



# **ARROWSMITH HYDROGEN PROJECT**

## **AHP1**

### **WEED AND DIEBACK HYGIENE**

### **MANAGEMENT PLAN**

## Revision Control

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## Table of Contents

Revision Control .....	1
Table of Contents .....	2
List of Figures .....	3
List of Tables .....	3
List of Appendices .....	3
Terms & Abbreviations .....	4
Related Documents .....	4
1. Introduction .....	5
2. Hygiene Management Objective .....	5
3. Background .....	5
3.1 <i>Phytophthora Dieback</i> .....	5
3.1.1 The Pathogen .....	6
3.1.2 Host .....	6
3.1.3 Environment .....	6
3.1.4 AHP1 Location – Phytophthora Presence .....	7
3.1.5 AHP1 Location – Phytophthora Dieback Impact .....	7
3.1.6 Introduction of Phytophthora to site. ....	9
3.1.7 Declared Weeds .....	10
3.1.8 Environmental Weeds .....	10
3.1.9 Weeds of National Significance .....	10
3.1.10 AHP1 Location – Weed Presence .....	10
4. Potential Impacts due to Weeds or Dieback .....	11
5. Environmental Risk Assessment .....	11
6. Avoidance and Mitigation .....	12
7. Responsibility and Accountability .....	16
7.1 <i>Responsibilities</i> .....	16
7.2 <i>Training</i> .....	16
8. Monitoring .....	17
8.1 <i>Inspections</i> .....	17
8.2 <i>Annual Monitoring</i> .....	17
9. Thresholds and Triggers .....	18
10. Reporting and Review .....	19
10.1 <i>Non-Compliance Reporting</i> .....	19

10.2	<i>Compliance Assessment Report</i> .....	19
10.3	<i>Management Plan Review</i> .....	19
<b>11.</b>	<b>References</b> .....	<b>20</b>

## List of Figures

Figure 1:	Spread of Dieback in WA .....	8
Figure 2:	Phytophthora species near Development Envelope .....	9
Figure 3:	Significant weeds associated with AHP1 Project.....	10
Figure 4:	Hygiene Station Location.....	15

## List of Tables

Table 1:	Weed and Dieback Monitoring as part of Rehabilitation Monitoring.....	17
Table 2:	AHP1 Hygiene Management Plan Thresholds and Triggers .....	18
Table 3:	Environmental Incident Reporting .....	19

## List of Appendices

<b>Appendix A</b>	<b>Introduced Taxa identified in the Project Area</b>
<b>Appendix B</b>	<b>Hygiene Inspection Log</b>
<b>Appendix C</b>	<b>Example Hygiene Station</b>

## Terms & Abbreviations

AHP1	Arrowsmith Hydrogen Project
BKNR	Beekeepers Nature Reserve
DBCA	Department of Biodiversity, Conservation and Attractions (formerly Department of Parks and Wildlife (DPaW))
CEMP	Construction Environmental Management Plan
EPA	Environmental Protection Authority
ERP	Emergency Response Plan
HMP	Hygiene Management Plan
IGE	Infinite Green Energy
IBRA	Interim Biogeographic Regionalisation of Australia
MW	Mega Watt
<i>P. cinnamomi</i>	<i>Phytophthora cinnamomi</i>
WoNS	Weed of National Significance

## Related Documents

Document #	Document Name
AHP1-S-PLN-IGE-0002-REV3	AHP1 Construction Environmental Management Plan
AHP1-S-PLN-IGE-0003-REV3	AHP1 Vegetation Management Plan
AHP1-S-PLN-IGE-0004-REV3	AHP1 Fauna Management Plan
AHP1-S-PLN-IGE-0006-REV3	AHP1 Rehabilitation Plan

## 1. Introduction

IGE propose to install the Arrowsmith wind and solar farms and construct a hydrogen plant within IGE owned freehold Lots 3, 4, 100 and 6110 in Arrowsmith, 30 km south of Dongara, within the Shire of Irwin, Western Australia (WA) (Appendix A). The proposed site is former agricultural land and has been grazed by sheep, cattle and goats. The AHP1 layout has been arranged to avoid wetlands, karst formations and Carnaby's Black Cockatoo (CBC) habitat on the property. The required clearing of vegetation for project construction is Gross 139.31 ha from a property area of 1,929.68 ha. Existing cleared area within the construction envelope 106.96 ha. Design methodology and outcome has incorporated existing fire roads and cleared land into the overall development footprint to minimise vegetation clearing and environmental impacts. (Table 1). Construction is planned to commence in quarter 1 2023 for production operations commencing in quarter 3 2025, subject to approvals and availability of equipment.

The scope of this referral includes the construction of the Arrowsmith Hydrogen Plant and associated infrastructure including:

- solar farm (65MW to 85MW Maximum Extent)
- wind turbines (Up to 25 maximum x 6 MW)
- water supply (groundwater)
- processing plant 23 to 42 tonnes per day
- storage and offloading

The following components are out of scope of the Proposal:

- There is potential for the construction of a transmission link between Eneabba and the Proposal area, which will ensure continuous power supply and export excess power generated to the grid. The project is stand alone and will operate 'off grid' without the transmission line. The construction and operation of the substation and transmission line is outside of the scope of this proposal.
- A service station development including hydrogen refueling is proposed by a third-party, adjacent to the northern boundary of the property. Hydrogen will be delivered from the facility by road tanker to the service station.

## 2. Hygiene Management Objective

To Prevent the introduction or spread of weeds or dieback as a result of AHP1 activities.

The Hygiene Management Plan has been developed in accordance with the DBCA Phytophthora Dieback Management Manual (October 2017).

## 3. Background

### 3.1 Phytophthora Dieback

Phytophthora Dieback is a key threatening process for biodiversity of south-west Western Australia. Phytophthora Dieback (Dieback) refers to the disease caused by soil-borne plant pathogens from the genus *Phytophthora*. Forty-two *Phytophthora* species have been identified in Western Australia (FEM, 2017).

The observable disease (Phytophthora Dieback) is the result of interaction between the pathogen (Phytophthora species) and the vegetation hosts (susceptible plant species within the vulnerable areas). The environmental conditions of the site significantly affect the pathogen's ability to survive or flourish and spread over time. All land with an annual average rainfall of more than 400 millimetres is considered vulnerable to Phytophthora Dieback. This large area stretches

approximately from Perth, Bunbury and Augusta in the west to Narrogin, Ravensthorpe and Esperance in the east, and as far north as Kalbarri (known as the 400 mm isohyet).

This vulnerable area has many different bioregions, with specific characteristics. Two formative factors of these characteristics, climate and geology, are highly significant in determining the pathogenicity and resulting disease impact levels of each *Phytophthora* species.

### 3.1.1 The Pathogen

The microscopic plant pathogens are water moulds from the genus *Phytophthora* live in soil and infested plant material and can be spread by any mechanism in which infested soil, plant material or water is moved into uninfested areas. Although *Phytophthora* can be spread by native and feral animals, in surface and subsurface water or by root to root contact; human activities have the capacity to move it further and faster than any other means of spread. Consequently, vehicles and equipment need to remain free from infested plant material and soil (FEM, 2017).

The life cycle of *Phytophthora* species is a continuous circle of infection, sporulation and further infection and is readily vectored by animals and human activity allowing for rapid invasion into new areas. Potential vectors in relation to the AHP1 project include:

- Transport vehicles
- Earthmoving vehicles
- Construction equipment
- Foot traffic

### 3.1.2 Host

A population of hosts is made up of susceptible, infected and immune or resistant individuals. The infection of host plants is an unseen activity happening constantly beneath the soil at an infested site.

The environmental conditions favouring or disfavouring the pathogen may change at a critical point during disease development, temporarily changing the rates of infection and invasion. This can be observed symptomatically after soil temperature change through winter months.

The plant host is a highly variable component of disease development. Sites may range from having no susceptible host to being highly susceptible to dieback disease.

### 3.1.3 Environment

Two fundamental environmental characteristics influencing disease development are rainfall and soil type.

Areas vulnerable to *Phytophthora* Dieback are defined as native vegetation which occur west of the 400 mm rainfall isohyet. The correlation of increased *Phytophthora* Dieback impact with increased annual rainfall is generally applicable.

Certain soil properties influence *Phytophthora* Dieback development within the vulnerable areas:

1. Moisture is critical for *Phytophthora* Dieback to survive in the soil and for sporangia production
2. Soil pH affects the growth and reproduction of the pathogen. The calcareous sands closest to the coast are alkaline and hostile to *Phytophthora cinnamomi*.
3. Fertile soils are less favourable to *Phytophthora* Dieback because the richness of nutrients aids strong host resistance, good soil structure allows water movement and drainage, and high organic matter provides antagonistic microflora.
4. Coarse-textured soils have larger pore spaces which favour dispersal of spores

5. The optimum temperature for *P. cinnamomi* sporulation is 21 to 30°C, peaking at 25°C, but some sporangia can still be produced at temperatures as low as 12°C. The optimum growth range is 15 to 30°C and temperatures lower than 5°C or greater than 35°C are unfavourable for the persistence of survival of spores and the vegetative mycelia of *P. cinnamomi*.

#### 3.1.4 AHP1 Location – Phytophthora Presence

A Dieback Assessment was conducted over the 1,929.68 ha development envelope by Evan Brown of Glevan Consulting in June 2021. The survey found that there was no evidence of Phytophthora dieback on the property. That assessment determined that without hygiene procedures, the likelihood of spreading the pathogen through the project area would be 'almost certain' however the consequence of the disease impact would rate as insignificant. This would determine the overall risk as Low and under these circumstances, the DBCA manual recommends standard hygiene practices to be adopted. The report recommends as per DBCA (2017):

- All personnel have completed Green Card training, if possible.
- All potential carriers (machinery, vehicles, footwear, equipment, tools) arrive clean at the site.
- Regard all-natural areas as protectable unless known otherwise.
- Plan to operate in vegetated areas before operating in cleared areas (where relevant);
- Schedule work (as far as possible) in dry soil conditions.
- Avoid driving through areas where pathogens may exist and adhere to vehicles (i.e. low-lying areas, boggy creeks, puddles);
- Carry information and equipment for minor, unplanned hygiene compliance; and
- Report any observed breaches of hygiene to supervisors.

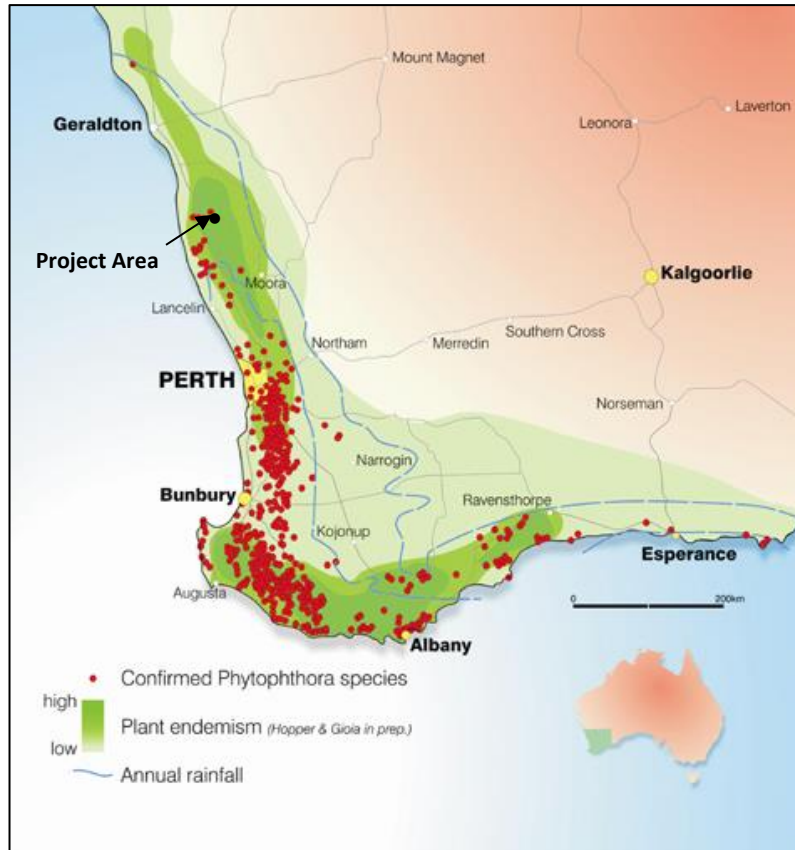
#### 3.1.5 AHP1 Location – Phytophthora Dieback Impact

The impact of the disease caused by Phytophthora species on vegetation is dependent on the hosts present and the environment. As stated, the Development Envelope contains suitable host species for Phytophthora, however the rainfall and soil structure will affect the impact.

The environmental conditions surrounding the Development Envelope, such as low rainfall, sandy calcareous soils which provide good water drainage and unsuitable pH reduces the risk of infestation by *Phytophthora cinnamomi* to very low. Figure 1 (DBCA, 2020) shows that the project area is low risk of plant endemism.



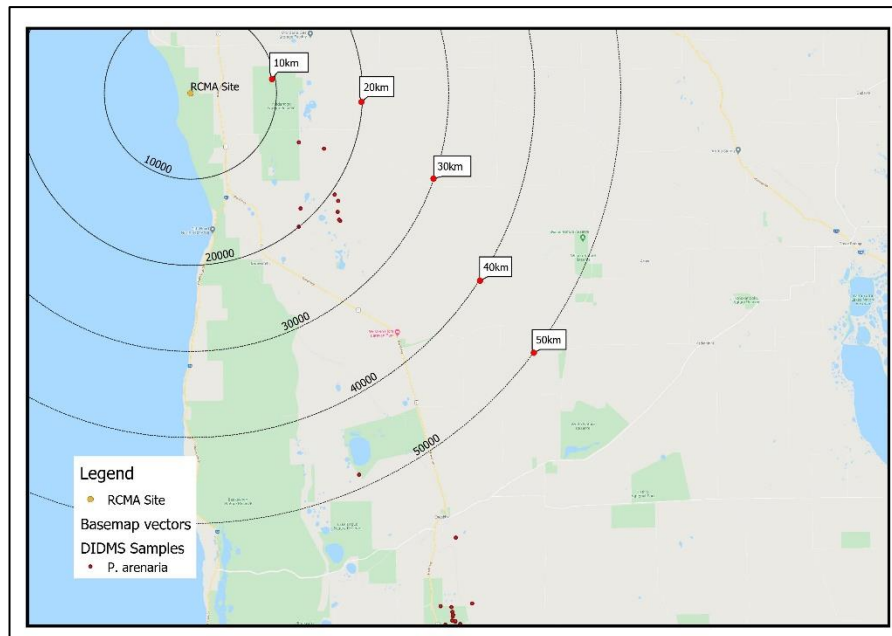
**Figure 1: Spread of Dieback in WA**



(DBCA 2021)

While the average rainfall of the area (447 mm) is above the published 400 mm vulnerable rainfall and the AHP1 location does not have suitable soil composition to support the disease caused by *P. cinnamomi*, other Phytophthora pathogens, principally *P. arenaria* and *P. multivora* may cause limited disease, if present. Figure 2 shows that *P. arenaria* has been recorded within 20 km from the Development Envelope. This does not infer the range of *P. arenaria*, but rather the historic sampling effort.

**Figure 2: Phytophthora species near Development Envelope**



Whereas *P. cinnamomi* forms a visible and indiscriminate path of destruction through entire plant communities under suitable conditions, *P. constricta* and *P. arenaria* have a more limited impact, selectively killing species belonging predominantly to the family Proteaceae. Furthermore, the incidence of *P. constricta* or *P. arenaria* (causing disease) is usually episodic following extreme rainfall events (Rea, Burgess, Hardy, Stukely & Jung, 2011). The possible presence of *P. constricta* adjacent to the Development Envelope was not confirmed by publicly available data.

The calcareous sands closest to the coast are favourable to *P. multivora* (FEM 2017).

*P. multivora* has been recovered from samples taken from Banksia species (*B. attenuata*, *B. grandis*, *B. menziesii*, *B. prionotes* and *B. sessilis*) (Scott, Burgess, Barber, Shearer & Stukely, 2009) some of which will occur within the Development Envelope however '*P. multivora* is able to establish on drier sites but usually has less impact on vegetation than *P. cinnamomi*' (Conservation Commission of WA, 2010). Glevan Consulting has assessed thousands of hectares of the Geraldton Sand Plain over many years. During those assessments, *P. multivora* has been recovered from over twenty locations. Most sites have been observed in subsequent years and those sites not exhibiting increasing impact. It would be assumed that the impact of any *P. multivora* infestation within the Development Envelope would be similar.

Whilst the impact of putatively native Phytophthora species on susceptible vegetation within the Geraldton Sand Plains is limited, or possibly beneficial (Shaw, 2020), their impact on other IBRA have not been identified, and therefore this Management Plan will also address the hygiene of soil and plant material being removed from site.

### 3.1.6 Introduction of Phytophthora to site.

The likelihood of Phytophthora being vectored to site increases through the importation of soils and plant material from sources external to site. IGE plan to use onsite marl reclaimed material for road base with any additional material sourced locally.

Weeds are usually opportunistic plant species that are not native to an area, but once introduced, are able to compete effectively for resources. They can be intentional introductions, such as garden plants or even commercial crops.

Weeds create numerous environmental impacts including resource competition and the prevention of seedling recruitment of native plant species, alteration of geomorphological and hydrological cycles, changes to soil nutrients, fire regimes and the abundance of indigenous fauna, and genetic changes (DEC 1999).

### 3.1.7 Declared Weeds

In order to protect agricultural interests, the Agriculture Protection Board maintains a list of “Declared Plants” (weeds). Declared Weeds, under the *Agriculture and Related Resources Protection Act 1976*, are those that landowners are required by law to control. They are required to be controlled as they are considered a significant risk to the Western Australian economy. Many weed species, however, are not declared under this Act as they may have an agricultural role. They may, however, be serious environmental weeds with the potential to affect native ecosystems.

### 3.1.8 Environmental Weeds

‘Environmental weeds’ is a secondary category of weeds, used to describe “plants that establish themselves in natural ecosystems and proceed to modify natural processes, usually adversely, resulting in the decline of communities they invade” (DEC 1999).

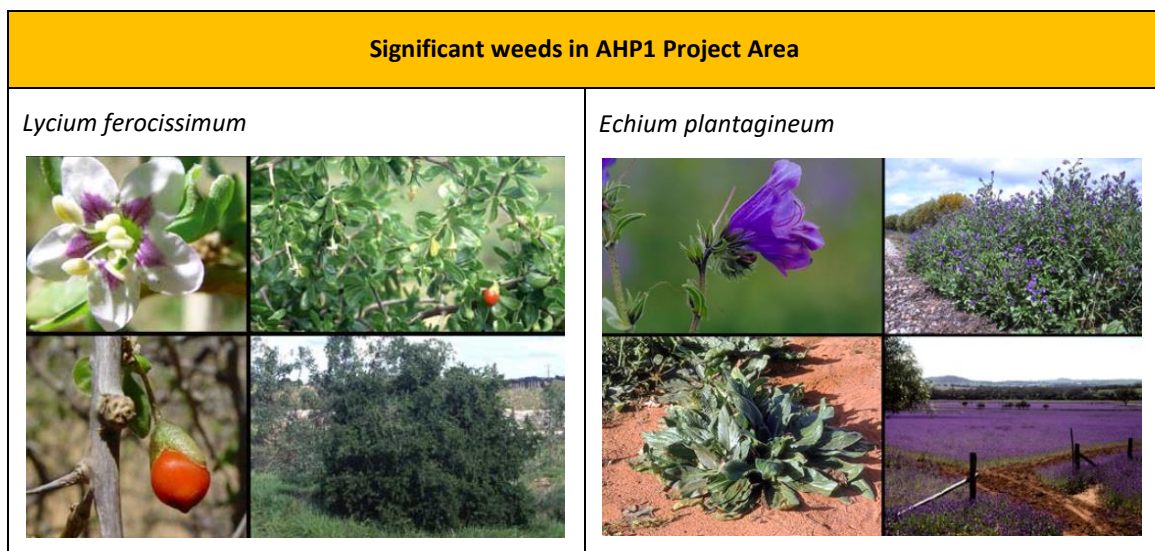
### 3.1.9 Weeds of National Significance

The Australian and state and territory governments have agreed a list of twenty Weeds of National Significance (WoNS), based on the weed species’ invasiveness, impacts, potential to spread and socio-economic and environmental values. The full list of WONS can be accessed at [www.weeds.gov.au/weeds/lists/wons/html](http://www.weeds.gov.au/weeds/lists/wons/html).

### 3.1.10 AHP1 Location – Weed Presence

A total of 39 introduced flora taxa were identified in the Project Area during October 2020 (Appendix A). Of these two are considered to be significant weeds including *Echium plantagineum* (Declared Pest) and *Lycium ferocissimum* (WoNS) (Figure 3).

**Figure 3: Significant weeds associated with AHP1 Project**



#### **4. Potential Impacts due to Weeds or Dieback**

The potential direct impacts due to weed or dieback introduction or spread as a result of the AHP1 project is deterioration, loss or fragmentation of vegetation or vegetation communities leading to loss of biodiversity and fauna habitat.

#### **5. Environmental Risk Assessment**

IGE have assessed the risks of their AHP1 activities and have developed measures to avoid and mitigate environmental impacts on vegetation that could potentially be caused by weed or dieback introduction or spread as a result of IGE's activities. This process involved:

1. Identifying the potential direct and indirect impacts of weed and dieback introduction or spread
2. Plan project activities to avoid potential impacts associated with weed and dieback vectors
3. Establishing management strategies to minimise the potential impacts on biodiversity
4. Develop and implement weed and dieback monitoring program (Rehabilitation Plan) to detect impacts on vegetation

The adequacy of these measures was assessed to determine whether they met ALARP and acceptability criteria.

## 6. Avoidance and Mitigation

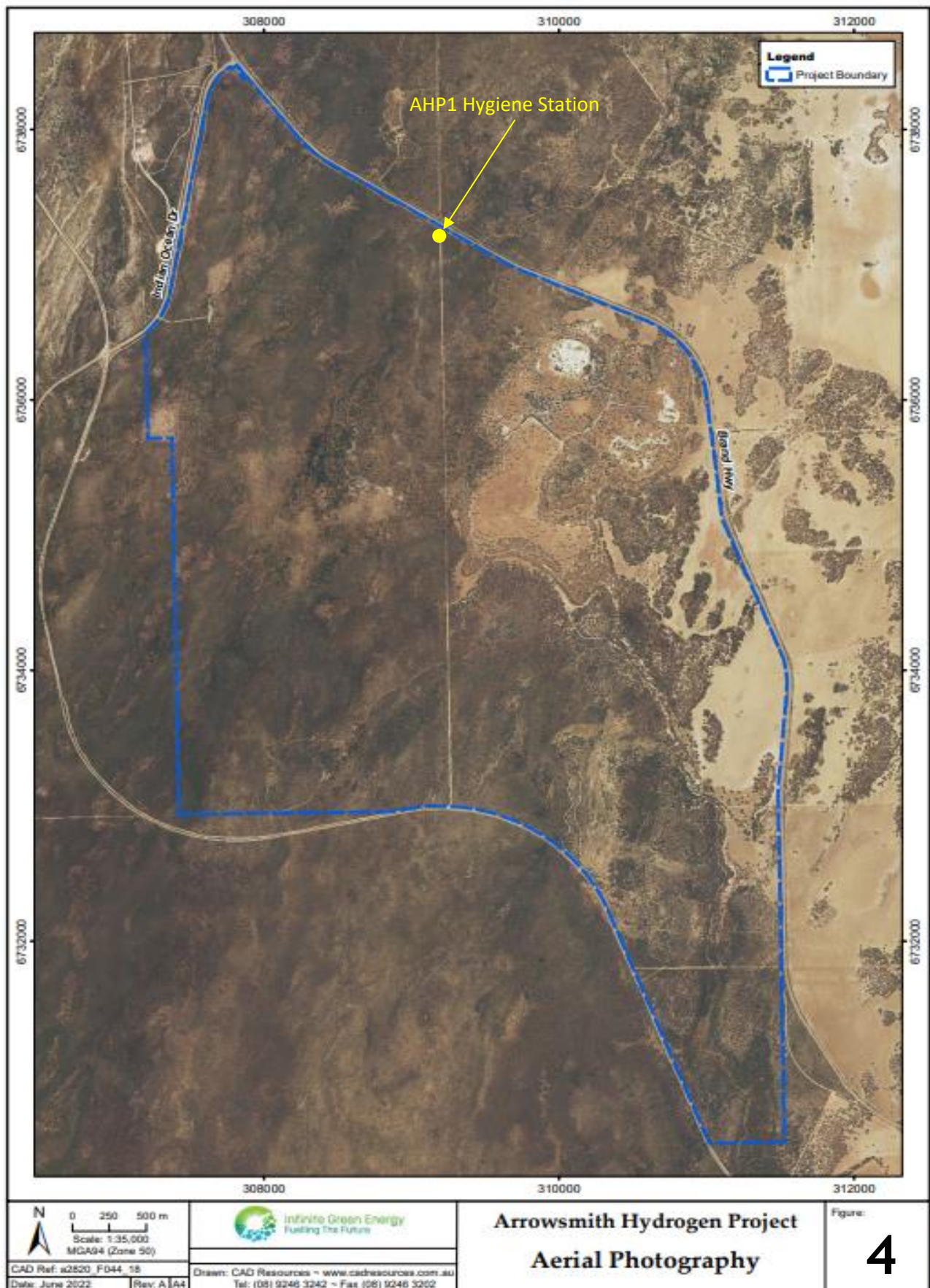
Commitment #	Commitment	Responsibility	Timing
1.	The area of land disturbance for the AHP1 Project will be kept to the practicable minimum	Project Manager	Land Clearing
2.	Cleared areas no longer required for the project will be progressively rehabilitated	Project Manager	At all stages of the AHP1 Project
<b>Site Preparation Plan</b>			
3.	<p>A Site Preparation Plan will be prepared to specify all details of site preparation requirements, including:</p> <ul style="list-style-type: none"> <li>• Earthmoving equipment inspection and clean down prior to mobilisation to site</li> <li>• Establishment of a hygiene station during site preparation activities (including lined pad with drainage sump, brushes/brooms and weatherproof container for inspection register)</li> <li>• Requirement for a Hygiene Procedure and Hygiene Inspection Form (Appendix C) available at the hygiene station</li> <li>• Sheeting materials are from the AHP1 property only</li> <li>• Requirements for borrow pit management to exclude topsoil (minimise risk of weeds)</li> <li>• Areas to be cleared are clearly demarcated</li> <li>• Vehicles and equipment to be used only within approved project footprint</li> <li>• All Crew have undertaken the induction</li> <li>• Weed inspections will be undertaken 1-2 weeks following rainfall</li> </ul>	Project Manager	Prior to Site Preparation
<b>Awareness</b>			
4.	Induction of personnel outlines the Project hygiene requirements. And includes images of the weeds in Figure 4	Project Manager	At all stages of the AHP1 Project
<b>Hygiene Methodology</b>			
5.	Sheeting materials (marl to minimise dieback risk) are from the AHP1 property only or locally sourced	Construction Manager	Site Preparation
6.	AHP1 borrow pits are managed to minimise the risk of weed transfer (topsoil exclusion during out loading and stockpiled with sufficient controls to ensure that it does not contaminate materials being imported into construction areas (e.g. a sufficient distance away and not down-wind from material being loaded))	Construction Manager	Site Preparation

Commitment #	Commitment	Responsibility	Timing
7.	All earthmoving equipment must be inspected and cleaned down off site prior to mobilisation. Offsite clean down must ensure vehicle is free of all soil and plant matter as per requirements of Appendix C Hygiene Inspection Log and the Hygiene Procedure	Construction Manager	Prior to Mobilisation to Site
8.	A hygiene station is established during construction at temporary site entry (Figure 5) during site preparation activities (including lined pad with drainage sump, brushes/brooms and weatherproof container for hygiene inspection log) *Images of example hygiene station presented in Appendix D	Construction Manager	Site Preparation
9.	Vehicles and equipment are to arrive on site in a clean state and all vehicles conduct inspection on site at AHP1 hygiene station in accordance with the Hygiene Procedure including driver sign off on the hygiene inspection log (Appendix C)* *unless issued with a permit from the AHP1 Operations Manager All soil moving machinery will be cleaned on leaving site to ensure plant pathogens are not exported from the site. Hydrogen trucking vehicles are not required to be washed down.	Construction Manager	At all stages of the AHP1 Construction Project
10.	Vehicles exiting site which have driven on unsealed roads require washdown.	Construction Manager	At all stages of the AHP1 Project
11.	Only drive on existing tracks, access roads, firebreaks, and service corridors to prevent impact on native vegetation outside the project footprint. Avoid driving in wet areas.	All personnel	At all stages of the AHP1 Project
12.	Personnel are required to complete the induction which outlines weed and dieback hygiene requirements including reiteration of the importance of staying within the project footprint	Construction Manager	Prior to Mobilisation to Site
<b>Monitoring and Maintenance</b>			
13.	Following importation and spread of sheeting material at AHP, a weed inspection will be carried out 1-2 weeks following rainfall	Project Manager	Immediately following rainfall
14.	Any identified Paterson's Curse or African Boxthorn will be treated on detection by: <ul style="list-style-type: none"> <li>African Boxthorn – foliar spray or cut stem and apply herbicide to cut surface</li> <li>Paterson's Curse – spot spray in autumn/winter with 0.5 g/10 L chlorsulfuron + wetting agent. Glyphosate at 75 ml -100 ml/15 L or metsulfuron methyl 5 g/ 100 L applied at early flowering will</li> </ul>	Project Manager	At all stages of the AHP1 Project

Commitment #	Commitment	Responsibility	Timing
	<p>control existing plants. Grubbing and cutting are suitable for young plants as long as 20 to 40 mm of taproot is removed. Slashing or mowing can cause out of season flowering and seed production</p> <ul style="list-style-type: none"> <li>All removed weeds removed by grubbing or hand pulling will be disposed of appropriately</li> </ul>		
15.	If any other WoNS or Declared Weed is detected a management strategy will be devised	Project Manager	At all stages of the AHP1 Project
16.	Following detection (15 or 16 above), ongoing monitoring for new germination will continue 1-2 weeks after rainfall events	Project Manager	At all stages of the AHP1 Project
17.	<p>Should the weed load on the boundary of BKNR increase as a direct result of AHP1 activities, IGE will implement a weed control program which includes:</p> <ul style="list-style-type: none"> <li>Consultation with DBCA</li> <li>Monitoring weeds monthly and 1-2 weeks after rainfall events</li> <li>Weed removal</li> <li>Offsite disposal of weeds</li> </ul>	Project Manager	Until AHP1 completion criteria have been met
<b>Rehabilitation</b>			
18.	A rehabilitation plan will outline measures to be implemented during rehabilitation and over following periods to manage and control the spread of weed species and remediation actions to be implemented if required	Project Manager	Within two years of well construction rehabilitation



Figure 4: Hygiene Station Location





## 7. Responsibility and Accountability

### 7.1 Responsibilities

The IGE Managing Director has overall responsibility for the safe and environmentally acceptable management of the operation. The Project Manager must ensure that the commitments and requirements of this HMP are implemented. All personnel, contractors and visitors must adhere to the requirements of this HMP.

### 7.2 Training

Training on relevant sections of this HMP will be incorporated into the AHP1 Induction. Upon completion, trained personnel will be signed off and recorded in the training log along with the date and the specific induction for which training was conducted. All personnel and contractors are required to undertake the induction. Visitors accompanied by an inducted person are not required to complete the induction for the purposes of this HMP.

Commitment #	Commitment	Responsibility	Timing
19.	All personnel and contractors undertake the AHP1 Induction and the records are included in the training log	Project Manager	At all stages of AHP1
20.	If possible, personnel complete Green Card training	Construction Manager	Earthmoving Stage of AHP1

## 8. Monitoring

### 8.1 Inspections

Inspections are conducted 1-2 weeks after rainfall events during all phases of the project.

### 8.2 Annual Monitoring

Weed and dieback monitoring is conducted on an annual basis commencing one year following the commencement of the AHP construction activity. The requirements of the monitoring are presented in Table 1.

**Table 1: Weed and Dieback Monitoring as part of Rehabilitation Monitoring**

Aspect	Objective	Scope
<i>Photographs at Monitoring Points</i>		
Weed	Ensure weeds are managed to prevent the spread of weeds	<ul style="list-style-type: none"> <li>• Observe weed cover</li> <li>• Recommend weed management</li> </ul>
Dieback	Ensure if dieback is introduced it is identified	<ul style="list-style-type: none"> <li>• Observe suspicious vegetation deaths</li> <li>• Make recommendations on requirement for dieback survey</li> </ul>

## 9. Thresholds and Triggers

Table 2 presents the threshold criteria that provide a limit beyond which the weed and dieback outcomes are deemed not to have been achieved. It provides the trigger criteria that will provide an early warning that the weed and dieback outcomes are not likely to be met, how the criteria will be monitored and contingency measures that will be implemented if threshold or trigger criteria are met.

**Table 2: AHP1 Hygiene Management Plan Thresholds and Triggers**

#	Threshold Criteria	Trigger Criteria	Monitoring	Contingency Measures
1.	No introduction of dieback	Hygiene Procedure violation	<ul style="list-style-type: none"> <li>Daily inspection of construction hygiene station including hygiene register</li> <li>Audit of hygiene records against vehicle movements</li> <li>Annual rehabilitation dieback site assessment</li> </ul>	<ul style="list-style-type: none"> <li>Hygiene procedure review</li> <li>Dieback interpreter engaged</li> <li>Consultation with DBCA</li> </ul>
2.	The foliage cover of weeds should not be greater than surrounding areas	Weed control program is not managing weeds to foliage cover less than 80% of surrounding areas	<ul style="list-style-type: none"> <li>Daily inspection of construction hygiene station including hygiene register</li> <li>Monthly weed inspections</li> <li>Annual monitoring of weed cover</li> </ul>	<ul style="list-style-type: none"> <li>Review of weed control program and implement revised program</li> <li>Review of hygiene procedures</li> <li>Consultation with DBCA</li> </ul>

## 10. Reporting and Review

### 10.1 Non-Compliance Reporting

Environmental incidents shall be reported and investigated as soon as practicable following identification, enabling effective actions to be implemented without delay. Environmental incidents are defined as events that cause or could potentially cause harm to the environment. Hygiene incidents and reporting protocols are included in Table 3.

**Table 3: Environmental Incident Reporting**

Report	Type of Incident	Frequency	Contact
IGE Reporting	<ul style="list-style-type: none"> <li>All incidents</li> </ul>	Upon discovery	Project Supervisor
EPA Services Non-compliance Report	<ul style="list-style-type: none"> <li>A limit, outcome or threshold criteria contained the Ministerial Conditions or this HMP has or is likely to be exceeded</li> </ul>	Within 7 days of IGE becoming aware of followed by a further report within 21 days	Attn: EPA CEO <a href="mailto:compliance@dwer.wa.gov.au">compliance@dwer.wa.gov.au</a>
DBCA Notification	<ul style="list-style-type: none"> <li>Identification of weed infestation</li> <li>Confirmed introduction of <i>phytophthora cinnamomic</i></li> <li>Noncompliance with the Hygiene Management Plan</li> </ul>	ASAP	Regional Manager 08 9964 0901 <a href="mailto:GeraldtonEnquires@dbca.wa.gov.au">GeraldtonEnquires@dbca.wa.gov.au</a> Manager EMB 08 9219 9500 <a href="mailto:EMBAdmin@dbca.wa.gov.au">EMBAdmin@dbca.wa.gov.au</a>

### 10.2 Compliance Assessment Report

A compliance assessment report will be submitted to EPA (where required). The report will contain evidence to substantiate statements of compliance against the requirements of this Hygiene Management Plan.

### 10.3 Management Plan Review

This HMP is to be reviewed by IGE:

- Every second year from the commencement of operations until the achievement of rehabilitation completion criteria, to ensure it remains current
- As and when directed by the EPA

## 11. References

Conservation Commission of Western Australia 2010 Performance Assessment of Phytophthora Dieback Management on Lands Vested in the Conservation Commission of Western Australia, Report.

Department of Biodiversity, Conservation and Attractions (DBCA) (2017) Phytophthora Dieback Management Manual.

DBCA (2020) *Phytophthora dieback* searched 07/12/2021:  
<https://www.dpaw.wa.gov.au/images/impact-map.jpg>

Department of Environment and Conservation, Environmental Weed Strategy for Western Australia, 1999: [https://www.dpaw.wa.gov.au/images/documents/plants-animals/plants/weeds/environmental\\_weed\\_strategy\\_wa.pdf](https://www.dpaw.wa.gov.au/images/documents/plants-animals/plants/weeds/environmental_weed_strategy_wa.pdf)

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Glevan Consulting (2021) Infinite Blue Energy Arrowsmith Hydrogen Project Phytophthora Dieback occurrence and risk assessment – Version 0.27. Unpublished report for Infinite Blue Energy.

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## Appendix A Introduced Taxa identified in the Project Area

Family	Introduced Flora	Common Name	WoNS	Declared Weed
Aizoaceae	<i>Mesembryanthemum nodiflorum</i>	Slender Iceplant		
Asteraceae	<i>Arctotheca calendula</i>	Cape Weed		
	<i>Centaurea melitensis</i>	Maltese Cockspur		
	<i>Cotula bipinnata</i>	Ferny Cotula		
	<i>Hypochaeris glabra</i>	Smooth Cats-ear		
	<i>Reichardia tingitana</i>	False Sowthistle		
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle		
	<i>Ursinia anthemoides</i>	Ursinia		
Boraginaceae	<i>Echium plantagineum</i>	Paterson's Curse		*
Brassicaceae	<i>Brassica tournefortii</i>	Mediterranean Turnip		
Campanulaceae	<i>Wahlenbergia capensis</i>	Cape Bluebell		
Caryophyllaceae	<i>Petrorhagia dubia</i>	-		
	<i>Polycarpon tetraphyllum</i>	Fourleaf Allseed		
	<i>Silene gallica</i>	French Catchfly		
	<i>Stellaria media</i>	Chickweed		
Convolvulaceae	<i>Cuscuta planiflora</i>	-		
Fabaceae	<i>Trifolium arvense</i>	Hare's Foot Clover		
	<i>Trifolium campestre</i>	Hop Clover		
	<i>Trifolium hirtum</i>	Rose Clover		
Geraniaceae	<i>Erodium botrys</i>	Long Storksbill		
Juncaceae	<i>Juncus bufonius</i>	Toad Rush		
Plantaginaceae	<i>Plantago coronopus</i>	Buckshorn Plantain		
Poaceae	<i>Avellinia michelii</i>	-		
	<i>Avena barbata</i>	Bearded Oat		
	<i>Briza maxima</i>	Blowfly Grass		
	<i>Briza minor</i>	Shivery Grass		
	<i>Bromus diandrus</i>	Great Brome		
	<i>Bromus hordeaceus</i>	Soft Brome		
Poaceae	<i>Bromus rubens</i>	Red Brome		
	<i>Ehrharta brevifolia</i>	Annual Veldt Grass		
	<i>Ehrharta longiflora</i>	Annual Veldt Grass		
	<i>Hordeum leporinum</i>	Barley Grass		
	<i>Lolium multiflorum</i>	Italian Ryegrass		
	<i>Pentameris airoides</i>	False Hairgrass		
	<i>Polypogon monspeliensis</i>	Annual Beardgrass		
	<i>Vulpia myuros</i>	Rat's Tail Fescue		
Primulaceae	<i>Lysimachia arvensis</i>	Pimpernel		

Family	Introduced Flora	Common Name	WoNS	Declared Weed
Scrophulariaceae	<i>Zaluzianskya divaricata</i>	Spreading Night Phlox		
Solanaceae	<i>Lycium ferocissimum</i>	African Boxthorn	*	

## Appendix B Hygiene Inspection Log



### Vehicle and Mobile Equipment Weed Hygiene Form

This form must be completed:

- for all vehicles and mobile equipment entering all project areas
- for all vehicles and mobile equipment exiting weed risk areas as declared weed risk areas

Company: ..... Date: .....

Property Entered: ..... Driver/Operator Name: .....

Equipment/Vehicle Make: ..... Equipment/Vehicle Model: .....



Vehicle Number/Registration: .....

The following areas have been inspected and are free from dirt and vegetation:	Y	N	N/A	Comments
Internal areas - cabins				
External areas - panels, trays etc				
Radiators and filters				
Dust bowls and cyclones				
Sump and engine guards				
Buckets, blades, tines				
Running gear, bash plates				
Tyres, wheels, wheel arch, tracks				
Under carriage, other				
<b>Prior to exiting the area known to be contaminated with Declared Plants of Significant Environmental Weeds a washdown of vehicles and mobile equipment shall be performed in designated areas as per the requirements outlined in the Weed Management Procedure</b>				
Vehicle, equipment washdown completed				

Supervisor Sign Off (IBE or Contractor)		IBE SSO Sign Off	
Name:		Name:	
Position:		Position:	
Signature:		Signature:	
Date:		Date:	



## Appendix C Example Hygiene Station



### **WEED & DIEBACK RISK AREA**

#### **CLEANDOWN PRIOR TO ENTRY**



Vehicles, equipment and footwear must be cleaned down before entering this property to prevent the introduction of declared weeds and phytophthora dieback