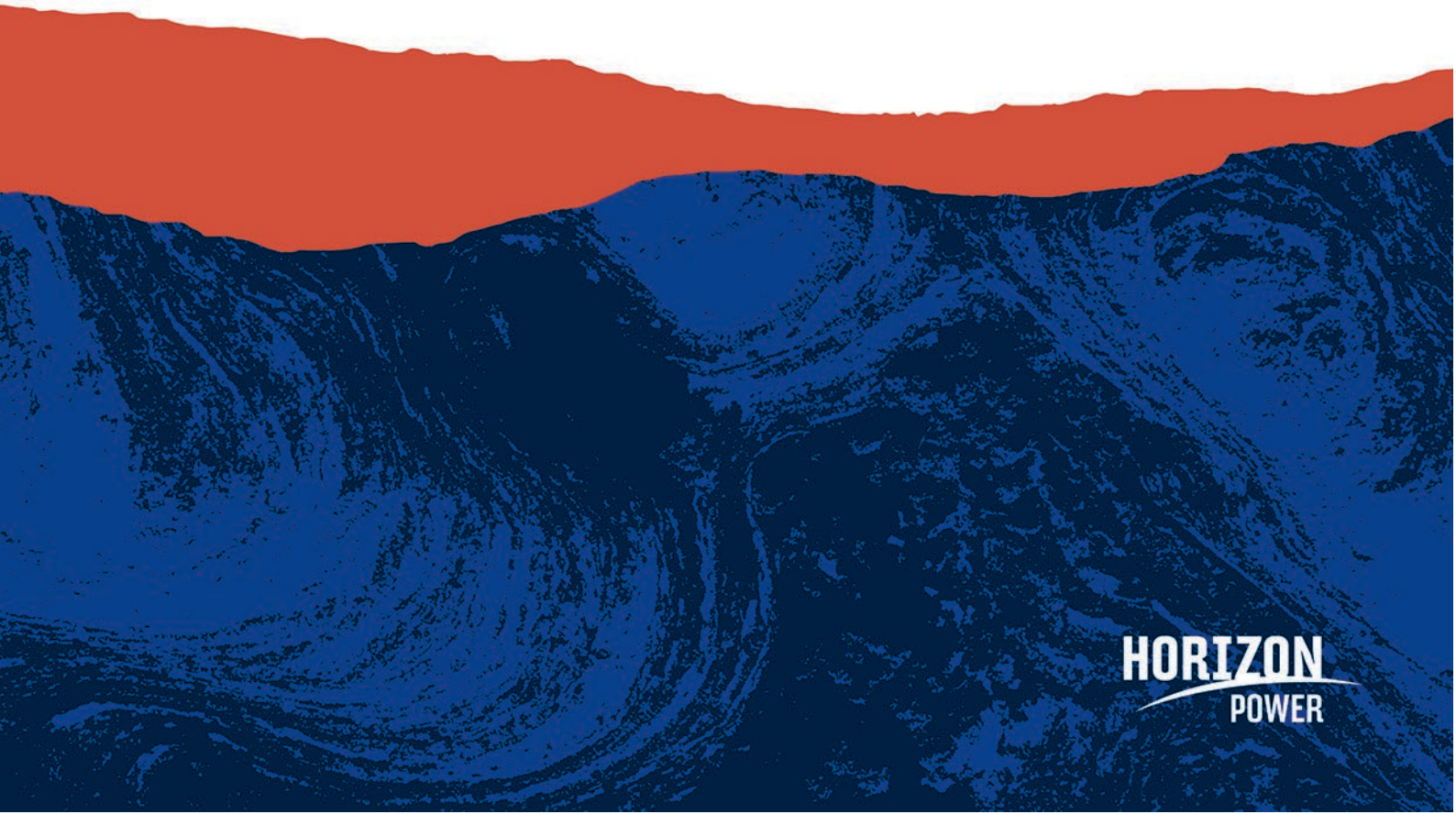
Native Vegetation Clearing Permit

Supporting Document

October 2022



Contents

1. Introduction

Horizon Power is a Western Australian Government Trading Enterprise (GTE) and the state's regional and remote energy provider. Horizon Power operates under the *Electricity Corporations Act 2005* and is governed by a Board of Directors accountable to the Minister for Energy.

Horizon Power is proposing to expand the North West Interconnected System (NWIS) electricity network, by constructing an approximately 19 kilometer (km) long 132 kilovolt (kV) overhead transmission line between the Karratha substation on Stovehill Road and the Maitland Strategic Industrial Area (SIA) (the Project). The Maitland SIA is not currently connected to the NWIS. The Project will provide common user transmission infrastructure, owned and operated by Horizon Power, between the Maitland SIA and Karratha, supporting the connection of future renewable energy projects in this SIA into the NWIS.

To enable construction of the Project, the clearing of native vegetation will be required. The Development Envelope (DE) for the Project covers 205.7 ha and represents the boundary within which all native vegetation clearing will be contained (Figure 1). The Project will require the clearing of up to 30.5 ha of native vegetation, including 18.7 ha of permanent clearing and 11.8 ha of temporary clearing which will be rehabilitated upon completion of construction.

This supporting document has been prepared to support Horizon Power's application for a Native Vegetation Clearing Permit (NVCP) under Section 51E of Part V of the *Environmental Protection Act 1986* (EP Act). The document is intended to provide the Department of Water and Environmental Regulation (DWER) with an assessment of the proposed clearing against the ten clearing principles and address any other potential negative environmental impacts as a result of the proposed vegetation clearing.

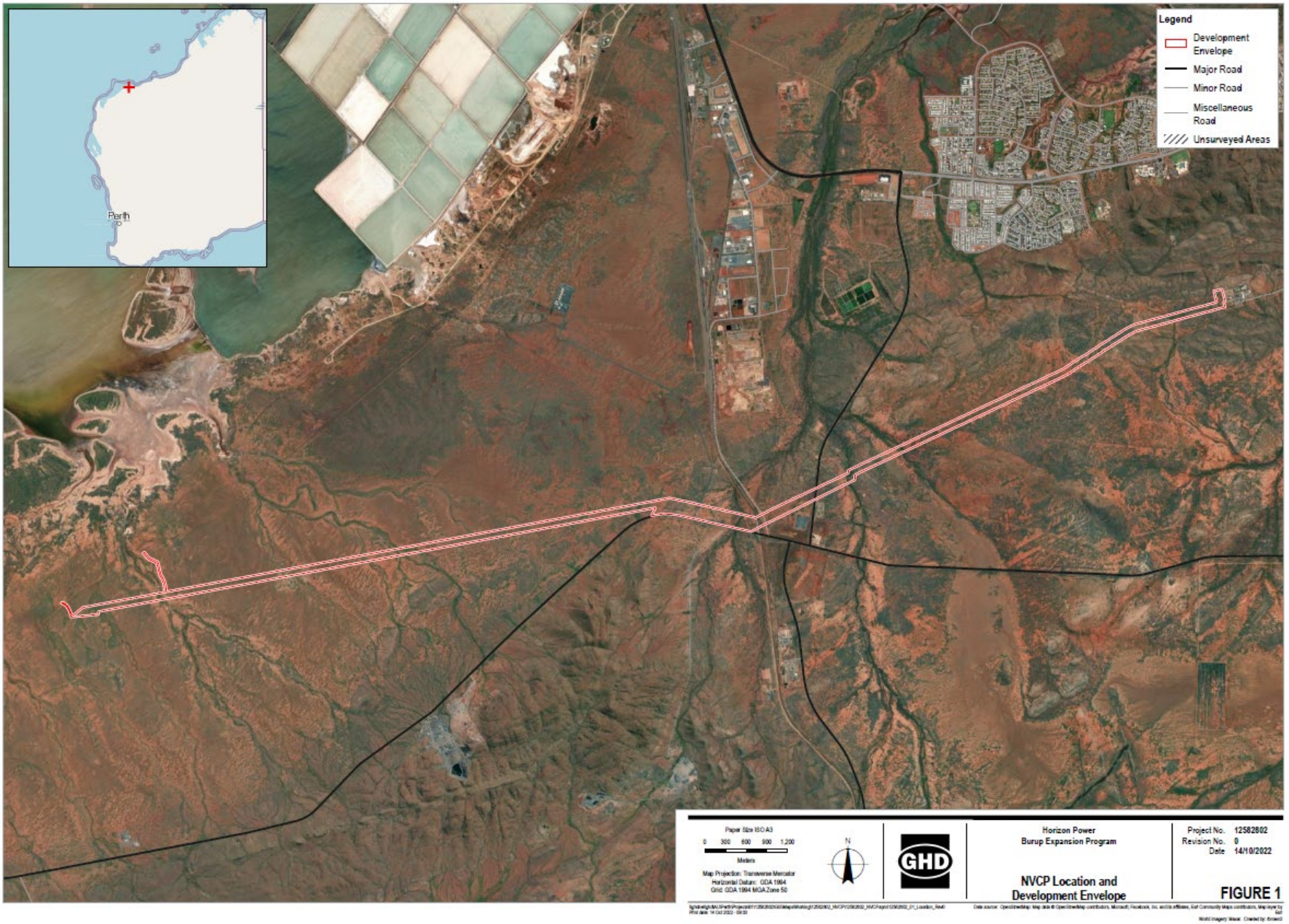

Perth
Legend
Development Envelope
Major Road
Minor Road
Miscellaneous Road
Unsurveyed Areas
Paper Size ISO A3
0 300 600 900 1,200
Meters
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50
N
GHD
Horizon Power
Burup Expansion Program
NVCP Location and Development Envelope
Project No. 12582602
Revision No. 0
Date 14/10/2022
FIGURE 1

Figure 1.0

2. Description of clearing activities

2.1 Property details

Properties impacted by the proposal are outlined in the table below.

Property	Ownership	Locality
Lot 588 on Deposited Plan 7709	Freehold – Regional Power Corporation	Stove Hill
Lot 2656 on Deposited Plan 215106	Crown Reserve 37349	Stove Hill
Lot 501 on Deposited Plan 400632	Unallocated Crown Land	Stove Hill
PIN 705585	Unallocated Crown Land	Stove Hill
Lot 4217 on Deposited Plan 217002	Crown Reserve 41013	Stove Hill
Lot 330 on Deposited Plan 46452	Unallocated Crown Land	Stove Hill
Lot 331 on Deposited Plan 46452	Unallocated Crown Land	Stove Hill, Gap Ridge
Lot 589 on Deposited Plan 77089	Crown Reserve 36991	Stove Hill, Gap Ridge
Lot 450 on Deposited Plan 216916	Road – State of Western Australia	Stove Hill, Gap Ridge, Baynton
Lot 590 on Deposited Plan 77089	Crown Reserve 36991	Gap Ridge
Lot 931 on Deposited Plan 931	Unallocated Crown Land	Gap Ridge
Lot 603 on Deposited Plan 66690	Crown Reserve 53433	Gap Ridge
Lot 4659 on Deposited Plan 221145	Crown Reserve 9701	Gap Ridge
Lot 215 on Deposited Plan 216769	General Lease I126349	Gap Ridge
Lot 591 on Deposited Plan 77089	Crown Reserve 36991	Gap Ridge
Lot 32 on Deposited Plan 47815	General Lease I195323	Gap Ridge
Lot 285 on Deposited Plan242018	Crown Reserve 36991	Gap Ridge
Lot 559 on Deposited Plan 407846	Unallocated Crown Land	Gap Ridge

Property	Ownership	Locality
Lot 665 on Deposited Plan 30490	Freehold - State of Western Australia	Gap Ridge
Lot 663 on Deposited Plan 30490	Freehold - State of Western Australia	Gap Ridge
PIN 11733157	Road – State of Western Australia	Maitland, Gap Ridge, Stove Hill, Cooya Pooya
Lot 693 on Deposited Plan 30490	Freehold - State of Western Australia	Maitland
Lot 530 on Deposited Plan 221145	Crown Reserve 9701	Maitland
Lot 1502 on Deposited Plan 75876	Lease LPL N050300	Maitland
Lot 651 on Deposited Plan 29591	Crown Reserve 9701	Maitland
Lot 650 on Deposited Plan 29591	Crown Reserve 9701	Maitland
Lot 324 on Deposited Plan 42631	Crown Reserve 9701	Maitland
Lot 150 on Deposited Plan 242287	General Lease 123646	Maitland

Table 1.0 Property details.

2.2 Proposed clearing activities

A total clearing footprint of 30.5 ha has been calculated within the total DE area of 205.7 ha. The proposed construction activities will result in a maximum temporary disturbance footprint of 11.8 ha of native vegetation and a maximum permanent clearing area of 18.7 ha. Some allowances have been made within the calculations to allow for operational flexibility, and to ensure that Horizon Power can meet the conditions of the permit once granted.

The following table provides a breakdown of the clearing calculations.

Purpose	Area
Temporary clearing *Line stringing, winch sites, laydown area*	11.8 ha
Permanent clearing *Substation site*	1.5 ha
Permanent clearing *Access tracks*	9.0 ha
Permanent clearing *Poles and stay wires*	8.2 ha
TOTAL	30.5 ha

Table 2.0 Clearing calculations.

3. Flora and Fauna Surveys

The following table provides an overview of the relevant flora and fauna surveys.

Survey	Findings	Distance to proposed clearing areas
Flora and Vegetation Survey – Woodside Solar PV, Power Plant and Transmission Corridor Vicky Long & Associates for GHD 2019	**Southern Survey Results** – No Threatened Ecological Communities (TECs) were recorded in the survey area – The area was too dry to allow for the identification of either of the two potential Priority Ecological Communities (PECs), Priority 1 and Priority 3 • Roebourne Plains coastal grasslands with gilgai microrelief on deep cracking clays (P1) • Horseflat land system of the Roebourne plains (P3) – The substrate inspected indicated that the P1 PEC is less likely to be present – 106 plant species were recorded during survey – No species of conservation significance were recorded – Five weed species, one of which is a Declared Pest under the *Biosecurity and Agriculture Management Act 2007* and Weed of National Significance, were recorded during the survey.	The southern part of the survey area overlaps by approximately 50 m into of the western end of the GC
Fauna Survey – Woodside Solar PV, Power Plant and Transmission Corridor GHD 2020	– Nine main fauna habitats were recorded of moderate to high value – Two fauna habitats were recorded in the vicinity of the proposed clearing area • Tussock grasslands on cracking clays, deemed of moderate value • Minor drainage, deemed of high value – Recorded six species of conservation significance, but not in the area adjacent to the GC. Identified 11 further species that were likely to occur in the survey area	The southern part of the survey area overlaps by approximately 50 m into of the western end of the GC
Flora and Vegetation Survey – Horizon Power Burrup Expansion GHD 2020	– Nineteen vegetation types were identified – No TECs were identified in the survey area – Two PECs were identified – The PEC in the vicinity of the GC is the Horseflat land system of the Roebourne Plains (P3). Approximately	The previous surveyed area is approximately 400 m south of GC on the western side and

Survey	Findings	Distance to proposed clearing areas
	173 ha of the PEC was recorded in the survey area, ranging from Degraded to Excellent condition. – No Threatened flora species were recorded within the survey area – Four Priority species were recorded: • Rhynchosia bungarensis (P4) • Terminalia supranitifolia (P3) • Vigna Triodiophila (P3) • *Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479). The species has since been renamed to *Dolichocarpa* sp. Hamersley Station (A.A. Mitchell PRP 1479). – Of the four Priority species, one was recorded approximately 400 m south of the GC, *Oldenlandia* sp. Hamersley Station	follows adjacent on the eastern side.
Maitland to Karratha Terminal Flora and Fauna Survey GHD 2022	- Seven vegetation types were identified - No TECs were identified - One PEC was identified - The PEC was identified within the survey area: Horseflat land system and the Roebourne Plains (P3). Approximately 75.13 ha of this PEC occurs within the survey area, ranging from Very Good to Good condition. - No significant flora species were recorded within the survey area. The likelihood of occurrence assessment post-field survey concluded one significant flora *Oldenlandia* sp. Hamersley Station (P3) is likely to be present within the survey area. - Four broad fauna habitat types (excluding cleared areas) have been identified within the survey area. - No significant fauna species or evidence of their presence was recorded in the survey area during the field assessment.	Specific to project – within clearing area
Burrup Expansion Project – Additional Areas Reconnaissance / Basic Survey GHD 2022	No significant flora taxa were recorded within the Maitland additional survey area during the survey.	Specific to project – within clearing area

Table 3.0 Flora and fauna surveys

4. Assessment against 10 clearing principals

Of the 205.7 ha within the DE, 203.1 ha has been comprehensively surveyed for vegetation, flora and fauna values. The remaining 2.6 ha of the DE that has not been subject to surveys is required for access tracks to the west of the DE (Figure 1). The positioning of these access tracks will ensure construction of the Project avoids direct impacts to identified sites of Aboriginal heritage significance. To ensure a conservative approach is taken with this

assessment, the entirety of these access tracks is assumed to comprise '*Eragrostis* Tussock Grassland' (VT02) in good condition, which is mapped as representative of the Priority 3 'Horseflat land system of the Roebourne Plains' PEC, on the basis that this vegetation type is mapped within adjacent areas of the DE (other than intersecting drainage lines). This vegetation type is also considered to provide suitable fauna habitat for three significant fauna species including the Oriental Plover, Peregrine Falcon and the Northern Short-tailed Mouse.

To support Horizon Power's NVCP application for the Project, an assessment of the proposed clearing against the Ten Clearing Principles has been undertaken and presented in Table 4.

The assessment was undertaken with reference to DWER guideline 'A guide to the assessment of applications to clear native vegetation under Part V Division 2 of the *Environmental Protection Act 1986*' (DWER 2014).

Based on the following assessment, the clearing of native vegetation within the DE associated with the Project is 'not at variance', or 'unlikely to be at variance', to the Ten Clearing Principles.

Principle	Assessment
(a) Native vegetation should not be cleared if it comprises a high level of biological diversity.	The Project will require the clearing of up to 30.5 ha of native vegetation within the DE. Native vegetation within the DE ranges in condition from Excellent to Completely Degraded, with 64.1% being in good or better condition (GHD 2022). The DE intersects two broadscale vegetation associations (VAs) mapped by Beard (1979), including VA 589 and VA 157. These VAs are well represented across all scales (i.e. State, IBRA Bioregion, IBRA Sub-region and Local Government Area [LGA]), with over 96% of the pre-European extent remaining. The eastern portion of the DE follows existing vehicle tracks and a pipeline whilst the western half of the DE (west of the train line) had limited vehicle access, however development is proposed within this area. The vegetation within the DE is not considered to be restricted to the DE and is well represented in the surrounding area. Areas of the DE are therefore impacted by edge effects due to adjacent infrastructure and roads. There are areas of native vegetation in the general region of the DE that have similar and higher levels of biodiversity to that within the DE. Seven native vegetation types (totaling 188.3 ha) were identified within the DE, with the remaining 19.2 ha mapped as cleared (GHD 2022). The vegetation within the eastern half of the DE primarily consists of hummock grasslands of *Triodia epactia* and *T. wiseana* with scattered to open shrublands dominated by *Acacia*, *Hakea*, and *Senna* species on rocky sandy loam plains and low undulating rocky rises and slopes. The eastern half of the DE is also dominated by tussock grasslands on weakly gilgaied red clay loams. Minor drainage lines which dissect the plain are lined by either *Corymbia hamersleyana* or *Eucalyptus victrix* and *Acacia coriacea*. Weed presence (particularly **Cenchrus ciliaris*) was greater in these minor drainage lines (GHD 2022). The GHD (2022) survey did not record any vegetation representative of Threatened Ecological Communities (TECs) within the DE. GHD (2022) identified vegetation representative of the Priority 3 PEC Horseflat land system of the Roebourne Plains. There is 73.2 ha of this PEC within the DE,

Principle	Assessment
	with the Project requiring the clearing of no more than 20.7 ha (including 4.2 ha required for temporary disturbance). The Horseflat Land System of the Roebourne Plains are extensive, weakly gilgaied clay plains dominated by tussock grasslands on mostly alluvial non-gilgaied, red clay loams or heavy clay loams. Perennial tussock grasses include *Eragrostis xerophila* and other *Eragrostis* spp., *Eriachne* spp. and *Dichanthium* spp. The community also supports a suite of annual grasses including *Sorghum* spp. and rare *Astrebla* spp. The community extends from Cape Preston to Balla surrounding the towns of Karratha and Roebourne (DBCA 2021). Given the extensive nature of this PEC, the clearing of up to 20.7 ha (including 4.2 ha required for temporary disturbance) required for the Project is not expected to have a significant impact on the Priority 3 PEC Horseflat land system of the Roebourne Plains. No Threatened flora species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or *Biodiversity Conservation Act 2016* (BC Act) were recorded within the DE (GHD 2022). In addition, GHD (2022) did not identify any Priority flora species listed by DBCA within the DE. A likelihood of occurrence assessment conducted post field survey by GHD (2022) concluded that one significant flora species, *Dolichocarpa* sp. Hamersley Station (A.A. Mitchel PRP1479) (Priority 3), was considered likely to occur within the DE. This assessment took into account previous records, habitat requirements, seasonal variation, efficacy of the survey, intensity of the survey, flowering times and the cryptic nature of the species. All other significant flora species were considered unlikely to occur within the DE. *Dolichocarpa* sp. Hamersley Station (A.A. Mitchel PRP1479) is a spreading annual, herb which grows to 0.1 m high and flowers in March (blue flowers). It is known to occur in cracking clay and basalt, on gently undulating plains with large surface rocks or flat crabholed plains (WA Herbarium 1998-). This species has previously been recorded within the DE in open, flat grassland habitat over clay to cracking clay soils (GHD 2020). This habitat type is present within the DE and is representative of VT02. There are 33 *Florabase* records of the species across WA, with records indicating that the species is locally common (WA Herbarium 1998-). Clearing for the Project is not expected to have a significant impact upon this species Four broad fauna habitat types were identified within the DE based on the predominant landforms, soil and vegetation structure in the area (GHD 2022). These fauna habitats align with the vegetation types within the DE and include: • Broad drainage lines • Grassland Claypans • Hummock grasslands on sandy clay loam plains • Low undulating rocky rises and slopes. The GHD (2022) survey did not identify the presence of any fauna species listed under the EPBC Act and/or BC Act within the DE. A likelihood of occurrence assessment concluded that three significant fauna species are considered likely to occur within the DE, including:

Principle	Assessment
	• Oriental Plover (*Charadrius veredus*) – EPBC Act/BC Act: Migratory • Peregrine Falcon (*Falco peregrinus*) – BC Act: Other • Northern Short-tailed Mouse (*Leggadina lakedownensis*) – DBCA: Priority 4. All other significant fauna species were considered unlikely to occur within the DE. The impact of native vegetation clearing on these fauna species are discussed further in Principle (b). Whilst the Project is proposing to impact up to 30.5 ha (including 11.8 Ha of temporary disturbance) of native vegetation, ranging in condition in from Excellent to Completely Degraded, this vegetation is well represented locally and regionally with approximately 140,870 ha of native vegetation within a 10 km radius. Clearing for the Project will impact upon less than 0.02% of the remaining native vegetation. The native vegetation within the DE is not considered to comprise a high biological diversity at a local or regional scale. **The proposed clearing is unlikely to be at variance with this Principle.**
(b) Native vegetation should not be cleared if it comprises the whole or part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous Western Australia.	The Project is proposing clearing of up to 30.5 ha of native vegetation across four broad fauna habitats within the DE. These fauna habitats have been identified based on the predominant landforms, soil and vegetation structure in the area, and the surveys undertaken to date (GHD 2022). The fauna habitats within the DE align to the vegetation types mapped in the survey and include: • **Low undulating rocky rises and slopes**: Habitat type is associated with stony/rocky plains and low undulating rises and consists of scattered shrubs of *Acacia*, *Hakea* and *Senna* species over a *Triodia* hummock grassland. Habitat type aligns with VT01. • **Broad drainage lines**: Dominated by open woodlands to scattered trees of *Corymbia hamersleyana*, *Acacia coriacea* and occasional *Eucalyptus victrix*. Mixed *Acacia* shrublands dominated the mid layer over an open hummock and tussock grassland of *Triodia epactia*, *T. wiseana* and **Cenchrus ciliaris*. Habitat type aligns with VT06 and VT07. • **Hummock grasslands on sandy clay loam plains**: Dominated by open shrublands of Acacia species (*Acacia bivenosa*, *A. ancistrocarpa*, *A.inaequilatera*, *A. pyrifolia*) over an open hummock and tussock grassland of *Triodia epactia*, *T. wiseana* and **Cenchrus ciliaris*. Habitat type aligns with VT04 and VT05. • **Grassland Claypans**: Consists of a low open tussock grassland of *Eragrostis xerophila* grassland with isolated patches of *Acacia xiphophylla* shrubs and *Triodia epactia* hummock grasses on weak gilgai clay plains. Habitat type aligns with VT02 and VT03. The fauna habitats within the DE extend outside of the DE and are not restricted to areas within the DE. The Project consists of construction of a transmission line, which includes only isolated pockets of disturbance, and will not fragment the landscape or restrict access of fauna species to these habitats. Within a 10 km radius of the DE there is approximately 140,870 ha

Principle	Assessment
	of native vegetation which may also be utilised by fauna species. Clearing for the Project represents approximately 0.02% of this available vegetation. No significant fauna species or evidence of their presence were recorded within the DE during the GHD (2022) survey. A likelihood of occurrence assessment concluded that three significant fauna species are considered likely to occur within the DE, including: • Oriental Plover (*Charadrius veredus*) – EPBC Act/BC Act: Migratory • Peregrine Falcon (*Falco peregrinus*) – BC Act: Other • Northern Short-tailed Mouse (*Leggadina lakedownensis*) – DBCA: Priority 4. It is considered unlikely that the DE provides important habitat (e.g. breeding habitat or key foraging habitat) for any of these significant fauna species (GHD 2022). These species are considered to only utilize the habitats within the DE occasionally for temporary refuge and dispersal between the extensive suitable habitat surrounding the DE (GHD 2022). No fauna species of significance are likely to be solely dependent on the habitats present within the DE. There is potential for fauna to be impacted by clearing activities due to the clearing of up to 30.5 ha of native vegetation that may support fauna. However, these impacts are not expected to be long term or significant, as the native vegetation in the DE is well represented locally and regionally. There is native vegetation in similar and better condition available in the surrounding area. The abundance of analogous, contiguous habitat in areas surrounding the DE allows any significant fauna species to relocate beyond the DE. The vegetation in the DE is considered unlikely to comprise habitat necessary for the maintenance of significant fauna. **The proposed clearing is unlikely to be at variance with this Principle.**
(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.	No Threatened flora taxa listed under the EPBC Act were recorded within the DE during the GHD (2022) survey. In addition, no Threatened flora taxa are considered likely or possible to occur within the DE (GHD 2022). Therefore, the Project is not expected to impact the continued existence of Threatened flora species. **The proposed clearing is not at variance with this Principle.**
(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a	Vegetation identified by GHD (2022) within the DE is not considered to represent any TECs. Therefore, the clearing of native vegetation required for the Project is not expected to impact upon TECs. **The proposed clearing is not at variance to this Principle.**

Principle	Assessment
threatened ecological community.	
(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.	Broad scale (1:100,000) pre-European vegetation mapping of the DE was completed by Beard (1979) at an association level. The DE intersects two VAs, including VA 589 and VA 157. The VAs within the DE are well represented within the region with over 99% of the pre-European extent at all scales (e.g. State, IBRA Bioregion, IBRA Sub-region and Local Government Area (LGA). Project clearing of up to 30.5 ha of native vegetation is not expected to significantly impact the remaining extent of VA 589 or VA 157. **The proposed clearing is not at variance with this Principle.**
(f) Native vegetation should not be cleared if it is growing in or in association with a watercourse or wetland.	There are no primary watercourses (rivers) or wetlands within or immediately adjacent to the DE. However, several broad, ephemeral drainage lines intersect the DE. Surface water flows in the region is largely reliant on weather patterns, with drainage lines generally only flowing for parts of the year typically in response to cyclonic rainfall events (between November and April) (GHD 2022). Two vegetation types within the DE are considered to represent riparian vegetation (GHD 2022), including: • VT06 – *Eucalyptus victrix* low open forest over *Acacia coriacea* tall shrubland over *Carissa lanceolata* open shrubland over **Cenchrus ciliaris, Chrysopogon fallax* and *Themeda triandra* tussock grassland along alluvial broad drainage lines • VT07 – *Corymbia hamersleyana* low open forest to scattered trees over *Acacia coriacea* tall shrubland to scattered shrubs over **Vachellia farnesiana and Carissa lanceolata* low shrubs over **Cenchrus ciliaris* and *Chrysopogon fallax* tussock grassland on brown sandy loam on minor/broad drainage lines. Surveyed areas of the DE comprise 0.2 ha of VT06 and 11.7 ha of VT07 as mapped by GHD (2022). Where possible, the Project will avoid clearing native vegetation within the bed and banks of intersecting drainage lines. However due to the broad nature of the drainage systems, and engineering limits regarding maximum spans based on pole height, minor clearing of riparian vegetation may be required to construct the Project (specifically transmission poles, the associated pole pads and access track for construction). Laydown areas and other flexible footprints will be located outside of areas mapped as VT06 and VT07. Clearing of riparian vegetation is not expected to be necessary, however if required to construct the Project, is not expected to impact the function, alter hydrological flows, or contaminate intersecting drainage lines. As it may not be possible to entirely avoid clearing of native vegetation growing

Principle	Assessment
	in association with intersecting drainage lines due to the broad expanse of some drainage systems, the impacts are expected to be minor. **The proposed clearing is unlikely to be 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.	Geology within the Pilbara Province consists of two different tectonic components. The two broad geologic sequences within the region are the ancient Archaean granite-greenstone terrain and the younger volcano-sedimentary sequence of the Hamersley Basin (Tille 2006). The Karratha Coast Zone is characterised by coastal mudflats with sandy coastal plains and some hills on marine deposits and some sedimentary and volcanic rocks of the Pilbara Craton. Soils include tidal soils with some calcareous loamy earths, salt lake soils and red/brown noncracking clays (Tille 2006). The DE intersects two land systems, including: • Ruth – Hills and ridges of volcanic and other rocks supporting hard spinifex (occasionally soft spinifex) grasslands. **Geology**: Archaean and Proterozoic intermediate and basic volcanic rocks, also quartz, minor chert, jaspilite, shale and siltstone. **Geomorphology**: Erosional surfaces; rounded hills and ridges with restricted lower slopes and stony interfluves, moderately to widely spaced drainage patterns. • Horseflat – Gilgaied clay plains supporting tussock grasslands and minor grassy snakewood shrublands. **Geology**: Quaternary alluvium. **Geomorphology**: Depositional surfaces, gilgaied and non-gilgaied clay plains, stony plains, narrow linear drainage depressions and dissected slopes marginal to the River land system; mostly internally drained, some through going trunk drainage channels The DE is mapped as having a low to extremely low probability of occurrence of Acid Sulphate Soils (ASS). The Horseflat land system in particular is likely to be susceptible to erosion following ground disturbance (including clearing) due to clayey texture of the soils. Erosion has the potential to cause sedimentation of intersecting drainage systems when flowing, if soils of Horseflat system are disturbed within proximity of these systems (noting that surface water flows are ephemeral). The Project will incorporate standard construction management measures through implementation to reduce the risk of soil erosion and sedimentation as a result of ground disturbance. Horizon Power is committed to maintaining a flexible approach to Project design. Where possible, pole spans will be adjusted to avoid placing poles within the bed or banks of intersecting drainage pathways. If poles must be placed within the bed or bank of an intersecting drainage pathway, the exact positioning of the poles will take into account preferential flow pathways to minimise erosion and alteration of sediment deposition patterns. Construction of the project is proposing clearing of up to 30.5 ha of native vegetation within the DE. Horizon Power is committed to optimizing use of existing cleared areas (i.e. existing access tracks) where practicable, and minimizing the width of new access tracks to reduce clearing of native

Principle	Assessment
	vegetation within the DE, thereby minimising land (soil) degradation given the clayey nature of soils present across much of the DE. Areas of the DE have previously been impacted by past disturbances including land clearing for infrastructure and linear corridors (road, rail, powerlines and pipeline). There is also evidence of recreational vehicle use, camping, cattle grazing and weed incursion within the DE (GHD 2022). Construction of the Project requires small, isolated areas of native vegetation to be cleared (i.e. pole pads) with connecting access tracks. Development of the Project may cause localised land degradation of a minor nature limited to the construction phase. Therefore, the Project is unlikely to be at variance to this Principle. **The proposed clearing is unlikely to be at variance to this Principle.**
(h) Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.	There are no DBCA managed conservation areas located within or immediately adjacent to the DE. The closest reserves are an un-named reserve (arboretum) located approximately 4 km east of the DE, and the Murujuga National Park located on the Burrup Peninsula more than 10 km north of the DE. The proposed clearing of native vegetation is not considered likely to impact on the environmental values of any conservation areas. **The proposed clearing is not at variance with 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.	The Project is located within the Pilbara Groundwater Area and the Pilbara Surface Water Area, both proclaimed under the *Rights in Water and Irrigation Act 1914* (RIWI Act) (GoWA 2022). There are no Public Drinking Water Source Areas (PDWSAs), rivers or waterways within the DE (GoWA 2022). In addition, no wetlands of International Importance (Ramsar) or Nationally Important wetlands intersect the DE. There are number of ephemeral drainage systems which intersect the DE. As discussed in Principle (f) and Principle (g), vegetation clearing and construction activities associated with the Project have potential to cause minor and temporary erosion, which if occurring in proximity to drainage systems may cause minor sedimentation of surface waters in the immediate area (when flowing or if surface water pools are present). It is considered that potential impacts to surface water quality from construction of the Project (i.e. sedimentation and contamination) can be adequately managed through standard construction controls to prevent and minimise erosion and accidental release of contaminants. The Project is not expected to impact groundwater quality given only minor quantities of contaminants (i.e. hydrocarbons) will be handled/ stored within the DE during construction, and potential impacts resulting from accidental release of contaminants to soil can be adequately managed

Principle	Assessment
	through standard construction controls which includes spill response procedures. Construction of pole footings is not expected to require dewatering. Acidification of groundwater from drilling is not anticipated given the DE is mapped as having a 'low to extremely low' probability of occurrence of ASS as described in Principle (g). Given Project impacts are of a minor and temporary nature, and suitable controls will be implemented, it is considered unlikely that the Project would cause deterioration in the quality of surface or underground water. **The proposed clearing is unlikely to be at variance with this Principle.**
(j) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the intensity of flooding.	Based on climate data from the nearby Karratha weather station (Karratha Aero Station No. 004083), the region receives an annual average rainfall of 297.5 millimetres (mm) with maximum rain falling between January and June (BoM 2022). The DE consists of tidal soils with some calcareous loamy earths, salt lake soils and red/brown noncracking clays (GHD 2022). These soils characteristically retain water, which does not drain or infiltrate easily. Given Horizon Power is committed to avoiding (where possible) placement of poles within the bed or banks of intersecting drainage systems thereby limiting clearing of riparian native vegetation, construction of the Project is not likely to cause or exacerbate the intensity of flooding within these systems. By nature, the intersecting drainage systems are broad with surface flows dispersed across a larger area which reduces the velocity of surface flows and the potential for isolated poles to impact flow intensity. Clearing native vegetation has the potential to exacerbate surface water flows, as vegetation generally aids in water infiltration (noting that soils in the DE typically have poor drainage). Clearing adjacent to intersecting drainage systems may increase runoff into these systems. However, any impacts to flooding/ drainage patterns from clearing required to construct the Project is expected to be negligible given the limited clearing required (30.5 ha compared to the ~205 ha DE) and disconnected nature of clearing proposed. With Horizon Power's commitment to ensure clearing of native vegetation is minimised, use of existing cleared areas is optimised, clearing in drainage channels is avoided (where practicable), and cleared areas only required for construction are rehabilitated, clearing to develop this Project is unlikely to significantly cause or exacerbate flooding intensity. **The proposed clearing is unlikely to be at variance with this Principle.**

Table 4.0 Ten clearing principles assessment.

5. Mitigation of clearing impacts

The following avoidance and mitigation measures outline efforts to avoid or minimise the impact to native vegetation during the project

5.1 Impact avoidance

- The Project has been designed to limit the amount of native vegetation clearing required for construction through the use of existing cleared areas (where possible). For example, the co-location of the eastern section adjacent existing infrastructure has allowed the utilisation of approximately 7 km of existing access tracks avoiding approximately 3 Ha of clearing.
- Pole placement and spacing has been optimised to balance design requirements, engineering limits, avoiding clearing, and avoiding areas of significance (heritage, PECs).
- Pole placement has been optimised to avoid drainage lines (where possible) to avoid impacts to riparian vegetation, clearing and movement through waterways will not be undertaken unless necessary.

5.2 Impact minimisation

- As a preference, and where possible, temporary clearing will be limited to driving, storing and moving equipment and vehicles over vegetation. Impacting vegetation in this manner meets the definition of *clearing* as per s51A of the *Environmental Protection Act 1986*, however, it is not the intention of the project to utilise mechanical clearing to bare earth for the entire requested footprint. Undertaking works in this manner minimises the impact to native vegetation.
- Minimising the width of unsealed access tracks to limit clearing of native vegetation.
- Where possible, utilising existing access tracks or low disturbance methods to string the transmission line.

5.3 Rehabilitation measures

- Stockpiling of cleared topsoil for rehabilitation.
- Rehabilitation of cleared areas only required for construction (i.e. temporary access/laydown) upon completion of construction.
- Inspection of all clearing areas within 12 months and any areas observed to not be regrowing will be subject to further rehabilitation activities.

5.4 Other mitigation measures

- It is noted that Horizon Power has commenced stakeholder consultation with the Ngarluma Aboriginal Corporation to ensure identification of heritage sites or areas of significance are identified and incorporated into the design. It is a Horizon Power requirement that heritage monitors are present during all ground disturbing works.
- Dust impacts resulting from clearing are not expected to significantly impact sensitive receptors given the distance to these receptors, however, standard construction dust control and mitigation measures will be implemented if required during clearing.
- Noise levels from the clearing activities are unlikely to exceed the Environmental Protection (Noise) regulations, however, standard construction noise management and control measures will be implemented if required during clearing.

6. Ongoing management measures

The construction of the project will result in permanent infrastructure that will be owned and operated by Horizon Power. As a State Government-owned utility, Horizon Power is an experienced asset manager undertaking active management of vast electricity networks across Western Australia, utilising mature and robust operational, health and safety, and environmental systems. Operational and maintenance activities associated with the infrastructure will be undertaken in alignment with Horizon Powers existing systems. Existing roads and access tracks, as well as any new permanent access tracks developed for the Project will be utilised on an as needs basis.

7. References

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