

Natural Area Holdings Pty Ltd
57 Boulder Road
Malaga, WA 6090

16 September 2021

[REDACTED]
NEWest Alliance
Thornlie- Cockburn Link

Dear [REDACTED]

**RE: BASIC FLORA AND FAUNA SURVEY AT ADDITIONAL AREAS TO INFORM NATIVE
VEGETATION CLEARING PERMIT (NVCP) APPLICATION**

Please find enclosed the basic flora and fauna surveys of six additional areas at Clifton Road, Leeming Road, Ken Hurst Park, Training Place and Grey Street to inform a Native Vegetation Clearing Permit (NVCP) amendment.

Vegetation condition ranges from Completed Degraded to Good, with only Ken Hurst Park (North) assessed to be in Good condition. All sites have relatively high weed loads with an average of 60% of the flora species recorded within the areas constituting non-native introduced species.

Evidence of the European Rabbit (*Oryctolagus cuniculus*) in the form of scats and diggings was observed at Leeming Road (North) and Ken Hurst Park (South) sites. Western Grey Kangaroo (*Macropus fuliginosus*) were observed utilising several of the sites as evidenced from scats and tracks. No other fauna species were observed within the survey areas.

Regards



[REDACTED]
Environmental Scientist

[REDACTED]

Introduction

Natural Area Consulting Management Services (Natural Area) was commissioned by NEWest Alliance to undertake a basic flora, vegetation and fauna survey at six additional areas along the Thornlie-Cockburn link to inform an amendment to a Native Vegetation Clearing Permit (NVCP). The assessment was undertaken by Natural Area's Ecologist [REDACTED] on 13 September 2021. The location and size of the additional areas to be surveyed are shown in Table 1 and Figures 1 to 4.

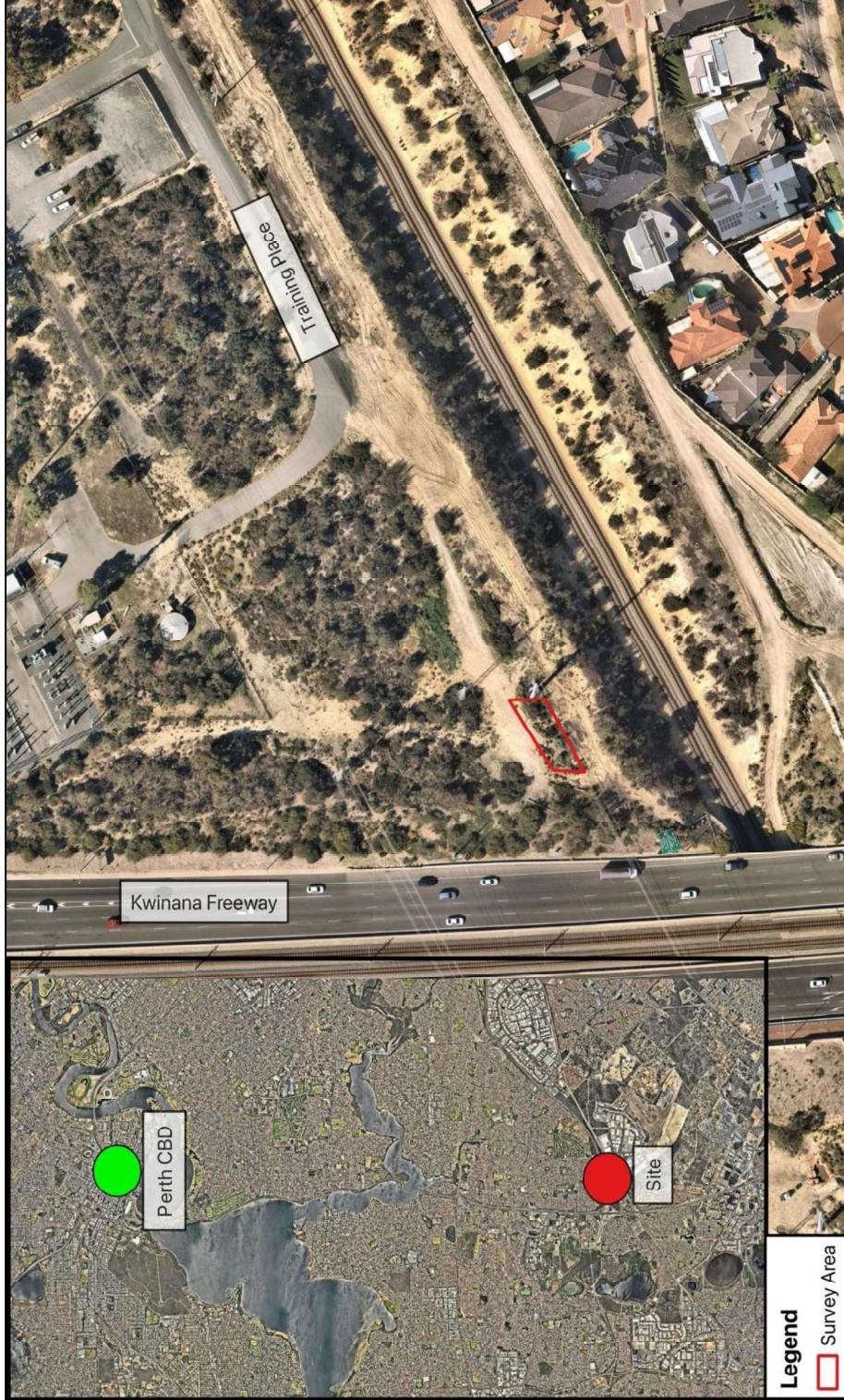
Table 1: Survey areas and corresponding sizes

Survey Location	Size (sqm)
Training Place	183
Leeming Road (North)	102
Leeming Road (South)	422
Ken Hurst Park (North)	27
Ken Hurst Park (South)	58
Grey Street	42

The basic flora survey involves a low intensity survey of the flora and vegetation to describe the general vegetation characteristics and conditions of the site. The basic flora and vegetation survey was conducted in accordance with *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). Due to the small areas surveyed, all flora species, including both native and non-native flora species present were recorded. Vegetation condition of the survey areas was scored based on the Keighery (1994) scale. Condition is determined based on the vegetation structure, level of disturbance at each structural layer and the ability of the vegetation unit to regenerate.

Similarly, a basic fauna survey is a low intensity survey aimed to gather broad fauna and habitat information. It involves opportunistic fauna observations, including evidence of scats, tracks and diggings, to determine the general fauna assemblages present and to identify if a detailed or targeted survey is required. The basic fauna survey was conducted in accordance with *Technical Guidance Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020).





Client: NEWest Alliance- TCL
 Date: Sep 2021
 Image Source: Nearmap,2021
 Datum: GDA 94

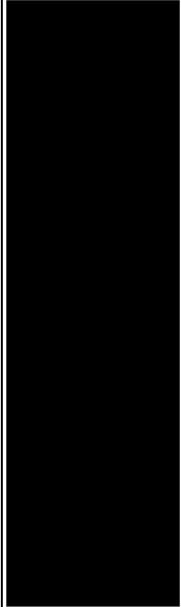
Figure 1:
 Additional Survey Area
 Training Place

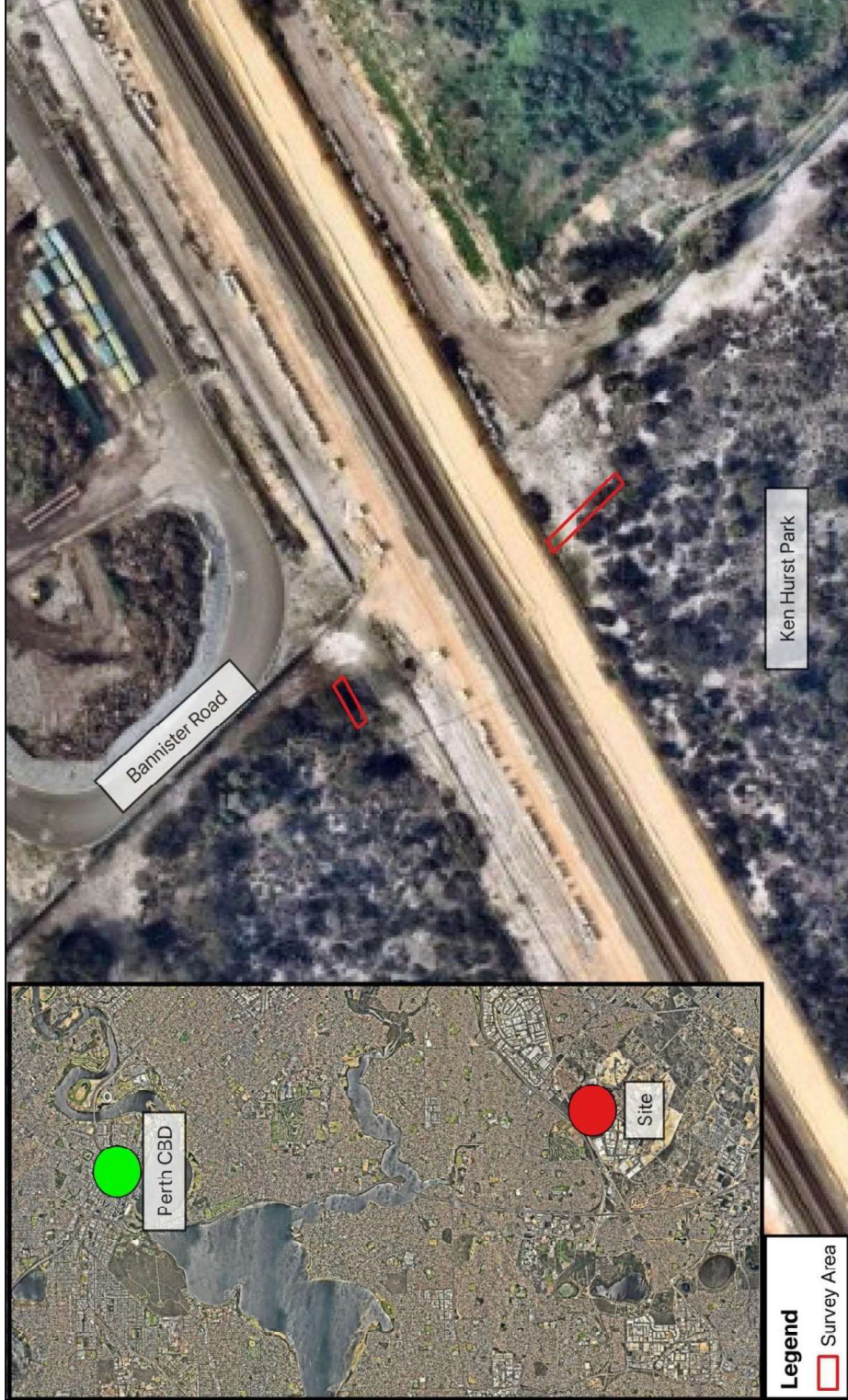




Client: NEWest Alliance- TCL
 Date: Sep 2021
 Created by: [Redacted]
 Image Source: Nearmap, 2021
 Datum: GDA 94

Figure 2:
 Additional Survey Area
 Leeming Road

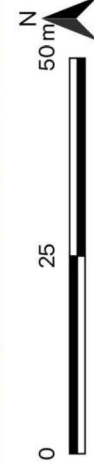
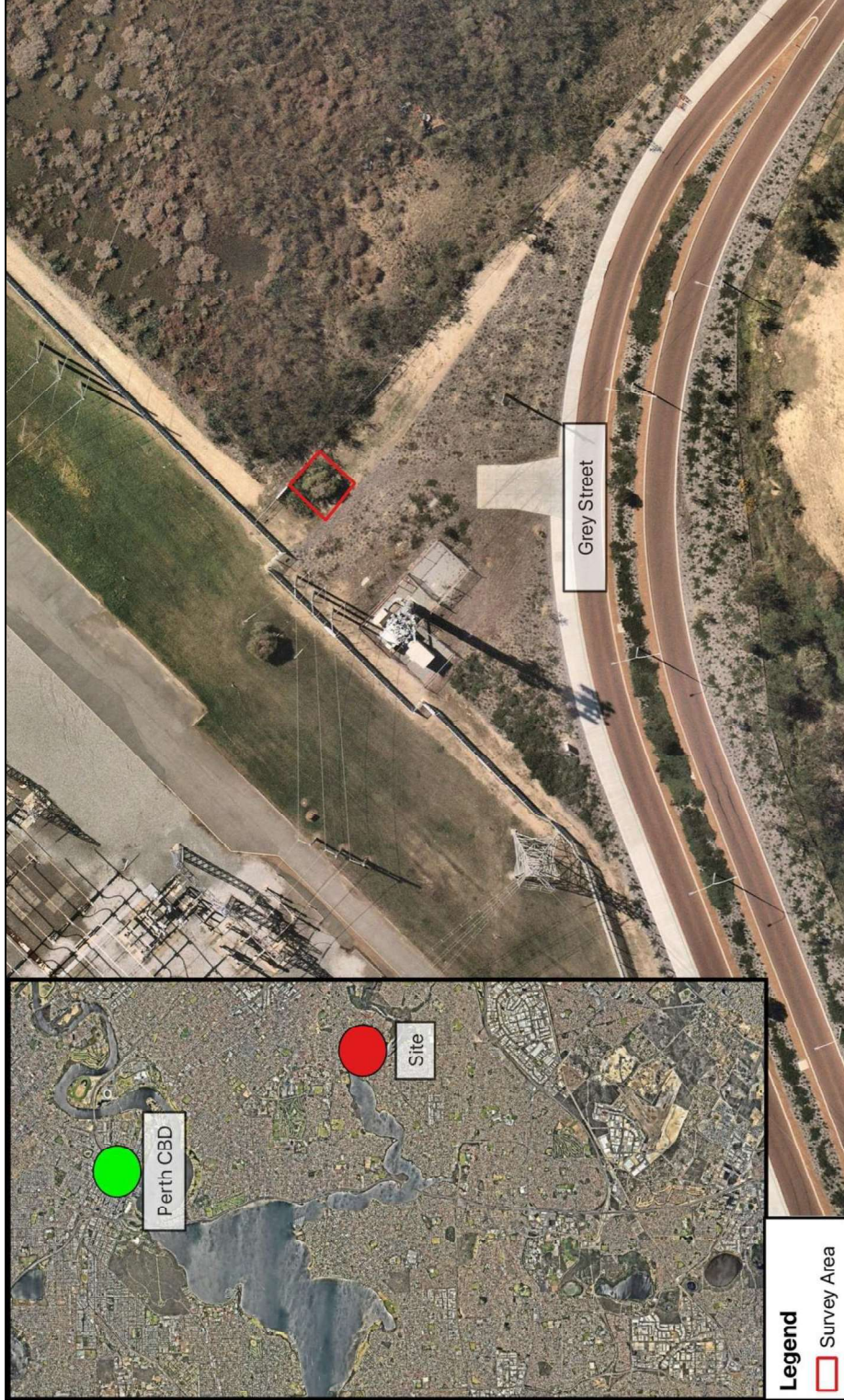




Client: NEWest Alliance- TCL
Date: Sep 2021
Created by: [Redacted]
Image Source: Nearmap,2021
Datum: GDA 94

Figure 3:
Additional Survey Area
Ken Hurst Park





Client: NEWest Alliance- TCL
 Date: Sep 2021
 Created by: [Redacted]
 Image Source: Nearmap,2021
 Datum: GDA 94

Figure 4:
Additional Survey Area
Grey Street

Legend
 Survey Area



Results

Training Place

Vegetation condition is assessed to be Degraded, with limited vegetative structure and high weed loads. The vegetation type surrounding the survey area consists of open Banksia Woodland over a weedy understorey. The vegetation within the site boundary consists of an open shrubland of *Adenanthos cygnorum* over introduced herbs and grasses. Seventeen (80%) of the 21 flora species recorded within the survey area are non-native introduced flora species with *Pelargonium capitatum* and introduced grass dominating the understorey. No observations of fauna were recorded within the site.



Figure 5: Site photos of Training Place survey area

Table 2: Flora species recorded at Training Place site

Species	Common Name	Species	Common Name
<i>Adenanthos cygnorum</i>	Common Woollybush	<i>Lagurus ovatus</i> *	Hare's Tail grass
<i>Arctotheca calendula</i> *	Capeweed	<i>Lysimachia arvensis</i> *	Pimpernel
<i>Brassica tournefortii</i> *	Mediterranean Turnip	<i>Oxalis pes-caprae</i> *	Soursob
<i>Briza maxima</i> *	Blowfly Grass	<i>Pelargonium capitatum</i> *	Rose Pelargonium
<i>Carpobrotus edulis</i> *	Hottentot Fig	<i>Retama raetam</i> *	
<i>Cenchrus setaceus</i> *	Fountain grass	<i>Scholtzia involucrata</i>	Spiked Scholtzia
<i>Ehrharta calycina</i> *	Perennial Veldt Grass	<i>Sonchus oleraceus</i> *	Common Sowthistle
<i>Ehrharta longiflora</i> *	Annual Veldt Grass	<i>Spyridium globulosum</i>	Basket Bush
<i>Euphorbia peplus</i> *	Petty Spurge	<i>Stirlingia latifolia</i>	Blueboy





<i>Euphorbia terracina</i> *	Geraldton Carnation Weed	<i>Watsonia meriana</i> *	Bugle Lily
<i>Hypochaeris glabra</i> *	Smooth Cats-ear		

*Denotes non-native/ introduced species



Leeming Road (North)

Vegetation condition is assessed to be Completely Degraded with majority of the site showing signs of being historically cleared. Remanent vegetation type is Open Banksia Woodland. Ten (50%) of the flora species are non-native introduced flora species. Scat and diggings from the European Rabbit (*Oryctolagus cuniculus*) were observed within the survey area. European rabbits are classed as Declared Pests under the *Biosecurity and Agriculture Management Act 2007*, which requires management and control from landholders.



Figure 6: Site photos showing vegetation condition and signs of European Rabbits



Table 3: Flora species recorded at Leeming Road (North)

Species	Common Name	Species	Common Name
<i>Bossiaea eriocarpa</i>	Common Brown Pea	<i>Hypochaeris glabra*</i>	Smooth Cats-ear
<i>Brassica tournefortii*</i>	Mediterranean Turnip	<i>Jacksonia furcellata</i>	Grey Stinkwood
<i>Briza maxima*</i>	Blowfly Grass	<i>Lysimachia arvensis*</i>	Pimpernel
<i>Conostephium pendulum</i>	Pearl Flower	<i>Melaleuca preissiana</i>	Moonah
<i>Crassula colorata</i>	Dense Stonecrop	<i>Phlebocarya ciliata</i>	
<i>Dasyogon bromeliifolius</i>	Pineapple Bush	<i>Scholtzia involucrata</i>	Spiked Scholtzia
<i>Ehrharta calycina*</i>	Perennial Veldt Grass	<i>Senecio condylus</i>	
<i>Erodium botrys*</i>	Long Storksbill	<i>Sonchus oleraceus*</i>	Common Sowthistle
<i>Euphorbia peplus*</i>	Petty Spurge	<i>Trachyandra divaricata*</i>	
<i>Fumaria capreolata*</i>	Whiteflower Fumitory	<i>Xanthorrhoea brunonis</i>	

*Denotes non-native/ introduced species



Leeming Road (South)

The two separate sites in Leeming Road (South) were assessed as a single area due to their proximity to each other and the small size (6 sqm) of the adjacent site. Vegetation condition is assessed to be Completely Degraded with most of the site being historically cleared. The site is highly disturbed, with *Xanthorrhoea preissii* and *Adenanthos cygnorum* over an understorey comprising of introduced herbs and grasses. Scats and tracks of the Western Grey Kangaroo (*Macropus fuliginosus*) were observed within the site. Due to the small size and degraded nature of the vegetation, it is more than likely that the Western Grey Kangaroos utilise the site transiently for movement and feeding.



Figure 7: Site photos showing proximity to disturbed areas and Western Grey Kangaroo Scats



Table 4: Flora species recorded at Leeming Road (South)

Species	Common Name	Species	Common Name
<i>Acacia saligna</i>		<i>Hibbertia subvaginata</i>	
<i>Adenanthos cygnorum</i>		<i>Hypochaeris glabra*</i>	Smooth Cats-ear
<i>Arctotheca calendula*</i>	Capeweed	<i>Hypolaena exsulca</i>	
<i>Asphodelus fistulosus*</i>	Onion weed	<i>Jacksonia furcellata</i>	Grey Stinkwood
<i>Brassica tournefortii*</i>	Mediterranean Turnip	<i>Lolium rigidum*</i>	Wimmera Ryegrass
<i>Cenchrus setaceus*</i>	Fountain grass	<i>Macrozamia riedlei</i>	Zamia
<i>Ehrharta calycina*</i>	Perennial Veldt Grass	<i>Pelargonium capitatum*</i>	Rose Pelargonium
<i>Ehrharta longiflora*</i>	Annual Veldt Grass	<i>Scholtzia involucrata</i>	Spiked Scholtzia
<i>Euphorbia peplus*</i>	Petty Spurge	<i>Trachyandra divaricata*</i>	
<i>Gladiolus caryophyllaceus*</i>	Wild Gladiolus	<i>Xanthorrhoea preissii</i>	

*Denotes non-native/ introduced species



Ken Hurst Park (North)

Vegetation Condition is assessed to be Good with several vegetative strata present. Vegetation type consists of *Banksia* spp. and *Allocasuarina fraseriana* Open Woodland over *Xanthorrhoea* spp. and *Regelia ciliata* and an understory comprising of introduced herbs and grasses. Part of the site includes sections of planted revegetation. Of the 23 flora species observed, 10 (43%) were non-native introduced flora species. No observations of fauna were noted within the site.



Figure 8: Site photos showing of Ken Hurst Park (North)

Table 5: Flora species recorded at Ken Hurst Park (North)

Species	Common Name	Species	Common Name
<i>Allocasuarina fraseriana</i>	Sheoak	<i>Fumaria capreolata</i> *	Whiteflower Fumitory
<i>Arctotheca calendula</i> *	Capeweed	<i>Hypochaeris glabra</i> *	Smooth Cats-ear
<i>Banksia attenuata</i>	Slender Banksia	<i>Melaleuca seriata</i>	
<i>Banksia ilicifolia</i>	Holly-leaved Banksia	<i>Phyllanthus calycinus</i>	False Boronia
<i>Banksia menziesii</i>	Firewood Banksia	<i>Regelia ciliata</i>	
<i>Brassica tournefortii</i> *	Mediterranean Turnip	<i>Retama raetam</i> *	
<i>Conostylis aculeata</i>	Prickly Conostylis	<i>Senecio condylus</i>	
<i>Daviesia physodes</i>		<i>Sonchus oleraceus</i> *	Common Sowthistle
<i>Ehrharta calycina</i> *	Perennial Veldt Grass	<i>Trachyandra divaricata</i> *	
<i>Ehrharta longiflora</i> *	Annual Veldt Grass	<i>Xanthorrhoea brunonis</i>	
<i>Erodium botrys</i> *	Long Storksbill	<i>Xanthorrhoea preissii</i>	Grass tree
<i>Euphorbia peplus</i> *	Petty Spurge		

*Denotes non-native/ introduced species



Ken Hurst Park (South)

Vegetation Condition is Degraded, with vegetation type constituting of *Banksia ilicifolia* and *Melaleuca preissiana* Open Woodland over mixed shrubs and an understory of introduced herbs and grasses. Eight (53%) of the 15 flora species observed on site were non-native introduced species.

Scat and tracks of the Western Grey Kangaroo (*Macropus fuliginosus*) and European Rabbit (*Oryctolagus cuniculus*) were observed on site. Further evidence of both species utilising the site is evidenced by the heavy grazing on the native grass-like herb, *Phlebocarya ciliata*.



Figure 9: Site photos of vegetation and fauna observations (Bottom right: rabbit diggings)



Table 6: Flora species recorded at Ken Hurst Park (South)

Species	Common Name	Species	Common Name
<i>Adenanthos cygnorum</i>	Common Woollybush	<i>Fumaria capreolata</i> *	Whiteflower Fumitory
<i>Arctotheca calendula</i> *	Capeweed	<i>Hypochaeris glabra</i> *	Smooth Cats-ear
<i>Banksia dallanneyi</i>	Couch Honeypot	<i>Lysimachia arvensis</i> *	*Pimpernel
<i>Banksia ilicifolia</i>	Holly-leaved Banksia	<i>Melaleuca seriata</i>	
<i>Brassica tournefortii</i> *	Mediterranean Turnip	<i>Phlebocarya ciliata</i>	
<i>Crassula colorata</i>		<i>Regelia ciliata</i>	
<i>Ehrharta calycina</i> *	Perennial Veldt Grass	<i>Solanum nigrum</i> *	Black Berry Nightshade
<i>Ehrharta longiflora</i> *	Annual Veldt Grass		

*Denotes non-native/ introduced species



Grey Street

Vegetation Condition is Completely Degraded with almost all flora species (84.6%) being non-native introduced species. *Watsonia meriana* was the dominant understorey species, with high coverage across the entire survey area. No observations of fauna within the survey area.



Figure 10: Sites photos of Grey Street survey area

Table 7: Flora species recorded at Grey Street

Species	Common Name	Species	Common Name
<i>Acacia iteaphylla</i> *		<i>Melaleuca raphiophylla</i>	Swamp Paperbark
<i>Arundo donax</i> *	Giant Reed	<i>Oxalis pes-caprae</i> *	Soursob
<i>Avena barbata</i> *	Wild Oat	<i>Paspalum dilatatum</i> *	
<i>Cynodon dactylon</i> *	Couch	<i>Romulea rosea</i> *	Guildford Grass
<i>Hyparrhenia hirta</i> *	Tambookie Grass	<i>Vicia sativa</i> *	Common Vetch
<i>Lepidosperma sp.</i>		<i>Watsonia meriana</i> *	Bulbil Watsonia
<i>Lotus subbiflorus</i> *			

*Denotes non-native/ introduced species



References

Biosecurity and Agriculture Management Act 2007 (Western Australia)

Environmental Protection Authority (EPA). (2016). *Technical Guidance Flora and Vegetation Surveys for Environmental Impact Assessment*. Retrieved from https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/EPA%20Technical%20Guidance%20-%20Flora%20and%20Vegetation%20survey_Dec13.pdf

Environmental Protection Authority (EPA) (2020). *Technical Guidance Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment*. Retrieved from https://www.epa.wa.gov.au/sites/default/files/Policies_and_Guidance/2020.09.17%20-%20EPA%20Technical%20Guidance%20-%20Vertebrate%20Fauna%20Surveys%20-%20Final.pdf

