed.



Plate 4.1: Inundated freshwater claypans to the east of the study area in 2009 (Biota and Timms 2010).

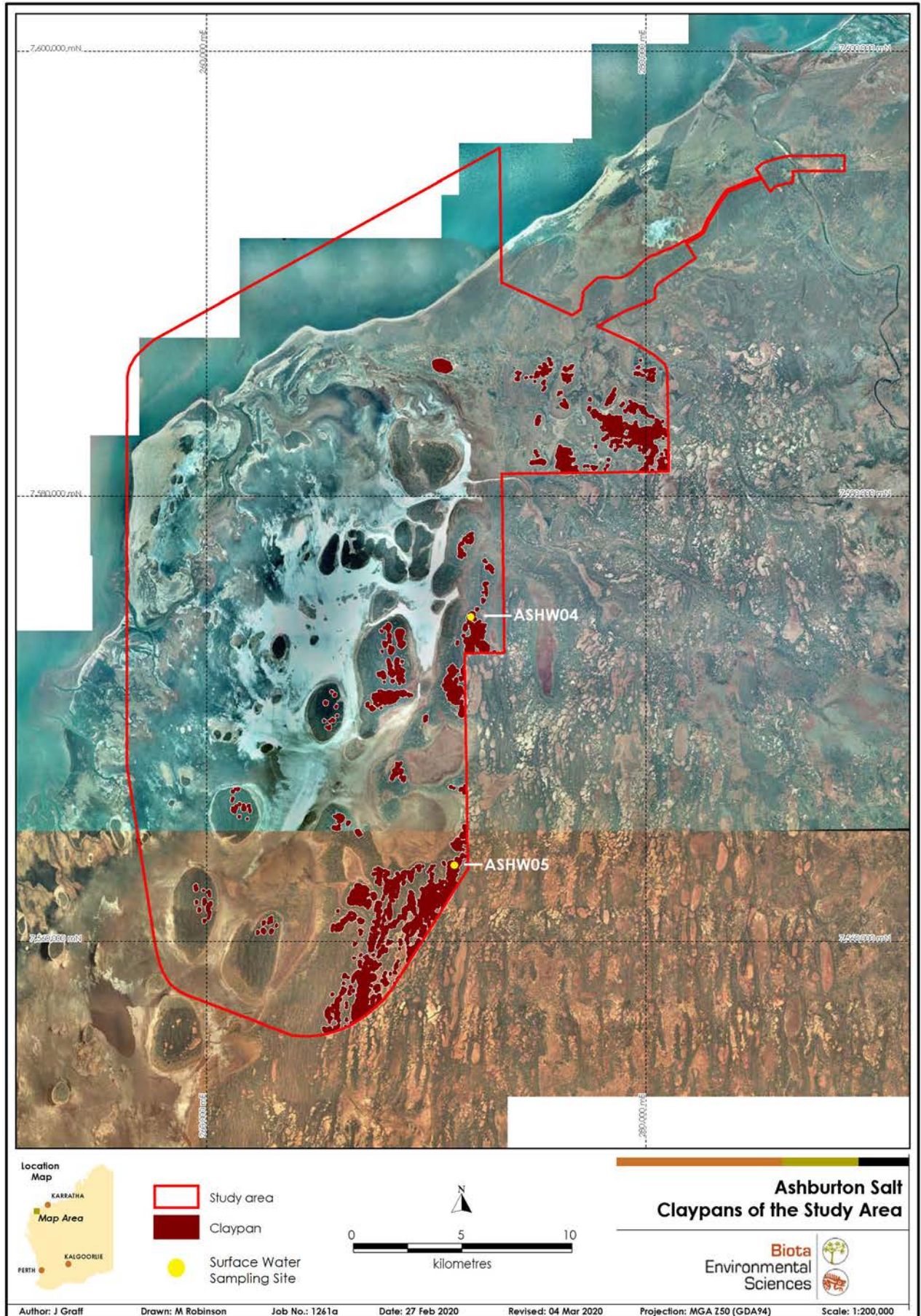


Figure 4.1: Claypans within the study area.

4.2 Previous Claypan Fauna Surveys in the Locality

Two previous surveys of claypan fauna within the study area locality were identified during the literature review. A summary of previous surveys is included below in Table 4.1.

Table 4.1: Previous surveys of claypan fauna within the study area locality.

Author	Report	Summary
Biota and Timms (2010)	Wheatstone Project Claypan Ephemeral Fauna Survey. Unpublished report for Chevron Australia and URS Australia.	The results of a survey of claypan invertebrates undertaken within the Wheatstone project area and surrounds to the east of the study area (~1 km to ~ 23 km from the study area). Sampling was undertaken at 25 sites over three phases, though not all sites were sampled during all phases.
Pinder et al. (2010)	An arid zone zone awash with diversity: Patterns in the distribution of aquatic invertebrates in the Pilbara region of Western Australia. <i>Records of the Western Australian Museum Supplement 78</i> , pp. 205-246.	This includes the results of a Pilbara-wide survey of claypan invertebrates undertaken as part of the Pilbara Biodiversity Survey by DBCA (then Department of Environment and Conservation). Sampling was undertaken at two claypans within the study area locality, Minderoo Claypan (~ 7 km to the east) and Cane River Claypan (~ 23 km to the east).

The locations of previous sampling sites in relation to the study area are shown in Figure 4.2.

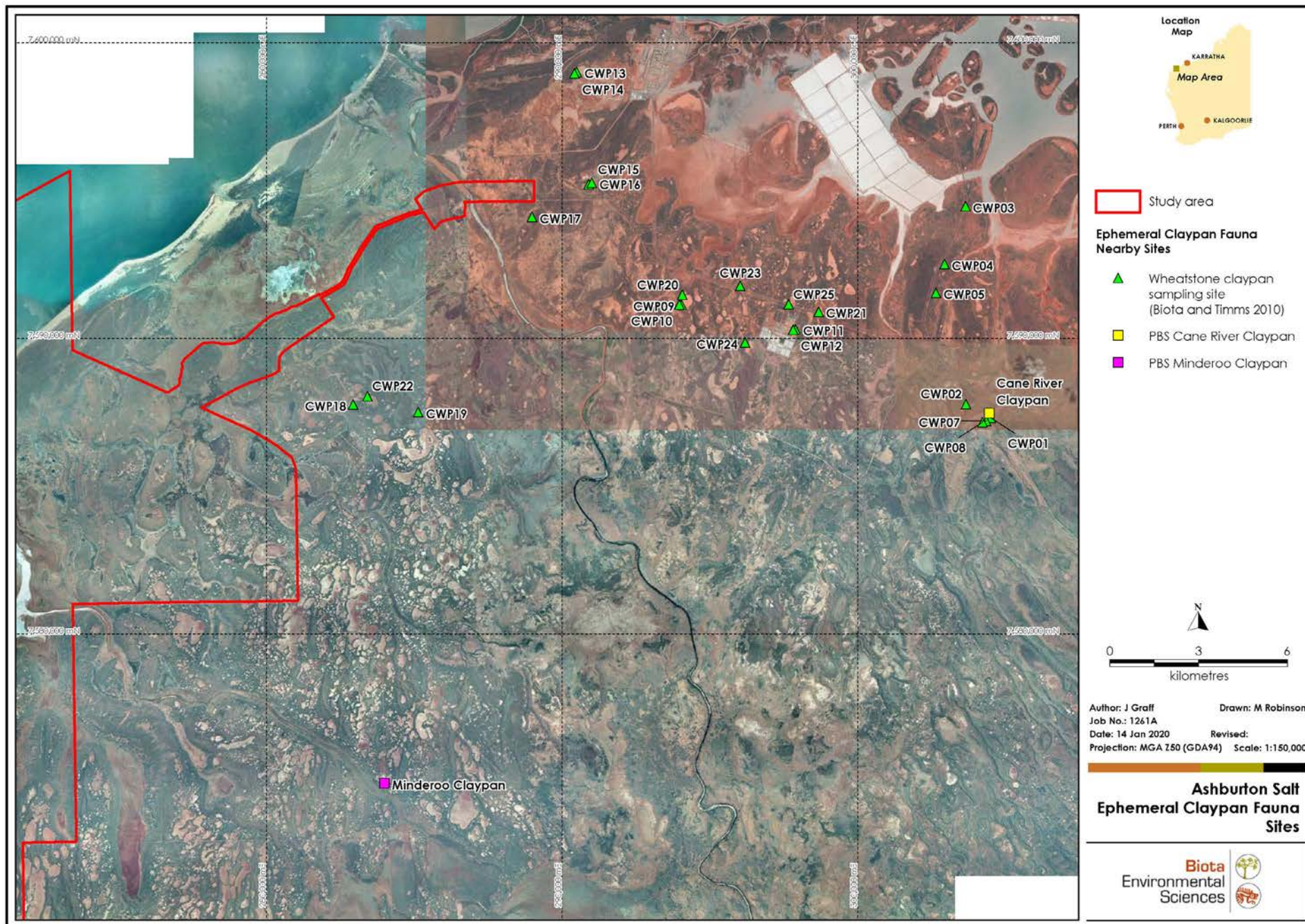


Figure 4.2: Previous claypan invertebrate sampling sites within the study area locality.

4.3 Potential Assemblage

The desktop review identified 234 taxa recorded from claypans in the locality during previous sampling. The majority of these taxa were crustaceans, insects and rotifers (Table 4.2). This was consistent with the typical composition of claypan invertebrate fauna elsewhere in Australia (Hancock and Timms 2002).

Table 4.2: Number of taxa recorded by species group from previous surveys in the locality.

Taxon Group	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Total
Crustaceans	41	33	17	72
Insects	54	58	3	87
Rotifers	31	19	10	54
Annelids	1	-	-	1
Arachnids (mites)	2	3	1	6
Flatworms	1	1	1	2
Molluscs	1	2	-	3
Nematodes	-	1	1	2
Protists	3	5	-	7
Total	134	122	33	234

A full list of species identified in the desktop review is included in Appendix 1, and images of typical representatives of some of the taxonomic groups are included below in Plate 4.1 to Plate 4.11.

Analyses undertaken by Biota and Timms (2010) indicated that there was a significant distinction in both the zooplankton and macroinvertebrate faunal assemblages between clear water and turbid water claypans in the region. The taxa found to be most characteristic of clear water claypans included rotifers, the water flea *Moina micrura*, amoebae from the genus *Arcella*, the ostracod *Bennelongia australis*, an unidentified copepod *Thermocyclops* sp., and the dragonflies *Diplacodes bipunctata* and *Anax* [*Hemianax*] *papuensis*. Turbid claypans showed a lower diversity of taxa overall, and had an assemblage characterised by taxa including the copepod *Calamoecia halsei*, an unidentified protozoan *Epistylis* sp., the diving beetle *Eretes australis*, and the backswimmer *Anisops stali* (Biota and Timms 2010).

Crustaceans



Plate 4.2: Order Anostraca (fairy shrimps).



Plate 4.3: Order Notostraca (shield shrimps).



Plate 4.4: Order Caenestheria.

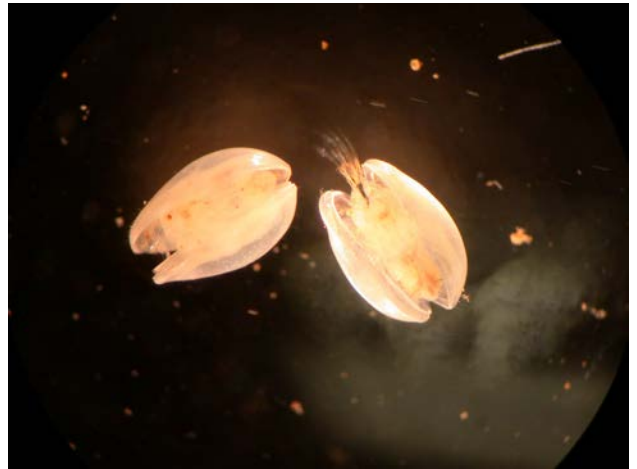


Plate 4.5: Order Ostracoda (ostracods).

Insects



Plate 4.6: Order Odonata (dragonflies; larval).



Plate 4.7: Order Coleoptera (beetles).



Plate 4.8: Order Hemiptera (true bugs; water bug).



Plate 4.9: Order Hemiptera (true bugs; backswimmer).



Plate 4.10: Order Trichoptera.

Arachnids (Mites)



Plate 4.11: Order Acarina.

4.3.1 Conservation Significant Taxa

4.3.1.1 Listed Taxa

No taxa listed as conservation significant under the Federal EPBC Act or the State BC Act were identified as potentially occurring within the study area. However, relatively few invertebrate species are listed under these acts owing to the relative paucity of knowledge on which to base assessments.

4.3.1.2 Range Restricted Taxa

A total of 33 taxa were endemic to the Pilbara region (Appendix 1), though most occur widely across the Pilbara region based on records from NatureMap (DBCAs 2019). Six taxa were identified as being restricted or potentially restricted to the Onslow locality comprising five crustaceans and one rotifer (Table 4.3).

Table 4.3: Taxa with known range restricted to Onslow locality.

Taxon Group	Class	Family	Taxon	Justification
Crustacean	Branchiopoda	Cyzicidae	<i>Eocycticus</i> n. sp.	Identified as a new undescribed species in Biota and Timms (2010)
Crustacean	Branchiopoda	Cyzicidae	<i>Ozestheria</i> [Caenestheria] n. sp.	Identified as a new undescribed species in Biota and Timms (2010)
Crustacean	Branchiopoda	Daphniidae	<i>Diaphanosoma</i> n. sp.	Identified as a new undescribed species in Biota and Timms (2010)
Crustacean	Branchiopoda	Limnadiidae	<i>Australimnadia multifasciata</i> [Limnadia n. sp.]	Timms and Schwentner (2017), described from specimens collected during the work by Biota and Timms (2010), where it is included as <i>Limnadia</i> n. sp.
Crustacean	Ostracoda	Cyprididae	<i>Heterocypris</i> sp. PSW66	Collected only from Cane River Claypan during the Pilbara Biodiversity Survey and no further records found in database searches or other literature.
Rotifer	Monogononta	Lecanidae	<i>Lecane</i> n. sp. PSW031	Collected only from Minderoo Claypan during the Pilbara Biodiversity Survey and no further records found in database searches or other literature.

It should be noted that while these taxa are known from the study area locality, they are not confirmed as occurring in the study area, as no sampling was undertaken for the current assessment and no previous sampling occurred within the study area. Conversely, it is possible that other range restricted taxa occur within the study area that were not recorded in the Onslow locality. Therefore, Table 4.3 should only be considered indicative of the potential range-restricted taxa within the study area.

4.4 Claypan Fauna Distributions

Claypan zooplankton and macroinvertebrate fauna are generally considered to have relatively high dispersal capabilities. Methods of dispersal vary between taxonomic groups. Most claypan insect fauna are capable of flight at certain life stages, and this is likely to be their primary means of dispersal (e.g. Watson 1969, Bilton 2014). Claypan crustacean fauna produce extremely hardy eggs, which are able to survive the long dry spells between inundation events, but also facilitate dispersal through a variety of vectors including wind (e.g. Brendonck and

Riddoch 1999), birds (e.g. Green et al. 2005, McMaster et al. 2007), and fish (e.g. Beladjal et al. 2007). Rotifers are similarly capable of dispersal via wind and animals (e.g. Lopes et al. 2016, Fontaneto 2019). On a local scale, dispersal between claypans is also likely to be facilitated by interconnection of claypans during flooding events. Within the study area, aerial imagery indicates that many of the freshwater claypans become interlinked when sufficiently inundated (e.g. see Plate 4.1) which is likely to allow taxa to move between claypans and reduces the likelihood of taxa being very restricted in distribution.

Although most claypan fauna taxa have relatively wide distributions, there are some examples of range-restricted claypan fauna, particularly within the crustacean groups. For example, Australia has some of the highest levels of endemism within ostracod crustaceans (Martens et al. 2008). However, in many cases, endemism is at the regional level (e.g. endemic to the Pilbara) rather than species being endemic at locality scales. However, examples of very localised endemic claypan taxa are known. The recently described clam shrimp *Australimnadia multifasciata* is a particularly relevant example, that is currently known only from a single location 19 km south of Onslow (Timms and Schwentner 2017).

The majority of taxa potentially occurring within the study area had relatively wide distributions, with only few being endemic to the Pilbara or locally restricted to the Onslow locality. Most insect taxa occur widely across at least the northern half of Australia, with over 80% of the insect taxa identified in the desktop review widespread and known from locations outside of Western Australia, and none restricted to the Onslow locality (Appendix 1). Many species, such as the backswimmer *Anisops stali*, the water bug *Diplonynchus eques* and the mosquito *Anopheles annulipes*, occur Australia wide. Crustacean taxa on average exhibited somewhat more restricted distributions, though many were still widespread, with just under 50% of the identified species occurring in at least one other Australian state or territory (Appendix 1). A total of 24 crustacean taxa were restricted to northwestern Western Australia, and five were restricted to the Onslow locality. Most rotifer taxa are considered cosmopolitan (Segers 2007), and the rotifers (and protists) identified by Biota and Timms (2010) were all considered to be cosmopolitan taxa. However, endemic rotifer taxa are known (Segers and De Smet 2008), and one taxon collected during the Pilbara Biodiversity Survey (*Lecane* n. sp. PSW031) does not appear to have been identified from any other locations outside of the Onslow area.

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5.0 Conclusion

The desktop review identified a diverse assemblage of claypan fauna, totalling 234 taxa, previously recorded from the study area locality and therefore potentially occurring within the study area. Crustaceans, insects and rotifers dominated this assemblage as is typical for claypan faunal assemblages in Australia.

Claypan fauna generally have wide distributions, and the majority of taxa identified during this review do occur widely within Australia. The insect and rotifer assemblages of the locality in particular are dominated by widespread taxa. However, while uncommon, some range-restricted claypan taxa have been documented, particularly within the crustacean groups, notably the newly described *Australimnadia multifasciata* which is known only from the study area locality. In total, six taxa were identified during the desktop review as being known only from the study area locality, comprising five crustaceans and one rotifer:

Crustaceans

- *Eocyclus* n. sp. (Class Branchiopoda, Family Cyzicidae);
- *Ozestheria* [*Caenestheria*] n. sp. (Class Branchiopoda, Family Cyzicidae);
- *Diaphanosoma* n. sp. (Class Branchiopoda, Family Daphniidae);
- *Australimnadia multifasciata* (Class Branchiopoda, Family Limnadiidae); and
- *Heterocypris* sp. PSW66 (Class Ostracoda; Family Cyprididae).

Rotifers

- *Lecane* n. sp. PSW031 (Class Monogononta, Family Lecanidae).

Overall, the desktop review indicated that the majority of claypan fauna likely to occur in the study area would be widespread taxa, but there is the potential for some range-restricted taxa, particularly crustaceans, to occur.

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6.0 Glossary

BC Act	WA State Biodiversity Conservation Act 2016.
Biota	Biota Environmental Sciences.
DBCA	Department of Biodiversity, Conservation and Attractions.
DEC	Department of Environment and Conservation (now Department of Biodiversity, Conservation and Attractions).
EIA	Environmental Impact Assessment.
EPA	Environmental Protection Authority of Western Australia.
EPBC Act	Federal Environment Protection and Biodiversity Conservation Act 1999.
Manuscript name	An unpublished scientific name for a taxon that has not yet been formally described.
sp. (plural: spp.)	Abbreviation of "species".
Study area	Historical development envelope for the project, which will encompass all physical elements of the proposal.
Taxon (plural: taxa)	A taxonomic entity, typically at species level or below.
WAM	Western Australian Museum.

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7.0 References

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Appendix 1

Claypan Fauna Taxa Recorded From the Study Area Locality



Crustaceans recorded from claypan sampling within the study area locality.

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1, 2}
Branchiopoda	Chydoridae	<i>Alona [Coronatella] rectangula novaezealandiae</i>		•	•	Also occurs in Victoria.
Branchiopoda	Chydoridae	<i>Alona [Coronatella] cf. rectangula</i> (may be >1spp)		•		Widespread in WA
Branchiopoda	Chydoridae	<i>Alona [Coronatella] sp.</i>	•			Unknown (genus widespread in Australia)
Branchiopoda	Chydoridae	<i>Armatalona macrocopa</i>			•	Widespread
Branchiopoda	Chydoridae	<i>Australospilus elongatus</i>			•	Also occurs in South Australia
Branchiopoda	Chydoridae	<i>Dunhevedia crassa</i>	•			Widespread
Branchiopoda	Chydoridae	<i>Leberis cf. diaphanus</i>	•			Widespread in WA
Branchiopoda	Cyzicidae	<i>Eocyclus n. sp.</i>	•			Onslow locality
Branchiopoda	Cyzicidae	<i>Ozestheria [Caenestheria] sarsii</i>	•			Also occurs in South Australia
Branchiopoda	Cyzicidae	<i>Ozestheria [Caenestheria] packardi</i>	•	•		Widespread
Branchiopoda	Cyzicidae	<i>Ozestheria [Caenestheria] n. sp.</i>	•			Onslow locality
Branchiopoda	Daphniidae	<i>Ceriodaphnia cornuta</i>	•	•		Widespread
Branchiopoda	Daphniidae	<i>Daphnia carinata</i>		•		Widespread
Branchiopoda	Daphniidae	<i>Daphnia projecta</i>	•			Widespread
Branchiopoda	Daphniidae	<i>Diaphanosoma excisum</i>	•			Widespread
Branchiopoda	Daphniidae	<i>Diaphanosoma n. sp.</i>	•			Onslow locality, common
Branchiopoda	Daphniidae	<i>Simocephalus latirostris</i>	•			Widespread
Branchiopoda	Limnadiidae	<i>Australimnadia multifasciata [Limnadia n. sp.]</i>	•			Onslow locality
Branchiopoda	Limnadiidae	<i>Limnadopsis birchii</i>	•			Widespread
Branchiopoda	Limnadiidae	<i>Limnadopsis tatei</i>	•			Widespread
Branchiopoda	Macrotrichidae	<i>Macrothrix indistincta</i>		•		Also occurs in southwest WA
Branchiopoda	Macrotrichidae	<i>Macrothrix sp.</i>	•			Unknown (genus widespread in Australia)
Branchiopoda	Moinidae	<i>Moina cf. australiensis</i> (CB)		•		Widespread in northwest WA
Branchiopoda	Moinidae	<i>Moina micrura</i>	•	•	•	Northern Australia
Branchiopoda	Moinidae	<i>Moina sp.</i>	•			Unknown (genus widespread in Australia)
Branchiopoda	Neotrichidae	<i>Neotrix armata</i>		•		Occurs in WA and Victoria
Branchiopoda	Sididae	<i>Diaphanosoma unguiculatum</i>			•	Widespread
Branchiopoda	Sididae	<i>Latonopsis brehmi</i>		•		Widespread
Branchiopoda	Sididae	<i>Latonopsis sp.</i>	•			Unknown (genus widespread in W Australia)
Branchiopoda	Thamnocephalidae	<i>Branchinella dubia</i>	•			Occurs in WA and Northern Territory
Branchiopoda	Thamnocephalidae	<i>Branchinella halsei</i>	•	•		Widespread
Branchiopoda	Thamnocephalidae	<i>Branchinella mcraei</i>	•			Pilbara region
Branchiopoda	Thamnocephalidae	<i>Branchinella occidentalis</i>	•			Widespread
Branchiopoda	Thamnocephalidae	<i>Branchinella pinderi</i>	•		•	Also occurs in the Murchison region
Branchiopoda	Thamnocephalidae	<i>Branchinella pinnata</i>	•			Widespread
Branchiopoda	Thamnocephalidae	<i>Branchinella proboscida</i>			•	Widespread
Branchiopoda	Triopsidae	<i>Triops australiensis australiensis</i>	•	•	•	Widespread
Malacostraca	-	penaid decapod (juvenile)	•			Unknown (insufficient level of identification)
Maxillopoda (subclass Copepoda)	Centropagidae	<i>Boeckella triarticulata</i>	•	•		Widespread
Maxillopoda (subclass Copepoda)	Centropagidae	<i>Calamoecia baylyi</i> (Cue form) (ex nr lucasi CB)		•		Widespread in northwest WA
Maxillopoda (subclass Copepoda)	Centropagidae	<i>Calamoecia halsei</i>	•		•	Northwest WA south to Shark Bay
Maxillopoda (subclass Copepoda)	Cyclopidae	<i>Mesocyclops brooksi</i>		•		Also occurs in southwest WA
Maxillopoda (subclass Copepoda)	Cyclopidae	<i>Mesocyclops sp.</i>	•			Unknown (genus widespread in Australia)
Maxillopoda (subclass Copepoda)	Cyclopidae	<i>Microcyclops varicans</i>		•		Occurs in WA and Victoria
Maxillopoda (subclass Copepoda)	Cyclopidae	<i>Pescecyclops sp. 442=462=465=CB2</i> (salinarum in Morton)		•		Widespread in WA
Maxillopoda (subclass Copepoda)	Cyclopidae	<i>Thermocyclops sp.</i>	•			Unknown (genus worldwide)
Maxillopoda (subclass Copepoda)	Diaptomidae	<i>Eodiaptomus lumholtzi</i>	•			Widespread in northwest WA

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1, 2}
Ostracoda	Cyprididae	<i>Bennelongia australis</i>	•	•		Northwest WA south to Shark Bay
Ostracoda	Cyprididae	<i>Bennelongia</i> CB		•		Pilbara region (Onslow and Port Hedland localities)
Ostracoda	Cyprididae	<i>Bennelongia minimus</i>		•		Pilbara region
Ostracoda	Cyprididae	<i>Bennelongia [nimala] tirigie</i>		•		Northwest WA, south to Perth (Martens et al. 2015)
Ostracoda	Cyprididae	<i>Bennelongia triangulata</i> (= sp. 414/460 CB)	•	•	•	Also occurs at Shark Bay
Ostracoda	Cyprididae	<i>Cypretta ?lutea</i>		•		Also occurs in Northern Territory (<i>C. lutea</i>)
Ostracoda	Cyprididae	<i>Cypretta 'triangulum'</i>	•	•		Pilbara region (Onslow inland to Pannawonica)
Ostracoda	Cyprididae	<i>Cypretta baylyi</i>		•		Also occurs in NT
Ostracoda	Cyprididae	<i>Cypricercus</i> n. sp. 69	•			Pilbara region
Ostracoda	Cyprididae	<i>Cypricercus salinus</i>		•		Widespread in WA
Ostracoda	Cyprididae	<i>Cypricercus</i> sp. 422		•	•	Widespread in northwest WA
Ostracoda	Cyprididae	<i>Cypricercus</i> sp. 442	•	•		Also occurs in southwest WA
Ostracoda	Cyprididae	<i>Hemicypris megalops</i>		•		Widespread in northwest WA
Ostracoda	Cyprididae	<i>Heterocypris</i> sp. PSW66	•		•	Onslow locality
Ostracoda	Cyprididae	<i>Ilyodromus</i> sp. PB		•		Pilbara region (widespread)
Ostracoda	Cyprididae	<i>Isocypris williamsi</i> (ex <i>Ilyodromus</i> sp. 413)		•		Pilbara region (widespread)
Ostracoda	Cyprididae	<i>Mytilocypris coolcalalaya</i>			•	Widespread in northwest WA
Ostracoda	Cyprididae	<i>Riocypris fitzroyi</i>			•	Also occurs in western Kimberley
Ostracoda	Cyprididae	<i>Zonocyprretta kalimna</i>	•		•	Widespread in northern WA
Ostracoda	Ilyocyprididae	<i>Ilyocypris 'spiculata'</i>		•		Widespread in WA
Ostracoda	Ilyocyprididae	<i>Ilyocypris australiensis</i>			•	Widespread
Ostracoda	Limnocytheridae	<i>Limnocytheridae</i> n.gen. sp 419 (CB)		•		Widespread in WA
Ostracoda	Limnocytheridae	<i>Paralimnocythere</i> n. sp. (PSW)			•	Pilbara region (widely separated records)
Ostracoda	-	Ostracoda sp. 'small round 2 eyes'	•			Unknown (insufficient level of identification)

¹ Based on NatureMap (DBCA 2019) and Atlas of Living Australia (ALA 2019) database records, and information in Biota and Timms (2010) and Pinder et al. (2010), unless otherwise noted.

² The distribution assessments have been made for the purpose of identifying taxa with distributions potentially restricted to the Pilbara region or the Onslow locality. Distribution notes for taxa that are not restricted to these extents should not be considered a comprehensive assessment of the distributions of those taxa.

Insects recorded from claypan sampling within the study area locality.

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1, 2}
Insecta (order Coleoptera)	Curculionidae	Curculionid sp. 1	•			Unknown (family widespread in Australia)
Insecta (order Coleoptera)	Curculionidae	Curculionid sp. 2	•			Unknown (family widespread in Australia)
Insecta (order Coleoptera)	Dytiscidae	<i>Allodessus bistrigatus</i>	•	•		Widespread
Insecta (order Coleoptera)	Dytiscidae	<i>Copelatus nigrolineatus</i>	•			Widespread in northern Australia
Insecta (order Coleoptera)	Dytiscidae	<i>Cybister tripunctatus</i>	•	•		Widespread
Insecta (order Coleoptera)	Dytiscidae	<i>Cybister</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Dytiscidae	<i>Eretes australis</i>	•	•		Widespread
Insecta (order Coleoptera)	Dytiscidae	<i>Hydroglyphus grammopterus</i>	•	•		Widespread in northern Australia
Insecta (order Coleoptera)	Dytiscidae	<i>Hydroglyphus leai</i>		•		Widespread in northern Australia
Insecta (order Coleoptera)	Dytiscidae	<i>Hyphydrus lyratus</i>	•			Widespread in northern Australia
Insecta (order Coleoptera)	Dytiscidae	<i>Hyphydrus</i> sp.	•	•		Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Dytiscidae	<i>Laccophilus sharpi</i>	•	•		Widespread in northern Australia
Insecta (order Coleoptera)	Dytiscidae	<i>Megaporus</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Dytiscidae	<i>Sternopriscus</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Gyrinidae	<i>Dineutus australis</i>	•	•		Widespread
Insecta (order Coleoptera)	Haliplidae	<i>Haliplus</i> n. sp. (testudo 'light')	•			Pilbara region
Insecta (order Coleoptera)	Haliplidae	<i>Haliplus</i> sp.	•	•		Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus approximans</i>	•			Widespread
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus macumbensis</i>	•			Widespread
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus</i> n. sp. ('pilbara sp 4')	•			Pilbara region
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus</i> nr. <i>josephenae</i>	•			Pilbara region
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus nutans</i>		•		Widespread
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus pulchellus</i>	•	•		Pilbara region and Great Sandy Desert
Insecta (order Coleoptera)	Hydrophilidae	<i>Berosus</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Hydrophilidae	<i>Enochrus deserticola</i>	•	•		Widespread
Insecta (order Coleoptera)	Hydrophilidae	<i>Enochrus elongatus</i>	•			Widespread
Insecta (order Coleoptera)	Hydrophilidae	<i>Hydrophilus brevispina</i>	•			Widespread
Insecta (order Coleoptera)	Hydrophilidae	<i>Hydrophilus</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Coleoptera)	Hydrophilidae	<i>Paracymus spenceri</i>		•		Widespread
Insecta (order Coleoptera)	Nepidae	<i>Ranatra diminuta</i>	•			Widespread
Insecta (order Diptera)	Ceratopogonidae	Ceratopogonid sp.	•			Unknown (family widespread in Australia)
Insecta (order Diptera)	Ceratopogonidae	<i>Culicoides</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Diptera)	Ceratopogonidae	<i>Nilobezzia</i> sp. P2 (PSW)		•		Pilbara region
Insecta (order Diptera)	Chironomidae	<i>Chironomus</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Diptera)	Chironomidae	<i>Cryptochironomus griseidorsum</i>		•		Also occurs southeast Australia
Insecta (order Diptera)	Chironomidae	<i>Dicrotendipes</i> sp. P4 (PSW)		•		Pilbara region
Insecta (order Diptera)	Chironomidae	<i>Dicrotendipes</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Diptera)	Chironomidae	<i>Kiefferulus intertinctus</i>			•	Widespread
Insecta (order Diptera)	Chironomidae	<i>Polypedilum leei</i>		•		Northwest WA, southeast Australia
Insecta (order Diptera)	Chironomidae	<i>Polypedilum</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Diptera)	Chironomidae	<i>Procladius paludicola</i>		•	•	Widespread
Insecta (order Diptera)	Chironomidae	<i>Rheotanytarsus juliae</i>		•		Widespread
Insecta (order Diptera)	Chironomidae	<i>Tanytarsus</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Diptera)	Culicidae	<i>Anopheles annulipes</i>	•	•		Widespread
Insecta (order Diptera)	Culicidae	<i>Culex starckeae</i>	•			Widespread in coastal northwest Australia
Insecta (order Diptera)	Leptoceridae	<i>Oecetis</i> sp. Pilbara 5 (PSW)		•		Pilbara region south to inland of Geraldton
Insecta (order Diptera)	Leptoceridae	<i>Oecetis</i> sp.		•		Unknown (genus widespread in Australia)

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1, 2}
Insecta (order Diptera)	Leptoceridae	<i>Triplectides australis</i>	•	•		Widespread
Insecta (order Diptera)	Stratiomyidae	Stratiomyidae sp.	•			Unknown (family widespread in Australia)
Insecta (order Diptera)	Tabanidae	Tabanidae sp.		•		Unknown (family widespread in Australia)
Insecta (order Ephemeroptera)	Baetidae	<i>Cloeon</i> sp. P1 (PSW)		•		Pilbara region
Insecta (order Ephemeroptera)	Baetidae	<i>Cloeon</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Ephemeroptera)	Baetidae	Baetidae sp.		•		Unknown (family widespread in Australia)
Insecta (order Ephemeroptera)	Caenidae	<i>Tasmanocoenis arcuata</i>		•		Widespread
Insecta (order Ephemeroptera)	Caenidae	<i>Tasmanocoenis</i> sp. E (PSW)		•		Pilbara region
Insecta (order Hemiptera)	Belostomatidae	<i>Diplonynchus eques</i>	•			Widespread
Insecta (order Hemiptera)	Belostomatidae	<i>Lethocerus distinctifemur</i>	•	•		Widespread
Insecta (order Hemiptera)	Corixidae	<i>Agraptocorixa eurynome</i>	•			Widespread
Insecta (order Hemiptera)	Corixidae	<i>Agraptocorixa parvipunctata</i>	•	•		Widespread
Insecta (order Hemiptera)	Corixidae	<i>Agraptocorixa</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Hemiptera)	Corixidae	<i>Micronecta gracilis</i>		•		Widespread
Insecta (order Hemiptera)	Corixidae	<i>Micronecta</i> sp.	•	•		Unknown (genus widespread in Australia)
Insecta (order Hemiptera)	Gerridae	<i>Limnogonus fossarum</i>	•			Widespread in northern Australia
Insecta (order Hemiptera)	Nepidae	<i>Laccotrephes tristis</i>	•			Widespread
Insecta (order Hemiptera)	Notonectidae	<i>Anisops canaliculatus</i>	•	•		Widespread in northern Australia
Insecta (order Hemiptera)	Notonectidae	<i>Anisops nasutus</i>	•	•		Widespread
Insecta (order Hemiptera)	Notonectidae	<i>Anisops paraexigerus</i>	•	•		Widespread
Insecta (order Hemiptera)	Notonectidae	<i>Anisops stali</i>	•	•		Widespread
Insecta (order Hemiptera)	Notonectidae	<i>Anisops thienemanni</i>	•	•		Widespread
Insecta (order Hemiptera)	Notonectidae	<i>Anisops</i> sp.		•		Unknown (genus widespread in Australia)
Insecta (order Hemiptera)	Pleidae	<i>Paraplea</i> sp.	•			Unknown (genus widespread in Australia)
Insecta (order Odonata)	Aeshnidae	<i>Adversaeschna brevistyla</i>		•		Widespread
Insecta (order Odonata)	Aeshnidae	<i>Anax</i> [Hemianax] <i>papuensis</i>	•	•		Widespread
Insecta (order Odonata)	Coenagrionidae	<i>Argiocnemis rubescens</i>		•		Widespread
Insecta (order Odonata)	Coenagrionidae	<i>Ischnura aurora aurora</i>		•		Widespread
Insecta (order Odonata)	Coenagrionidae	<i>Ischnura heterostricta</i>	•			Widespread
Insecta (order Odonata)	Coenagrionidae	<i>Xanthagrion erythroneurum</i>	•	•	•	Widespread
Insecta (order Odonata)	Corduliidae	<i>Hemicordulia tau</i>	•	•		Widespread
Insecta (order Odonata)	Isostictidae	<i>Eurysticta coolawanyah</i>		•		Pilbara region
Insecta (order Odonata)	Lestidae	<i>Austrolestes aridus</i>	•	•		Widespread
Insecta (order Odonata)	Libellulidae	<i>Diplacodes bipunctata</i>	•	•		Widespread
Insecta (order Odonata)	Libellulidae	<i>Diplacodes haematodes</i>		•		Widespread
Insecta (order Odonata)	Libellulidae	<i>Orthetrum caledonicum</i>	•	•		Widespread
Insecta (order Odonata)	Libellulidae	<i>Pantala flavescens</i>		•		Widespread
Insecta (order Odonata)	Libellulidae	<i>Trapezostigma loewi</i>	•			Widespread
Insecta (order Trichoptera)	Hydropsychidae	Hydropsychidae sp.		•		Unknown (family widespread in Australia)
Insecta (order Trichoptera)	Philopotamidae	<i>Chimarra</i> sp. AV17 (PSW)		•		Pilbara region

¹ Based on NatureMap (DBCA 2019) and Atlas of Living Australia (ALA 2019) database records, and information in Biota and Timms (2010) and Pinder et al. (2010), unless otherwise noted.

² The distribution assessments have been made for the purpose of identifying taxa with distributions potentially restricted to the Pilbara region or the Onslow locality. Distribution notes for taxa that are not restricted to these extents should not be considered a comprehensive assessment of the distributions of those taxa.

Rotifers recorded from claypan sampling within the study area locality.

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1, 2}
Bdelloidea	-	Bdelloidea sp. 2:2		•		Widespread (e.g. MWH Australia 2016)
Bdelloidea	-	Bdelloidea sp. 3:3		•		Widespread (e.g. MWH Australia 2016)
Bdelloidea	-	Bdelloidea sp.	•			Unknown (class occurs worldwide)
Monogononta	Asplanchnidae	Asplanchna sieboldi	•		•	Widespread
Monogononta	Asplanchnidae	Asplanchnopus multiceps	•			Widespread
Monogononta	Brachionidae	Anuraeopsis fissa	•			Widespread
Monogononta	Brachionidae	Anuraeopsis sp.	•			Unknown (genus occurs worldwide)
Monogononta	Brachionidae	Brachionus dichotomus		•		Northwest WA south to Shark Bay
Monogononta	Brachionidae	Brachionus falcatus		•		Widespread
Monogononta	Brachionidae	Brachionus leydigii		•		Widespread
Monogononta	Brachionidae	Brachionus nilsoni			•	Widespread
Monogononta	Brachionidae	Brachionus quadridentatus	•	•		Widespread
Monogononta	Brachionidae	Keratella procurva		•		Widespread
Monogononta	Brachionidae	Keratella tropica		•		Widespread
Monogononta	Brachionidae	Keratella sp. nov. (aff. australis grp) (CB)			•	Widespread in WA
Monogononta	Brachionidae	Platyias quadricornis	•			Widespread
Monogononta	Conochilidae	Conochilus natans	•			Widespread
Monogononta	Dicranophoridae	Dicranophorus epicharis		•		Widespread
Monogononta	Euchlanidae	Euchlanis dilatata	•			Widespread
Monogononta	Euchlanidae	Euchlanis meneta	•			Widespread
Monogononta	Flosculariidae	Lacinularia cf. racemovata	•			Widespread
Monogononta	Flosculariidae	Ptygura cf. crystallina	•			Widespread
Monogononta	Hexarthridae	Hexarthra mira	•	•		WA (widespread)
Monogononta	Lecanidae	Lecane bulla			•	Widespread
Monogononta	Lecanidae	Lecane cf. eswari	•			Widespread (few Australian records)
Monogononta	Lecanidae	Lecane cf. formosa	•			Widespread
Monogononta	Lecanidae	Lecane cf. luna	•			Northwest WA, southeast Australia (Bice et al. 2015)
Monogononta	Lecanidae	Lecane cf. pertica		•		Northwest WA, Mt Keith (e.g. MWH Australia 2016)
Monogononta	Lecanidae	Lecane cf. spenceri (PSW)			•	Pilbara region
Monogononta	Lecanidae	Lecane halsei		•		Widespread in WA
Monogononta	Lecanidae	Lecane n. sp. PSW031		•		Onslow locality
Monogononta	Lecanidae	Lecane sp.	•			Unknown (genus occurs worldwide)
Monogononta	Lepadellidae	Colurella uncinata bicuspidata	•			Widespread
Monogononta	Lepadellidae	Lepadella sp.	•			Unknown (genus occurs worldwide)
Monogononta	Notommatidae	Cephalodella cf. tenuiseta	•			Widespread
Monogononta	Notommatidae	Cephalodella cf. ventripes	•			Widespread
Monogononta	Notommatidae	Cephalodella forficula	•			Widespread
Monogononta	Notommatidae	Cephalodella intuta	•			Widespread
Monogononta	Notommatidae	Enteroplea cf. lacustris (PSW)			•	Widespread in WA
Monogononta	Notommatidae	Enteroplea n. sp. (PSW8)	•			Pilbara region
Monogononta	Notommatidae	Eosphora najas	•			Widespread
Monogononta	Notommatidae	Eosphora thoides	•			Widespread
Monogononta	Notommatidae	Notommata cerberus	•			Widespread
Monogononta	Notommatidae	Notommata tripus	•			Widespread
Monogononta	Synchaetidae	Polyarthra dolichoptera	•	•	•	Widespread
Monogononta	Testudinellidae	Testudinella cf. trilobata (=sp P3 PSW)		•		Pilbara region
Monogononta	Testudinellidae	Testudinella parva			•	Widespread

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1,2}
Monogononta	Testudinellidae	<i>Testudinella patina</i>		•		Widespread
Monogononta	Trichocercidae	<i>Trichocerca obtusidens</i>	•			Widespread
Monogononta	Trichocercidae	<i>Trichocerca similis</i>		•	•	Widespread
Monogononta	Trichocercidae	<i>Trichocerca tigris</i>		•		Widespread
Monogononta	Trichocercidae	<i>Trichocerca cf. tigris</i>		•		Northwest WA, South America (Serafim et al. 2003)
Monogononta	Trichocercidae	<i>Trichocera</i> sp.	•			Unknown (genus occurs worldwide)
Monogononta	Trochosphaeridae	<i>Filinia longiseta</i>			•	Widespread

¹ Based on NatureMap (DBCA 2019) and Atlas of Living Australia (ALA 2019) database records, and information in Biota and Timms (2010), Pinder et al. (2010) and Segers (2007) unless otherwise noted.

² The distribution assessments have been made for the purpose of identifying taxa with distributions potentially restricted to the Pilbara region or the Onslow locality. Distribution notes for taxa that are not restricted to these extents should not be considered a comprehensive assessment of the distributions of those taxa.

Other fauna recorded from claypan sampling within 40 km of study area

Class	Family	Lowest Taxon Identification	Biota and Timms (2010)	Cane River Claypan (Pinder et al. 2010)	Minderoo Claypan (Pinder et al. 2010)	Distribution notes ^{1, 2}
Annelids						
Oligochaeta	Naididae	<i>Nais communis</i>	•			Widespread
Arachnids (Acarina)						
Arachnida [Acarina]	Arrenuridae	<i>Arrenurus balladoniensis</i>		•		Widespread (Smit 1997)
Arachnida [Acarina]	Arrenuridae	<i>Arrenurus</i> sp. 15 (DEC)	•			Pilbara
Arachnida [Acarina]	Hydrachnidae	<i>Hydrachna</i> sp. 4/5 (PSW)		•		Pilbara
Arachnida [Acarina]	Hydrachnidae	<i>Hydrachna</i> sp.	•			Unknown (genus widespread in Aus)
Arachnida [Acarina]	Limnesiidae	<i>Limnesia</i> sp. 4 (PSW)		•		Pilbara
Arachnida [Acarina]	Sarcoptiformes	Oribatida group 5 (PSS)			•	Pilbara and vicinity of Geraldton
Flatworms						
-	-	<i>Turbellaria</i> sp.		•	•	Unknown (insufficient level of identification)
Rhabditophora	Typhloplanidae	<i>Mesostoma</i> sp.	•			Unknown (genus widespread)
Molluscs						
Gastropoda	Lymnaeidae	<i>Austropeplea lessoni</i>		•		Widespread
Gastropoda	Planorbidae	<i>Isidorella egraria</i>		•		Pilbara
Gastropoda	Planorbidae	<i>Isidorella</i> sp.	•			Unknown (genus widespread in Aus)
Nematodes						
-	-	Nematoda sp. P6 (PSW)		•		Pilbara
-	-	Nematoda sp.			•	Unknown (insufficient level of identification)
Protists						
Oligohymenohporea	Epistylididae	<i>Epistylis</i> sp.	•	•		Unknown (genus widespread)
Oligohymenohporea	Peniculidae	<i>Paramecium</i> sp.		•		Unknown (genus widespread)
Silicofilosea	Euglyphidae	<i>Euglypha</i> sp.		•		Unknown (genus widespread)
Tubulinea	Arcellidae	<i>Arcella bathystoma</i>	•			Widespread (e.g. Bankov et al. 2018)
Tubulinea	Arcellidae	<i>Arcella discoides</i>	•			Widespread
Tubulinea	Arcellidae	<i>Arcella</i> sp. P1		•		Pilbara
Tubulinea	Diffugiidae	<i>Diffugia</i> sp. P1		•		Pilbara

¹ Based on NatureMap (DBCA 2019) and Atlas of Living Australia (ALA 2019) database records, and information in Biota and Timms (2010) and Pinder et al. (2010), unless otherwise noted.

² The distribution assessments have been made for the purpose of identifying taxa with distributions potentially restricted to the Pilbara or the Onslow area (i.e. within 40 km of the study area). Distribution notes for taxa that are not restricted to these regions should not be considered a comprehensive assessment of the distributions of those taxa. This page intentionally blank.