Environmental Management Plan

MEG-HP1 Hydrogen Production Facility

Northam Western Australia

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1. Introduction

Hydrogen is now considered an essential component in transitioning to a low-carbon global economy and achieving net-zero greenhouse gas emission targets. This is due to its potential to be a zero or near-zero carbon energy carrier to replace fossil fuel use, including in hard-to-abate sectors and for storage of renewable energy, (International Energy Agency, 2022).

Infinite Green Energy (IGE) is committed to sustainable environmental performance during construction and operations of our proposed MEG-HP1 hydrogen Project. This Environmental Management Plan (EMP) outlines IGE's approach and processes to facilitate environmental mitigation and pathways to implement our net zero emissions strategy.

It describes the potential environmental impacts, risks and proposed mitigation measures associated with the project. Its implementation will be monitored by project management personnel and Environment Health and Safety professionals.

The plan provides the basis for IGE to achieve its environmental objectives and to assist with achieving our vision of net zero emissions. It incorporates legislative requirements, objectives, and targets, monitoring and measurement tools, continuous improvement initiatives and techniques for managing environmental aspects and impacts.

This document is compiled in accordance with the Part IV and V of the Environmental Protection Act 1986 (WA) (EP Act) and Environmental protection regulations 1987.

1.1 Vision

IGE's objective is to create a new kind of energy future in the region and internationally by leveraging our domain expertise in developing renewable hydrogen projects that will facilitate the transitioning of the Australian economy towards Decarbonisation and net zero emissions.

Our ethos engrained in our culture is to leverage our natural resources including water, solar and wind energy by way of alliances to proven technology partners, to deliver commercial scale projects that deliver renewable hydrogen to the evolving domestic and international markets creating a model of lower-carbon energy production that can be replicated worldwide.

Our vision is to establish IGE as a leader in the green hydrogen sector and to elevate Australia onto the global stage by demonstrating the country has the technology, skills and entrepreneurial mindset to be ahead of the pack in the development of green hydrogen projects. We are excited to be facilitating and being at the forefront of this transformation towards the net zero economy and establishing Australia as an early adopter of this energy future.

1.2 Scope

This EMP supports IGE's Development Application for the Northam Hydrogen Plant (MEG-HP1). The application is compiled in compliance with clause 62 of the planning and development (Local Planning) schemes) regulation 2015.

The Northam Hydrogen Plant (MEG-HP1) by Infinite Green Energy's (IGE's) subsidiary MEG-HP1 Pty Ltd will be constructed to enable the production of green hydrogen by electrolysis. The plant will be located adjacent to the existing 11MW Northam Solar Farm (NSF).

The new 10mw eletrolyser system will utilise renewable energy from the existing 11MW Northam Solar Farm and the additional 8MW array to be constructed. This new solar array shall allow for electrolyser capacity expansion from 10MW to 20MW as part of a planned future expansion project The facility will be connected to the local power grid to allow for 24/7 output.

The plant is planned to utilise 2x 5MW capacity Polymer Electrolyte Membrane (PEM) system to produce green hydrogen. Hydrogen will be compressed in gaseous form and transferred to trailer mounted Multi Element Gas Containers (MEGC) for transportation by road to Hydrogen Refuelling Stations (HRS).

Hydrogen is planned to be distributed to a number of Hydrogen Refuelling Stations (HRS) to end users within the heavy vehicle transportation sector. Planned Production capacity is four (4) tonnes of hydrogen per day (Average).

Due to hydrogen being classified as 'Dangerous Goods,' appropriate transport safety measures are an important feature of the project. Consequently, upgrades to project infrastructure is required to enable site access. Traffic management upgrades will include the installation of boom barriers and flashing lights at the railway level crossing and the construction of a deceleration lane, on approach to the site access road.

1.3 Key Environmental Aspects

Key environmental aspects incorporated into this plan include:

- Waste Management;
- Noise Management;
- Emissions Management;
- Dust Management;
- Surface Water and Drainage Management;
- Stormwater Management;
- Vegetation, Fauna and Fauna Management;
- Heritage Site Management;
- Landscape and Visual Amenity; and
- Bush fire Prevention and Management.

2. Definitions

Acronym or Term	Definition
AS/NZS	Australian and/or New Zealand Standard
CA	Contracts Administrator
CM	Construction Manager
DWER	Department of Environment and Conservation
DIA	Department of Indigenous Affairs
DWER	Department of Water and Environment Regulation
EMS	Environmental Management System
EMP	Environment Management Plan
EPA	Environmental Protection Authority
HSE	Health, Safety and Environment
IGE	Infinite Green energy
ISO	International Standards Organisation
SDS	Safety Data Sheet
NEPC	National Environment Protection Council
NEPM	National Environmental Protection Measures
PD	Project Director
PM	Project Manager
PMC	Project Management Consultant (Worley Parsons)
SC	Contractor Contractors and Suppliers
SS&E	Site Supervisors and Engineers

3. Site Location

The project site is located approximately one kilometer east of the Northam townsite, on the northeast side of the Northam – York Road and the East Perth – Kalgoorlie railway line, as shown in **Figure 1**.

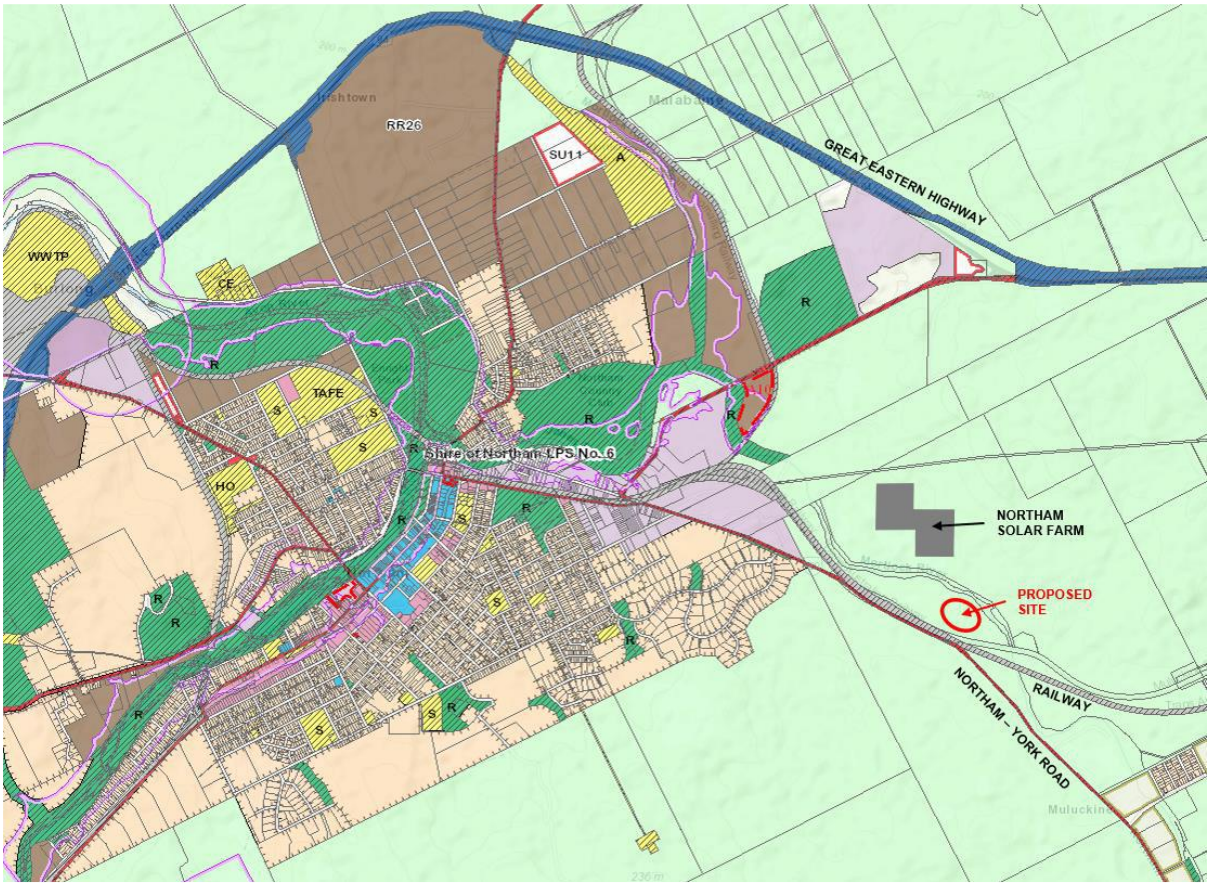


Figure 1: Location of the MEG-HP1 Project

4. Environmental Policy

IGE personnel shall be made aware of the company's Environmental Policy and their responsibilities concerning its implementation by means of inductions, training and awareness programs.

The policy outlines our commitment to the implementation of a sustainable environmental management framework, approved by the IGE Board and mandated across IGE operations.

This policy will be displayed in prominent locations throughout the project areas including notice boards and offices. Company personnel and contractors engaged to work on the project shall comply with the policies, procedures, regulations, and laws applicable to their assigned duties and responsibilities. Implementation of the policy principles will be driven by IGE to ensure the highest level of project environmental management.

IGE recognises the importance of environmental sustainability, and we will conduct our business in a professional, ethical, and a socially responsible manner. We will endeavor to protect the environment, our site personnel, stakeholders and the communities in which we operate. We will not compromise the protection and conservation of environmental values and will endeavor to manage and contribute to decarbonisation and a net zero emissions future.

IGE site personnel are expected to promote, implement, and communicate the IGE environmental policy to project personnel and stakeholders. IGE will strive to promote environmental awareness to achieve our vision of being a leader in the renewable energy sector while achieving our goal of net zero emissions.

Refer Appendix C

5. Legislative Requirements

IGE will comply with all relevant legislation at either the federal, state, or local level. Site personnel and contractors engaged on MEG-HP1 Hydrogen Project will be made aware of the legal requirements applicable to the project by means of inductions, pre-start meetings, toolbox meetings and ongoing and regular consultation. All legislative documents will be made available to site personnel.

Copies of licenses, approvals and permits relevant to the scope of works will be held on site files and be available for audit and inspection purposes. Electronic copies of Acts, regulations, standards and guidance documents shall be available on site when construction commences.

The Project Environment Manager shall review legislative requirements, guidelines and standards applicable to the project in order to identify amendments. Details of these amendments shall be distributed to the relevant parties.

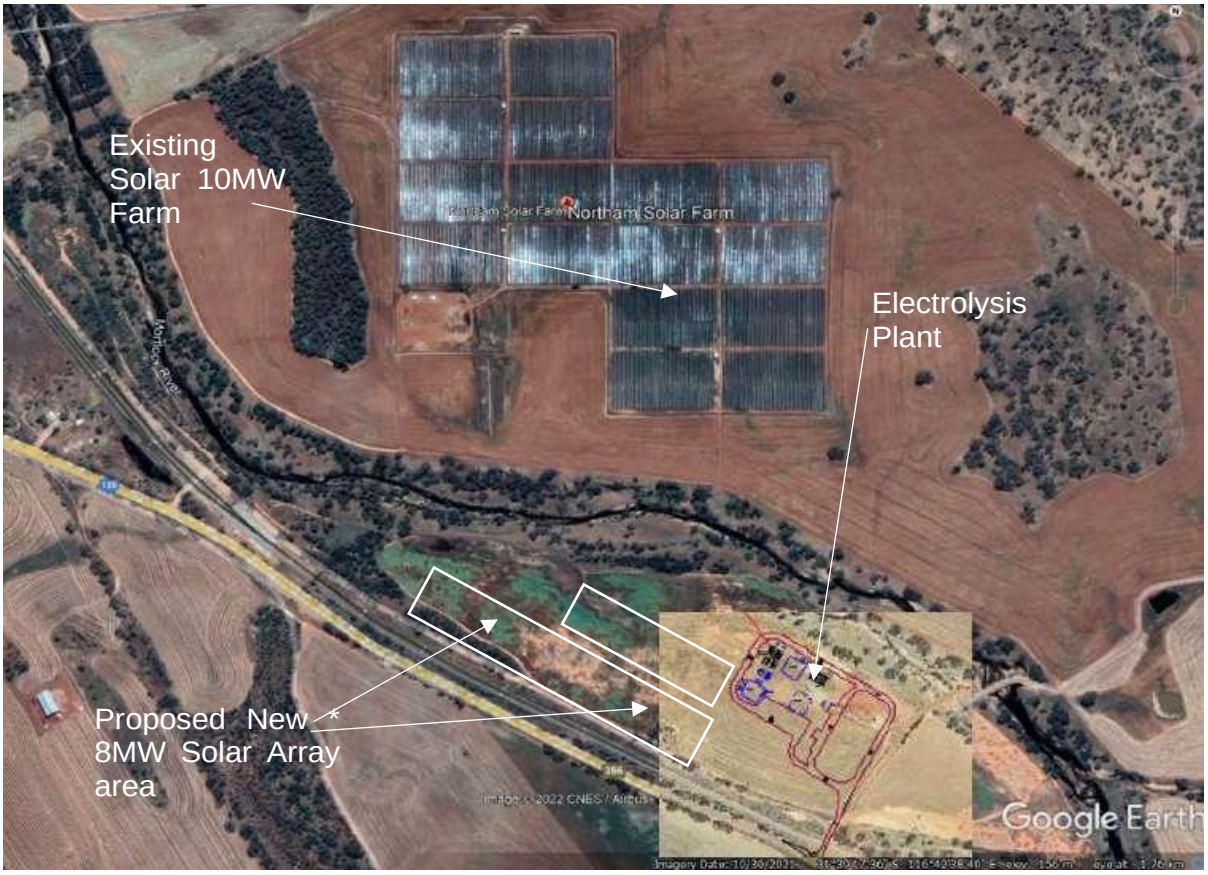


Figure 2: Site location and Solar Array

Table 1: Legislation

Legislation Title	Element
Environmental Protection Act 1986	General
Environmental Protection (Noise) Regulations 1997	Noise
Environmental Protection (Controlled Waste) Regulations 2004	Waste Management
Environmental Protection (Clearing of Native Vegetation) Regulations 2004	Land Clearing
Environmental Protection (Unauthorised Discharge) Regulations 2004	Dangerous Goods and Hazardous Materials
Environmental Protection Regulations 1987	General
Dangerous Goods Safety Act 2004	Dangerous Goods and Hazardous Materials
Dangerous Goods Safety (Storage and Handling of Non-Explosives) Regulations 2007	Dangerous Goods and Hazardous Materials
Contaminated Sites Act 2003	Contamination
Dangerous Goods (Transport) Act 1998.	Contamination
Contaminated Sites Regulations 2006	Contamination
Aboriginal Heritage Act 1972	Land clearing/disturbance
Bush Fires Act 1954	Emergency Management
Bush Fires Regulations 1954	Emergency Management
Agriculture and Related Resources Protection Act 1976	Weed Management
Rights in Water and Irrigation Act 1914	License to take water
Aboriginal Heritage Act 1997	Heritage
Threatened Species Conservation Act 1995.	Vegetation clearing

Table 2: Guidelines/Standards

Guideline/Standards	Element
AS 2436 – 2010 Guide to Noise Control on Construction, Maintenance and Demolition Sites	Noise/Vibration
AS 2670.2 – 1990 Annex A Evaluation of Human Exposure to Whole Body Vibration	Noise/Vibration
EPA Guidance Statement #8 Environmental Noise' (Draft)	Noise/Vibration
EPA Guidance Statement #18 Prevention of Air Quality Impacts from Development Sites	Dust, Odour & Fumes
National Environmental Protection Measure – Ambient Air Quality	Dust, Odour & Fumes
Dept of Conservation and Land Management - Environmental Weed Strategy for Western Australia	Weed Management
AS 1940 – 2004 The Storage and Handling of Flammable and Combustible Liquids	Dangerous Goods and Hazardous Materials

Table 3: Commonwealth Legislation

Legislation Title	Element
Environment Protection and Biodiversity Conservation Act 1999	Vegetation clearing
National Strategy for the Conservation of Australia's Biological Diversity 1996	Vegetation clearing
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Heritage
Industrial Chemicals (Notification and Assessment) Act 1989	Dust, Odour & Fumes

6. Project Environmental Requirements

This Environmental Management Plan (EMP) specifically addresses the environmental requirements of the proposed MEG-HP1 Hydrogen Plant. Within this EMP, stakeholder requirements have been integrated to ensure project objectives and targets are achieved.

IGE will make available all environmental records and information during audits or inspection to government regulatory bodies if required. For the purposes of environmental reporting, IGE will provide project personnel with regular environmental management updates.

7. Site Features

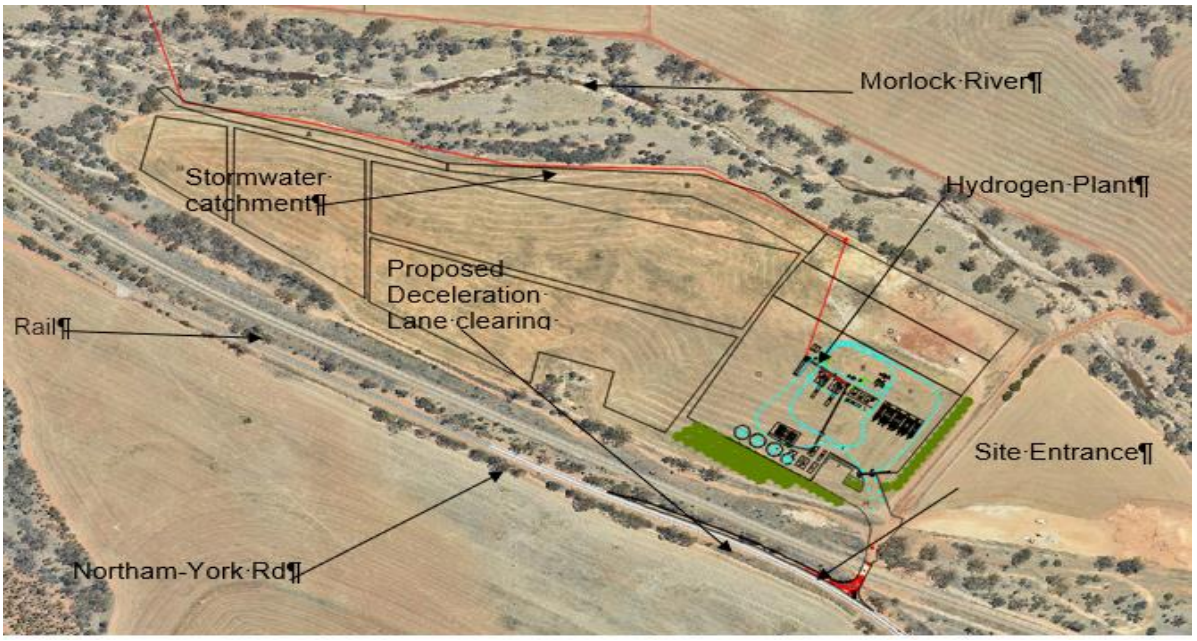


Figure 3: MEG-HP1 Project Site Layout

8. Roles and Responsibilities

Individual responsibilities for the environmental management plan and system are detailed below. An organisational chart can be found under separate cover.

Role	Responsibility
Project Director	The Director is accountable and has overall responsibility for the formulation and implementation of IGE Environmental Policy and IGE Environmental Management System. The Director is primarily responsible for: Providing the resources necessary to implement and maintain IGE's Environmental. Management System at all levels of the organisation and operation. Ensuring that IGE Environmental Management System is kept current with legislation, with the customers' requirements and that all changes are communicated in a timely and effective manner throughout the organisation. Ensuring that inspections and audits are implemented in accordance with the relevant Environmental Management Plans. Ensuring IGE Managers, Supervisors, Site personnel, Contractors and Contractors operate within the guidelines of the Corporate and Project Environmental Management Plans.
Project Manager	The Project Manager has responsibility for the effective implementation of IGE Environmental Management Systems and their Project Environmental Management Plans. The Project Manager is primarily responsible for: Ensuring adequate resources are in place to implement and maintain IGE Environmental Management Plan on each project. Ensuring that IGE Environmental Management System is kept current with legislation and implemented effectively throughout the organisation. Ensuring that project objectives and targets are achieved in accordance with the relevant Environmental Management Plans. Ensuring IGE Managers, Supervisors, Site personnel, Contractors and Contractors operate within the guidelines of the Project Environmental Management Plan.

Role	Responsibility
Construction Manager	The Construction Manager has an important senior role in the formulation and implementation of IGE Environmental Policy and IGE Environmental Management System. The Construction Manager is primarily responsible for: Providing the resources necessary to implement and maintain IGE Environmental Management System at all operations levels of the organisation. Ensuring IGE Managers, Supervisors, Site personnel, and Contractors operate within the guidelines of the Corporate and Project Environmental Management Plans. Ensuring that IGE Environmental Management System is kept current with legislation, with the customers' requirements and that all changes are communicated in a timely and effective manner throughout the organisation. Ensuring that inspections and audits are implemented in accordance with the relevant Environmental Management Plans.
Health and Safety Manager	The HSE Manager is responsible and accountable for the development, implementation and compliance assurance of IGE Environmental Management System including plans and procedures. The HSE Manager assists the Project Director and management team to: Formulate and review the Environmental Policy and Objectives. Oversee the development and maintenance of the IGE Environmental Management System. Assist the Project Manager and Site HSE Advisor to prepare a Project Environmental Management Plan and associated forms and procedures.
Project Site Engineer	The Project site engineer is accountable to the Project Manager and has the part responsibility for the environmental performance of the project. The Construction Manager has control of the IGE project site. The specific environmental responsibilities are: Assist the Construction Manager to fulfill the responsibilities regarding site compliance of the IGE environmental management system. Ensure that a Project Environmental Management Plan is prepared, and that environmental standards, processes and procedures meet regulatory requirements. Oversee the successful implementation, monitoring and review of the Project Environmental Management Plan. Ensure the key site staff including Site Supervisors are implementing and working in accordance with site environmental requirements and the EMP. Provide immediate reporting of environmental incidents to the IGE Environmental Manager and other periodic environmental reports to stakeholders.

Role	Responsibility
Environmental Manager/Advisor	The Site Environmental manager/advisor is accountable to the Project Manager and has the following key responsibilities: Maintain compliance with the environmental management plan and implement the system across the project site. Conduct training on environmental management plans and procedures, including the IGE site induction. Weekly reporting back to the Project Manager and incident notification and reporting. Conduct workplace compliance inspections including environmental elements. Liaise with the personnel and Site Environmental Representative. Align with ISO 14001 requirements, the IGE Environmental Management Plan, legal requirements and regulatory environmental management conditions.
Site Supervisor	The Site Supervisors are accountable to the Project Manager and responsible for: Ensuring project personnel understand comply with the IGE Environmental Management Plan and the environmental requirements applicable to their work. Ensure that site personnel and contractors are working in compliance with ISO 14001 environmental requirements and work activities are not impacting the associated environment. Formulate and implement safe methods of work and SWMS which incorporate site environmental requirements.

9. Risk Management and Environmental Aspects

An environmental aspects/risk assessment (Envid/Hazid) was conducted for the project and included an assessment of the project scope of works. This risk assessment was held as a consultative workshop involving IGE project personnel and key contractors.

The risk assessment included proposed project work activities, environmental hazards/ risks /impacts, consequence and likelihood of impacts, level of risk, and control measures.

The risk assessment will be formally reviewed biannually, this should be reviewed following changes in work scope, changes to the work environment or following a significant incident event. This review and the consequent outcomes will be communicated to key project personnel. The risk from identified potential hazards shall be reduced utilising a hierarchy of control.

Key items identified in the risk assessment are incorporated into the Project Environmental Management Plan (EMP) and communicated as part of the IGE Site Induction.

Environmental objectives and targets addressed below have been developed and will be used as a guide for the management of significant environmental risks.

10. Objective and Targets

IGE Northam Hydrogen MEG-HP1 Project key objectives and targets will include:

- Minimise adverse impacts on the abundance, species diversity, geographic distribution and productivity of vegetation communities;
- Maintain ecological integrity;
- Manage social surrounds impacts;(Including Heritage)
- Manage Landscape and visual amenity impacts
- Minimise, monitor and manage emissions (including waste generated) from all work areas associated with the project;
- Manage surface water and stormwater impacts.

10.1 Objectives, Targets and KPI's

The following key strategies will be applied to the project to achieve the environmental objectives and targets.

- Environmental Management Strategies;
- Project Environmental Risk Management; and
- By Adhering to Environmental management policy guidelines, the project aims to implement the following objectives and targets:

Objective	Target	Key Performance Indicators
To provide a working environment and culture where environmental protection and sustainability are core values	To manage the environmental aspects effectively and in accordance with the legislative requirements	Prepare and implement a suite of procedures to address identified environmental impacts.
	Effective communication	Establish close liaison with stakeholders for the term of the project. Meet regularly with stakeholders if required
Manage Environmental Impacts	Zero environmental Incidents/Impacts	No environmentally related prosecutions brought against the project. No level 4 incidents Zero community complaints
Best Practice EMS	Implement an effective Environmental Management System	Maintain compliance to ISO 14001
Planned Monitoring and Inspection regime	Manage Environmental compliance and instill a vision of beyond compliance	Continuously monitor and improve environmental performance via a program of inspections, audits, and reviews
Timely Auditing	Regular project auditing Audit Schedule	Maintain the EMS to ascertain no systemic failures are identified during the audit program

Objective	Target	Key Performance Indicators
Effective training	Complete relevant training for all site personnel	Provide the relevant environmental training and instruction to all site personnel
Successful Community Relations	Create a positive and proactive partnership with the local community	No adverse media or community complaints
Effective environmental Incident tracking	Zero environmental incidents	Identify address and closeout, environmental investigations promptly and in accordance with legislative requirements and the Project EMP

10.2 Aspects and Impacts

Site construction and subsequent operational activities will be undertaken in planned phases. The environmental mitigation strategies applicable to the site-specific impacts are derived from the previous Envid workshop.

Table 4 – Key Environmental Aspects, Impacts Risk Register

Aspect	Impact	Consequence	Likelihood	Risk Rating
Water Quality	Pollution/contamination of ground or surface water bodies.	1	4	L
Erosion & Sediment Control	Topsoil migration, triggering nutrient loading, impacting water quality and ecological values.	1	5	L
Site Contamination	Mobilisation of chemicals exceeding regulatory environmental guidelines	1	1	L
Air Quality/Emissions Control	Pollution/ contamination of atmosphere from dust, exhaust emissions, odour and air-born chemicals. The sensitive receptors adjacent to site could be exposed to dust and other air emissions causing health effects.	2	1	L
Hydrogen Emissions	Pollution/ contamination of atmospheric conditions from hydrogen venting during the Electrolysis plant process	2	8	M
Hydrogen Transportation	Pollution/ emissions to atmosphere from hydrogen leakage/venting	2	1	L
Noise & Vibration	Disturbance/ nuisance impacts from 'unreasonable' or excessive levels of noise to public/environment.	1	2	L
Hazardous Materials/Chemicals	An acute weather event where hazardous chemicals have the potential to be spilled or released to the environment creating adverse impacts.	2	5	L

Aspect	Impact	Consequence	Likelihood	Risk Rating
Cultural Heritage	Destruction or disturbance to archaeological/cultural artefacts including skeletal remains, shell middens or other object d'art/types	2	3	L
Flora, Vegetation and Fauna	Direct/Indirect impact (stress) to an individual or species of flora/vegetation.	2	3	L
Waste Management	Degradation of aesthetic values due to ineffective waste management controls. Accumulation of general, hazardous or controlled waste.	2	5	L
Stormwater	Impacting Ecological Values/Erosion and water bodies	2	8	M
Visual Amenity/Landscape	Community/Public/Civic impacts to amenity	1	2	L
Bushfire	Local community/site personnel/health and wellbeing/company assets/flora and fauna	2	5	L

10.3 IGE Risk Matrix

		Consequence				
	Assessment Impact Score	Minor (1) FAI <$10K	Medium (2) MTI $10K - $100K	Serious (3) RWI $100K - $500K	Major (4) LTI $500K - $2M	Critical (5) Fatality >$2M
Likelihood	Assessment Impact Score / Risk Level	1	2	3	4	5
Almost Certain (A) >1 per week	A	Moderate 11	High 16	Extreme 20	Extreme 23	Extreme 25
Likely (B) 1/week - 1/month	B	Moderate 7	High 12	High 17	Extreme 21	Extreme 24
Possible (C) 1/month - 1/year	C	Low 4	Moderate 8	High 13	High 18	Extreme 22
Unlikely (D) 1/year - 1/10 years	D	Low 2	Low 5	Moderate 9	High 14	High 19
Rare (E) <1/10 years	E	Low 1	Low 3	Low 6	Moderate 10	High 15

Risk level	Category	Description	Criteria	Control Level
Extreme	4	Unacceptable	Not acceptable at all. Treatment plans to be explored, implemented and managed by highest level of authority and	Managing Director
High	3	Urgent attention required	Risk only acceptable with excellent controls, managed by Senior Management / Executive and subject to monthly monitoring.	Senior Site Official
Moderate	2	Monitor	Risk acceptable with adequate controls, managed by specific procedures and subject to semi-annual monitoring.	Management Supervision
Low	1	Acceptable	Risk acceptable with adequate controls, managed by routine procedures and subject to annual monitoring.	Procedural control

11. Environmental Risk Management

The Project shall incorporate a process of environmental risk identification, assessment, and monitoring of all activities. Typically, this shall be implemented by one of more of the following as appropriate:

Table 5 - Environmental Risk Identification

Risk Management Activity	Frequency/Requirement	Responsibility
Completion of a Risk Register to identify aspects and impacts	Commencement and reviewed Quarterly	IGE
Completion of Project Risk Workshops Hazid/Envid	Commencement and reviewed quarterly	IGE
Development of Environmental Management Plans and sub-plans	Prior to commencement and reviewed 6 monthly	IGE and selected contractors
Development of Environmental Work Method Statements(WMS)	Prior to commencement	Selected contractors
Environmental Site Inspections	Weekly	IGE
Implementation of the Environmental Management Plan and Sub-plans	During construction	IGE and all contractors

The identification and management of risk at project level is undertaken by IGE via a program of workshops and regular reviews. The scope of each risk assessment identifies persons responsible for implementing risk management. Workshops/Envids will include personnel adequately experienced in the appropriate management sector and or aspects being assessed.

IGE is aligned to the appropriate international management guidelines in safety, quality and the environment and have developed detailed standard operating procedures supplemented by management plans. The plans detail qualitative risk controls measures and management requirements to be implemented by project personnel to comply with standard and procedures.

IGE is continually assessing and updating their management practices while optimising their procedures. Our project risk management process seeks to assess the adequacy of existing controls and identify additional risk and control measures which are unique to the MEG-HP1 Hydrogen project.

12. Communication and Consultation

Project communications shall be considered a critical element of the relationship between the IGE's project team, our contractors, stakeholders and their representatives and within the community in which we operate.

12.1 Communication

IGE aims to ensure that the environmental management processes effectively use available methods of communications, both internally and externally, that allows individuals to be aware of specific environmental impacts, participate in environmental management activities, identifying risks, and assisting in developing corrective and preventative actions.

Communication of environmental matters will occur utilising:

- Management meetings/coordination meetings;
- Site inductions;
- HSE meetings and toolbox meetings;
- Training, informational, and promotional sessions;
- Distribution/circulation/display of environmental information and other relevant documents;
- Informal workplace interface meetings;
- Reporting systems; and
- Electronic media.

Informal environmental consultation will occur daily on site between IGE personnel and contractors including discussions related to general construction activities and potential environmental impacts.

All enquiries and site complaints will be managed in accordance with the IGE Communications Plan. Complaints received by IGE relating to environmental impacts will be investigated accordingly. Environmental incidents shall be reported and investigated by the Environmental representative/advisor.

Table 6 - Environmental management communications

Event	Frequency/Requirement	Participants	Record/Evidence
Project specific induction.	Prior to commencement of contracted work.	Personnel (excluding short term one- off visitors).	Project induction Declaration form and Induction Training documentation
Work activity Induction (in EWMS or equivalent).	Prior to commencing work.	Personnel conducting specific work activities.	Record of training – listed on the EWMS or Toolbox Talk Records.
Toolbox Meetings.	Generally, when there is the introduction of a new process (EWMS) or when discussing Environmental impacts/topics.	Supervisors, contractors, site personnel, and service providers.	Toolbox Talk Records or other.
Contractor Meetings.	Weekly or as required	Project team/ contractors, their site personnel, suppliers, and others as required.	Minutes of meeting.
Project team meetings.	Weekly	Project team	Minutes of meeting.
HSE Meetings	Monthly	Stakeholders and Project Manager.	HSE Report
Stakeholder Group meetings	Quarterly	Project team	Minutes of meeting.
Environmental Report	Monthly	Project Team	Monthly Environmental Reports
Project Notice Board and general signage	As reqd.	All personnel	Project Notice board
Site Inspections	Weekly	Project team	Site Inspection Report
Audits	As per schedule	Project team	Audit Report
Enquiries and Complaints	As reqd.	As per Communications Management Procedure	Complaints Register
External stakeholders	As reqd.	As per Communications Management procedures	Meeting minutes

12.2 Training, Competence and Awareness

IGE will ensure systems are in place to identify, plan, document and monitor training needs to ensure site personnel and contractors can competently meet their environmental responsibilities.

Prior to construction and during operations IGE will organise an environmental induction for the project management team. The induction will include an explanation of the purpose and objectives of the EMP and, the roles and responsibilities of personnel on site in relation to key site impacts. The Project HSE Manager shall maintain records of this induction.

Personnel working on the MEG-HP1 site will be required to attend and satisfactorily complete the site induction. In order to eliminate or minimise the risk of exposure to hazards, Personnel are to be adequately instructed and trained in the environmental management procedures related to the work they are required to perform.

Where training of IGE staff and site personnel is required in order to gain particular skills and or knowledge, the training shall be authorised by the Construction Manager or Project HSE Manager. Records of training and/or competency will be maintained on the divisional training matrix.

12.3 Environmental Awareness in Procurement

Procurement shall be in accordance with the sustainable Procurement Plan.

Potential environmental risks shall be considered when purchasing, hiring or leasing goods, materials, substances or equipment. In particular consideration will be given to:

- Legislative and Regulatory requirements;
- Impacts identified during the risk management workshops, Hazid/Envid;
- Industry practices;
- Practicalities of transport, handling and storage, and
- Stakeholders' specific requests.

12.4 Hazardous Substances

Hazardous substances supplied to the project shall be approved for use and accompanied by a current SDS. Hazardous substances shall be registered, correctly stored, used and disposed in accordance with the SDS and regulatory requirements. Site personnel shall be trained in the SWMS based on the SDS and provided with the appropriate PPE.

12.5 Contractor and Supplier Management

Contractors on the project are required to meet all IGE management standards. IGE will:

- Provide documentation to potential contractors and suppliers detailing the process and compliance requirements;
- Require contractors to comply with legal and contractual requirements;
- Monitor and review contractors and suppliers' performance and compliance with the environmental obligations specified in their contracts;
- Investigate non-conformance or environmental, incident. contractors will be required to respond to IGE with a corrective and preventative action report; and
- Provide assistance and guidance to contractors and suppliers in relation to compliance with legal and contractual requirements.

12.6 Inspections and Audits

Informal and formal inspections of work areas and activities on site will be conducted regularly. Dependant on the environmental impacts, conditions or potential risk, inspections shall occur daily, weekly or monthly. Inspections will be conducted by individuals or teams listed below:

- Site Supervisors, Managers and Engineers;
- Project Environmental Manager;
- HSE Manager; and
- Health safety & environment representatives.

Inspections of site activities will be conducted to ensure change in environmental conditions are being managed effectively. Unplanned changes work environments that may impact on a particular activity will be communicated to impacted personnel. Planned changes to work conditions or environmental conditions will be communicated to relevant parties. Inspections will be recorded.

The environmental inspection checklist will be attached to this EMP when submitted.

IGE will establish an audit program for environmental management on the project that will include:

- Quarterly systems audits focused on those sections of the environmental management plan that are relevant to current operations ISO 14001standards and regulatory compliance;
- Contractor compliance audits with a frequency based on the risks associated with the work, Contractors environmental performance, previous performance, incidents relating to the Contractor's work area and/or the results of previous audits conducted; and
- Audits by external organisations.

Waste Management (segregation of materials, recycling, waste disposal).

Ongoing toolbox, training and awareness sessions shall be conducted throughout the project as part of IGE's commitment to environmental management. Specific topics to be covered include, but are not limited to:

- Use of Spill Kits and Spill Management;
- Protection of Native Flora and Fauna;
- Environmental Aspects;
- Stormwater Management;
- Heritage;
- EMP Project Requirements;
- Emergency Response Procedures;
- Bushfire Management;
- Hazardous Substances Management and
- Dust Suppression.

Personnel whose work involves significant environmental risks shall receive specific environmental training regarding specific risks.

Environmental training received shall be recorded and the records shall be maintained by the Site HSE Manager.

Records shall be available for examination by stakeholders, or third-party auditor, Training completed will be recorded.

13. Documentation and Records

The Environmental Management Plan, procedures, environmental inspection records and incident reports shall be maintained within the Site Office. Site personnel shall have access to the latest version of documents and all documents shall follow a formal review and approval process. Formal environmental documents shall be authorized by the Project Manager.

Environmental hazards shall be recorded on the Project HSE Hazard Register and shall be actioned and closed out as soon as practicable. The register shall be available to all personnel and new entries and corrective actions shall be discussed at pre-start and toolbox meetings. The environmental risk register and environmental documentation may also require review as an outcome of an ENVID/HAZVID Workshop.

Environmental records and statistics shall be presented to Stakeholder on a regular basis as if required.

Project environmental records will be maintained to ensure that IGE comply with both project and legislative requirements. Documents shall be controlled, protected from loss, and made available on request.

Environmental Monitoring Records for dust, noise, and soil monitoring along with Controlled Waste Disposal Records shall be stored on project environmental files and archived along with other project environmental records at the completion of the project.

14. Records Management and Document Control

14.1 Records Management

Environmental records will be kept demonstrating compliance with standards, relevant legislation and the requirements of the IGE Environmental Management System procedure.

Documents will include:

- Inspection and Audit Reports;
- Risk Registers;
- Work Method Statements;
- Induction and Training Records;
- Contractor reviews;
- Hazardous Substance and Dangerous Goods Register;
- Incident and Investigation Reports;
- Registers as required by site management;
- IGE forms; and
- Relevant Legislation, Codes of Practice, Australian Standards and Guidance Notes.

The Environmental Manager will regularly review the updating of the project site's Environmental records with those responsible for recording the information to ensure that files are current. Records will be filed electronically on the project's shared drive, project web page or as a hardcopy within the site filing system.

14.2 Document Control

IGE has established a system to maintain documents and records. This includes:

- A record filing system;
- Management protocols;
- Maintaining construction records;
- Determination of records retention;
- Organising archives for storage; and
- Retrieval of archived records.

Retaining documentary evidence is essential and is used to demonstrate compliance to project specifications, contract documents and environmental legislation. Relevant documents are to be stored, managed and made available for inspection by stakeholders, authorities and internal / external audit as and when required.

14.3 Environmental Reporting

Relevant environmental data from monitoring, inspections, etc, shall be recorded and reported as required. Reporting requirements are detailed in the specific EMP's outlined in Section 9.6 below.

Incident reporting is described further in Table 7 of this plan and shall be in accordance with IGE's policy and government regulatory requirements.

Daily and weekly reporting shall include but not be limited to inspection findings, incidents, non-conformances issued, and delays or impacts caused by weather conditions.

Environmental data will be reported monthly to Stakeholders as described in the Project Management Plan. Monthly Environmental reports may include the following details:

- Inspection findings;
- Audit results;
- Statutory visits (Authority notices etc);
- Contractor environmental performance and compliance;
- Incident data;
- Key items for action; and
- Evaluation and compliance with established objectives and targets.

14.4 Non-conformances, Corrective and Preventative Actions

Objective evidence showing departures from of the following shall be considered as valid justification for a non-conformance to be recorded and issued if a:

- Lack of consideration in relation to procedures, duties and/or responsibilities, particularly at a management level;
- Breaches of relevant legislation, Codes of Practice etc.;
- Inadequate procedures or practices related to work that has the potential to impact employees, the public, the environment; or
- Repetitive breaches of procedures, site rules or standards.

An Environmental non-conformance identified or reported, will be documented (when confirmed).

When a non-conformance is identified, the recipient and/or IGE shall identify strategies to rectify the non-conformance. Where appropriate, the recipient and/or IGE shall also develop measures to prevent recurrence.

Measures to rectify and prevent recurrence of non-conformances shall be documented within the required report and time frames established for remedial action. The instigator shall implement a follow up review and closeout the non-conformance and verify completion of measures undertaken. This information shall be recorded within the Improvement Register.

14.5 Environmental Incident Management Procedure

The procedures to follow in the event of an Environmental Incident are listed in Table 5. Complementary to this procedure, remedial actions specific to each of the project's environmental aspects are detailed in Section 9 of this plan.

Table 7 –Environmental Incident Management Procedures

Action	Procedure	Responsibility
Incident Reporting	The incident shall be reported to the Environmental Manager immediately.	Person responsible or first on the scene.
	The incident shall be reported to the Project Manager and the Environmental Manager.	Environmental Manager
	The level of Environmental Incident shall be determined by Environmental Manager. This may be up/down graded later depending on further advice from the Regional HSE Manager.	Environmental Manager
	An Environmental Incident Report shall be completed by the Environmental Manager and forwarded to the Project Manager and Regional HSE Manager. All incidents shall be signed off by the HSE Manager.	Environmental Manager
Immediate Actions	For all incidents Level 2 or higher, all work activities directly causing an environmental incident shall be stopped immediately and correct work procedures adopted (as detailed in component management plan remedial actions).	Environmental Manager
	Measures to limit the impact of Level 4 incidents on the environment shall be implemented as soon as practicable by the Environmental Manager.	Environmental Manager
	For all incidents, the causes and impacts of the incident and methods to prevent the incident from reoccurring shall be assessed and recommendations documented in the Environmental Incident Report. These recommendations shall be assigned implementation dates, as soon as practicable.	Environmental Manager
Corrective Actions	The Environmental Incident Report shall be 'signed-off' by the Environmental Manager. This shall follow agreement on new procedures to prevent reoccurrence of the incident and further remedial action required to mitigate impacts to the satisfaction of BME&I and regulatory authorities involved. Sign-off requires confirmation that the remedial actions have been implemented by the required date.	Environmental Manager
	Updated procedures arising from the Environmental Incident process shall be prepared by the Environmental Manager and approved by the Project Manager before being issued. These bulletins will be treated as addendums to the EMP and shall be communicated to the personnel via email and where applicable via Toolbox meetings described in section.	Environmental Manager
Notification	Level 1 – Internal notification only.	Environmental Manager
	Level 2 – Internal notification, if the incident impacts other areas of site stakeholders shall be notified within 24 hours	Environmental Manager
	Level 3 - Internal notification, stakeholders shall be advised as soon as practicable. Notification via telephone.	Environmental Manager

Action	Procedure	Responsibility
	Level 4 - Internal notification, stakeholders, Project Director and the CEO shall be advised as soon as practicable. Notification via telephone. IGE shall notify the Department of Environment and Conservation immediately of the occurrence.	Environmental Manager

14.6 Environmental Management Plans and Reports

The following environmental sub-plans and reports identify the management processes and information specific to each environmental aspect of the project. For each required environmental aspect plans and reports will detail the following:

- An introduction and description of the aspect;
- A range of conditions and objective;
- Management actions required to mitigate;
- Monitoring actions; if required to be implemented; and
- Remedial actions and/or management of impacts.

Plans and documents may be amended periodically as required by the Project Environmental Manager who is responsible to ensure amendment are accurately incorporated and is required to inform project personnel of amendments.

The Environmental Management Plans and reports required for the project are:

- A Noise management survey;
- A Bushfire attack prevention and control management plan;
- A Stormwater/Surface water management plan;
- A Heritage impact survey/ desk-top study report;
- A Flora and fauna Survey report; and
- A Visual Amenity/Landscape Management Plan;

15. Aspects, Triggers and Actions

The environmental impacts of project construction and operational activities are required to be managed throughout the entire lifecycle of the project. Every phase of a project has measurable environmental impacts including but not limited to water, energy, flora and fauna, noise, heritage, emissions etc..

The consideration of environmental aspects and the reduction of project environmental impacts require cooperation from an array of project stakeholders. Government Legislation and regulation are utilised to ensure that environment due- diligence management practices are incorporated into IGE's project environmental management processes.

Environmental actions within the following tables illustrate how environmental triggers are managed and who is responsible for those actions within the environmental management procedural process.

16. Noise and Vibration Management

(Refer to Noise Survey Assessment)

Trigger	Action	Responsibility
Complaints relating to noise	Report noise complaint. Assess conformance with construction activities detailed in the management actions table. If non-conformance detected, the situation shall be rectified immediately, and the project manager notified. If activities are in conformance with management actions but nuisance is still apparent, a noise measurement shall be taken at location of complaint and assess adherence to AS 2436 1981 guidelines for sound levels and management actions amended accordingly (e.g., noise barriers). Complaints to be managed in accordance with the Communications Plan	Environmental Advisor
Noise control measures: Electrolysis plant and equipment requiring maintenance	Replace or undertake the necessary repairs/ maintenance. When returning to work check noise level compliance. Select equipment incorporating noise mitigation measures and devices.	Environmental Advisor / Contractor
Non-conformance: noise levels	Investigate source. Initiate noise reduction measures as stated in: Appendices E and F of AS2436-1981. Section 5.2 6 of the EPA Guidance Statement no. 8 (EPA, 1997). Monitor noise along surrounding premises boundaries.	Environmental Advisor
Nonconformance: vibration levels	Investigate cause. Initiate vibration reduction measures (e.g., servicing of plant equipment) Monitor noise levels along premises boundaries.	Environmental Advisor

17. Emissions Management

Dust generated may be contaminated with heavy metals, polycyclic aromatic hydrocarbons (PAHs) or asbestos. Other non-dust air pollutants

including volatile organic compounds (VOCs) may also be emitted, for example, during contaminated sites remediation works. These emissions could affect the health and amenity of the surrounding communities. It is therefore important that management measures for dust and other air pollutants are put in place to avoid emissions or reduce the levels in the ambient air to acceptable levels. Various dust control measures can be implemented.

Airborne Particles are suspended in the air and exist as aerosols--dust, fumes, smoke or mists. These different aerosols are classified according to their processes of formation, as indicated below. However, from a health and nuisance impact perspective, particles are classified primarily by size, defined below as PM10, PM2.5 and TSP.

Dust emissions may be generated from construction and operational activities at the Project Area, particularly during dry, windy conditions. Excessive dust generation may be detrimental to human health, reduce visual amenity, impact vegetation, and disturb fauna.

Emissions

Emission Type	Description
Airborne toxins	Air toxics are gaseous, aerosol or particulate pollutants which are present in the air in low
Airborne particles - (aerosols)	Airborne Particles are suspended in the air and exist as aerosols--dust, fumes, smoke or mists.
Ambient air	The external air environment, it does not include the air environment inside buildings or structures
Diffuse Source	Source of dust from non-point sources including land clearing,
PAHs	Polycyclic aromatic hydrocarbons. PAHs may be emitted during the remediation of contaminated site which are contaminated with PAHs. PAHs may be released as particulate matter or in gaseous from.
PM10	Refers to dust particles/particulate matter with an equivalent aerodynamic diameter of up to 10 micrometres.
PM2.5	Refers to dust particles/particulate matter with an equivalent aerodynamic diameter of up to 2.5
Sensitive receptor	Individuals/communities/components of the environment which could be adversely affected by dust emissions, including people in dwellings, schools, hospitals, nursing homes, child care facilities, offices, public recreation areas that exist now and in the future and protected wetlands. Some individuals maybe more susceptible to adverse air quality, including, children, the elderly and people with pre-existing medical conditions including asthma or heart disease.
Point source	Source of dust from a stack/chimney.

17.1 Emissions

Air quality across the globe continues to deteriorate due to increasing emissions, threatening human health and contributing to climate change, biodiversity loss, and pollution and waste.

Pollutants tied to human and environmental health impacts include PM2.5, PM10, ground-level ozone, nitrogen dioxide and sulfur dioxide. The greater the density of pollutants in the air, the higher the Air Quality Index (AQI), a scale that runs from zero to 500. An AQI of 50 or below is considered safe, while readings above 100 are deemed unhealthy. According to UNEP partner IQAir, only 38 of 117 countries and regions averaged healthy AQI readings in 2021.(UNEP 2023).

Air quality guidelines

Pollutant	Average Period	Maximum Concentration	Goal within 10 years Maximum allowable exceedances	Source
Carbon monoxide	8 hours	9.0 ppm	1 day a year	NEPC 2003
Nitrogen dioxide	1 hour	0.12 ppm	1 day a year	NEPC 2003
Particles as PM10	1 day	50 ug/m3	5 days a year	NEPC 2003
Dust	Measured over 15 minutes	1000 µg/m3	Not applicable	DWER 1996

*PM_{10}: particle matter with an equivalent aerodynamic diameter 10 µm or less.

Aspects requiring management

Dust and/or emissions may be generated by:

- Site preparation, including earthworks;
- Movement of vehicles and equipment during construction and operations;
- Dust generation during hot, windy conditions from stockpiles, excavated soil or cleared areas;
- Plant and equipment operations;
- Vegetation stockpiles may begin anoxic degradation generating nuisance odours; and
- Fuel combustion and sewer pipe alterations may generate odours and particulates (fumes).

17.2 Objective and KPI's emissions and odour management

Management Objective	Target	Key Performance Indicator
To implement reasonable and practicable measures to ensure the prevention or minimisation of dust and emissions from project construction related activities.	No sustained visual dust observed beyond the immediate boundaries of the project sites during construction.	Visual monitoring of dust movement during project site inspections.
To ensure that dust and emissions do not adversely impact environment values or the health, welfare and amenity of people and adjacent land uses.	No signs of dust deposition on retained bushland vegetation or adjacent buildings caused by construction activities. No public complaint of excessive dust or emissions during construction.	Monitoring of retained bushland area and adjacent buildings. Number of public complaints from the public registry related to dust or emissions.
Ensure compliance with dust emission levels stated in National Environment Protection Council (NEPC) standards, Department of Environment and Conservation (DWER) guidelines and Environmental Protection Authority (EPA) Guidance Statement No 18.	Dust generated does not exceed guidance form National Environmental Protection Measures *(NEPM) and DWER standards* during construction. Monitored dust levels: exceedance <5 mg/m3.	Dust monitoring at boundaries or down wind.
Ensure onsite dust management plan is compliant and approved by the State and Local Government.	Minimise dust generated onsite by way of application of control measures.	Dust Management monitoring/Reports

17.3 Management actions for dust and odour prevention and control

Parameter	Action	Timing	Responsibility
Induction	Construction personnel shall be inducted on dust control measures and management actions required under the EMP (i.e., speed limits, access tracks).	Prior to commencing work on site	Environmental Advisor
Cleared Surfaces	Minimise the total area of exposed surfaces (including stockpiles and cleared areas) required for construction activities.	During construction	Environmental Advisor
	Exposed ground surfaces must be sprayed to prevent dust emissions if exposed for an extended period of time.	During construction	Environmental Advisor
Timing	Conduct earthworks immediately following the clearing of vegetation (as far as practicable).	During construction	Environmental Advisor
Vehicles	Prohibit the use of dry, dust prone areas by vehicles unless sufficient water or "Dust suppression agent" has been applied to prevent dust emissions.	During construction	Environmental Advisor / Contractor
	The speed of vehicles on-site shall be restricted to 20 km/hr. This speed will be further reduced if dust emissions are being generated. The Project Manager must be informed of a changed of speed limits. Vehicle operators must be authorised by the project Manager prior to increasing operational speed.	During construction	Environmental Advisor / Contractor
	Road surfaces within the construction zone are to be Formed and stabilised as quickly as possible.	During construction	Environmental Advisor / Contractor
Dust suppression	Make provision for on-site soil suppression material	During construction	Environmental Advisor / Contractor
	Apply sufficient water to dry, dust-prone areas or material handling areas to prevent dust emissions a result of excess wind, handling of materials or vehicle usage. Ensure that disturbed areas can be accessed for dust suppression.	During construction	Environmental Advisor / Contractor
	Where suitable a biodegradable dust suppressant should be spread on surfaces, to reduce water requirement.	During construction	Environmental Advisor / Contractor

Parameter	Action	Timing	Responsibility
Vegetation stockpiles	Remove stockpiles as quickly as reasonably possible from site.	During construction	Environmental Advisor / Contractor
	Design clearing procedures (vegetation and topsoil (if required) managed as per the Environmental Management Plan.	During construction	Environmental Advisor / Contractor
Public	Record public complaints in accordance with the IGE Communications procedure.	During and following construction	Environmental Advisor
	Communications to be issued to adjoining land occupiers(if required) before site earthworks work commence.	During construction	Project Manager
Fencing	Fences (ring lock and durable woven or knitted cloth) may need to be erected (to function as wind fencing by reducing wind velocities and potential excess dust) on the external construction boundaries.	Prior to commencing work on site	Project Manager
Environmental incident reporting	Environmental incidents related to dust and odour will be managed in accordance with this EMP.	During Construction	Environmental Advisor
Monitoring	It is the Environmental Advisor's responsibility to ensure that monitoring is implemented by accredited personnel/contractor. If monitoring targets are not achieved then remedial actions described shall be implemented to mitigate.	During construction	Environmental Advisor
	The contractor's environmental checklist will include the parameters as detailed which are: Level of visible dust or emissions; Water/ dust suppression agent levels; and Odour and emissions levels.	During construction	Environmental Advisor

17.4 Monitoring actions for dust

Parameter	Frequency	Location	Purpose	Responsibility
Level of visible dust or dust in atmosphere	Daily opportunistic, where there is potential for dust emissions	Project site and boundaries.	To assess the effectiveness of dust management actions.	Environmental Advisor / Contractor
Odour	As required	Sites refuse bins.	To ensure bins are not generating excessive odour.	Environmental Advisor / Contractor
Emissions	As required	Project site and boundaries.	To ensure emissions generated from plant are not causing ill health impacts.	Environmental Advisor
Surface	After site works completed and surface stabilised	Project site.	Ensure entire site is stable.	Environmental Advisor / Contractor
Monitoring dust	Opportunistic, where there is potential for dust emissions	Boundary at sensitive premises or down wind.	Ensure air quality levels are within the range specified (0.5 mg/m3 and 5mg/m3).	Environmental Advisor

17.5 Remedial actions for dust and odour management

Trigger	Action	Responsibility
Excessive dust generation as determined by visual observation or above 0.5 mg/m^3 but lower than 5mg/m^3 from monitoring results	Investigate cause. Implement appropriate dust control measures, which may include: Limit the quantity of equipment/vehicles in operation; Apply further dust suppression including water and hydro mulching; and The Superintendent's Representative may direct the Contractor to remove dust source material within 24 hours. Monitor success of control measure. If the measure is inadequate, seek alternative measures (consultation with relevant agencies may be required).	Environmental Advisor
Complaints received from the public and possible non-conformance	Dust monitoring and data recording may be initiated to provide information to support development of a management response. Monitoring must be implemented in accordance with NEPC, DWER and EPA requirements. Complaints will be managed in accordance with the Communications Plan If deemed necessary, mitigation measures including stopping works activities shall be implemented.	Environmental Advisor
Lack of water for dust suppression	Investigate cause. Source alternative water source. Monitor success of control measure. If the measure is inadequate, seek alternative measures (consultation with relevant agencies may be required).	Environmental Advisor
Sensitive odour generated from stockpiles or bins	Investigate cause. Implement appropriate odour control measures, which may include: Removal of vegetation stockpiles/bins; and Mixing Monitor success of control measure. If the measure is inadequate, seek alternative measures (consultation with relevant agencies may be required).	Environmental Advisor

Trigger	Action	Responsibility
Complaints received regarding emissions	Investigate cause. Monitoring must be implemented in accordance with NEPC, DWER and EPA requirements. If deemed necessary, mitigation measures including stopping works activities shall be implemented. Monitor success of control measure. If the measure is inadequate, seek alternative measures (consultation with relevant agencies may be required).	Environmental Advisor
Dust levels above 5mg/m3	Stoppage of works and immediate amelioration of dust source. Implement appropriate dust control measures, which may include: Limit the quantity of equipment/vehicles in operation; The Superintendent's Representative may direct the Contractor to remove dust source material within 24 hours; and Reduce the vehicle speeds below 20km/hr. Monitor success of control measure. If the measure is inadequate, seek alternative measures (consultation with relevant agencies may be required).	Environmental Advisor

17.6 Remedial actions for Electrolyser emissions management

Trigger	Action	Responsibility
Operations Electrolyser- Electromagnetic radiation	Process design controls. Natural and mechanical ventilation Permit to work	Construction Manager
Operations Electrolyser Nitrogen release inside the electrolyser, compressor and MEGC	Design: Naturally or mechanically ventilated area/ Control of ignition (ex-rated equipment) H2 vent designed in accordance with CGA5.5 (vent system designed for ignition) Vented Enclosure: Recycling Hydrogen	Construction Manager
Operations Electrolyser Venting	Emission controls/ Venting to safe location (FEED gas dispersion and heat radiation modelling)	Construction Manager
Operations Electrolyser -Hydrogen	Release of hydrogen during normal operations due to failure of joints (glands, flanges, equipment seals), corrosion, overpressure, material fatigue and compressor failure.	Construction Manager

18. Bushfire Prevention and Control Management

Refer to (Bushfire Prone Planning BPP) Bushfire Attack Assessment Report

18.1 Introduction

Construction activities may increase fire risk, particularly as construction is in close proximity to native bushland and will include activities in the summer season.

18.2 Relevant Legislation

Fire management will take into consideration and adhere to the requirements of all applicable legislation and regulations associated with that legislation. Applicable State legislation includes:

- Bush Fires Act 1954;
- Bush Fires Regulations 1954;
- Dangerous Goods Safety Act 2004;
- Dangerous Goods Safety (General) Regulations 2007;
- Dangerous Goods Safety (Storage and Handling of Non-explosives) Regulations 2007; and
- Dangerous Goods Safety (Explosives) Regulations 2007.

18.3 Applicable Australian Standards

Standard	Date	Type
AS/NZ 1221	1997	Fire Hose Reels
AS 12239	2004	Fire Detection and Alarm Systems – Smoke Alarms
AS 1841.1	1997	Portable Fire Extinguishers – General Requirements" (Includes Amendment 1 – 2001 and Amendment 2 – 2003)
AS 1841.5	1997	Portable Fire Extinguishers – Specific Requirements for Powder Type Extinguishers
AS 1841.6	1997	Portable Fire Extinguishers – Specific Requirements for Carbon Dioxide Type Extinguishers
AS 1851	2005	Maintenance of Fire Protection Systems and Equipment
AS 2441	2005	Installation of Fire Hose Reels
AS 2444 –	2001	Portable Fire Extinguishers and Fire Blankets Selection and Location
AS 3786 –	1993	Smoke Alarms

18.4 Aspects Management

Fire can be generated from many diverse sources, and it is important to identify the activities or aspects of the project that may be a source of fire. The management program for fire management has been developed to avoid or minimise the risk of the following to occur:

- Equipment or plant may be a source of fire and cause injury or loss of life and damage to correctly, equipment and adjacent vegetation including Conservation Areas;
- Handling and storage of flammable liquids could provide a source of fuel for fire; and
- Vegetation stockpiles could provide a source of fuel for fire if allowed to dry or not transported promptly off-site.

Objectives, targets and indicators for fire prevention and control

Management Objective	Target	Key Performance Indicator
To ensure adequate fire control measures are in place.	No fires on site during the construction phase.	Fuel source areas identified and adequately buffered. Number of environmental incidents arising from fire.
To prevent fires occurring as a result of construction activities.	No fires on site during the construction phase.	Number of environmental incidents arising from fire.

18.5 Management actions for fire prevention and control

Parameter	Action	Timing	Responsibility
Induction	Construction staff shall be made aware of firefighting equipment on site and shall be familiar with the equipment located in their specific work area.	Prior to commencing work on site	Environmental Advisor
	Construction staff shall be informed of the steps to follow in the case of a fire (e.g., when and how to call emergency services).	Prior to commencing work on site	Environmental Advisor
General	Fire prevention and response equipment shall be organised and checked prior to construction in area.	Prior to construction	Environmental Advisor
	Equipment shall be maintained and operated to comply with relevant safety standards and regulations.	At all times	Environmental Advisor / Contractor
	Project personnel shall be inducted on the smoking policy and the dangers of inappropriate cigarette disposal.	Prior to commencing work on site	Environmental Advisor / Contractor
	Open fires (vegetation burning, waste burning) are banned in the project area.	At all times	Environmental Advisor / Contractor
Storage of flammable material	Flammable materials will be stored as specified by the manufacture of the product and in accordance with Dangerous Goods Safety Act 2004.	At all times	Environmental Advisor / Contractor
Firefighting equipment	Construction equipment shall be fitted with dry chemical extinguishers and AFFF systems and shall be tagged by an approved testing facility prior to mobilisation. Light vehicles shall be diesel powered and fitted with an approved and tagged extinguisher.	Prior to and during construction	Environmental Advisor / Contractor

Parameter	Action	Timing	Responsibility
	Access for emergency services and to firefighting equipment shall be available at all times. The onsite water carts shall be readily accessible for firefighting requirements.	At all times	Environmental Advisor / Contractor
Fire Management	An Emergency Response Management Plan to be prepared by IGE. The advice of FESA may be sought in preparation of the plan.	Prior to construction	Environmental Advisor / Contractor
	construction or equipment repair activities that have potential to ignite a fire will be undertaken in safe areas and be compliant to the site hot works permit, including the use of welding tents and fire watch person where appropriate.	During construction	Environmental Advisor / Contractor
	The local firefighting body shall be informed of the construction activities.	Prior to construction	Project Manager
	Petrol vehicles shall not be permitted to access site.	During Construction	Environmental Advisor / Contractor
Fire reporting	Report all fires occurring within and outside the terrestrial disturbance footprint, major fires constitute and emergency and will be managed in accordance with the Bushfire attack management procedure plant/site.	At all times	Environmental Advisor / Contractor
	Environmental incidents related to fire will be reported. Public complaints relating to fire prevention and control will be treated as an environmental incident. The environmental incident will outline the: Extent of fire; Potential cause of fire; and Corrective actions required/areas for improvement.	As required	Environmental Advisor

Parameter	Action	Timing	Responsibility
Hot Work (welding, grinding, flame cutting, blasting)	Conduct hot work activities in areas clear of flammable material (including vegetation).	At all times	Environmental Advisor / Contractor
	Hot works to be conducted in accordance with site permit procedure and may be withdrawn at times of fire ban.	At all times	Environmental Advisor / Contractor
	Have in place firefighting equipment during hot works, permits in place and fire watch person.	At all times	Environmental Advisor / Contractor
Vehicle Movements	Park all vehicles in designated areas or areas devoid of vegetation. Plant maintenance to be performed in areas devoid of vegetation and flammable material.	At all times	Environmental Advisor / Contractor
Fuel, chemical and dangerous goods transport, storage, and handling	The transport, storage and handling of hazardous substances and dangerous goods will be in accordance with WA legislative requirements and Australian Standards.	At all times	Environmental Advisor / Contractor
	Store LPG bullets in a designated area, surrounded by bollards.	At all times	Environmental Advisor / Contractor
	Make available firefighting equipment at fuel and chemical storage areas, including the refueling areas.	At all times	Environmental Advisor / Contractor
Smoking	No smoking will be permitted onsite, designated areas only.	At all times	Environmental Advisor
Monitoring	It is the Environmental Advisors responsibility to ensure that monitoring is implemented. If monitoring targets are not achieved, then remedial actions described will be implemented.	During construction	Environmental Advisor

Parameter	Action	Timing	Responsibility
	The contractor's environmental checklist will include the parameter of the checking of firefighting equipment or controls as detailed.	During construction	Environmental Advisor

18.6 Monitoring actions for fire prevention and control

Parameter	Frequency	Location	Purpose	Responsibility
Occurrence of fires	Post fire	Within construction area.	To determine if management measures are appropriate to prevent fires occurring as a result of construction activities.	Environmental Advisor
Fire prevention	Yearly inspection or as per standard requirements	Within construction area.	To determine if management measures are appropriate to prevent fires occurring as a result of construction activities. To ensure appropriate fire control equipment is maintained for use will a fire incident occur.	Environmental Advisor / Contractor

Remedial actions for fire prevention and control management

Trigger	Action	Responsibility
Fire incident	Investigate cause (following incident). Apply more stringent fire control actions if due to construction activities. The local fire emergency services shall be consulted if advice is needed on improving fire control actions. If a fire occurs due to construction activities and spreads into a conservation zone, remedial actions shall be undertaken to rehabilitate the impacted area of vegetation. An environmental incident report shall be completed.	Environmental Advisor
Fire in bushland areas or surrounds	Fires will be managed in accordance with the IGE site Emergency Response Plan.	Environmental Advisor

19. Integrated Waste Management

19.1 Introduction

Globally, the buildings and construction sectors account for 40 per cent of global energy use, 30 per cent of energy-related greenhouse gas emissions, about 12 per cent of water use, and nearly 40 per cent of waste. They also employ about 10 per cent of the world's workforce. Waste can impact various aspects of the environment and may cause contamination, impacts on visual amenity and health impacts.

Integrated sustainable waste management brings together three dimensions, namely: (1) the *physical elements* (infrastructure) of the system, from waste generation through storage, collection, transport, transfer, recycling, recovery, treatment and disposal"; (2) the *stakeholders* involved, including municipalities; local shire; waste generators/service users (including industry, business, and construction stakeholders); producers; service providers (whether public or private sector,) (3) the *strategic aspects*, including the health, social, economic, financial, environmental and technical facets of the project

A key tenet of these integrated management principles is the waste hierarchy. This hierarchy is frequently referred to as the "3Rs" of waste management: reduce, reuse and recycle. This is sometimes further refined as the "5Rs", namely refuse, reduce, reuse, repurpose and recycle

In a waste management context, a circular economy emphasises waste minimisation, reuse and recycling options using life-cycle thinking.

Potential waste generation during construction include but are not limited to,

- General waste including food and drink packaging;
- Biological and grey wastewater from toilet facilities;
- General construction waste;
- Various Plastics;
- Wood products;
- Building Rubble;
- Organic waste;
- Office equipment (portable offices) – paper, cardboards, plastics etc.

It is important that waste generated by construction activities is constrained within the Project Area, using designated bins and waste correct management procedures.

19.2 Aspect/Impact Management

Potential sources of construction waste severity index (Rundle 2018)

#	Possible Source of Site Waste	Severity Index	Severity Index Ranking
1	Lack of on-site material planning and control.	24%	1
2	Packaging and pallet waste.	20%	2
3	Design and detailing errors.	20%	2
4	Client-initiated design changes.	20%	2
5	Procurement ordering and take-off errors.	16%	5
6	Improper materials storage.	14%	6
7	Poor workmanship.	14%	6
8	Improper materials handling.	10%	8
9	Contractor-initiated design changes.	8%	9
10	Site accidents.	4%	10
11	Leftover off cuts.	4%	10
12	Poor weather.	2%	12
13	Criminal waste caused by vandalism or pilfering.	2%	12

19.3 Objective, targets & KPI's for waste management

Management objective	Target	Key Performance Indicator
Solid and liquid waste is disposed of in an environmentally acceptable manner.	All waste is disposed of in designated disposal facilities during construction.	On site waste disposal facilities confirmed and documented.
All solid waste is removed promptly from the Project Area in an appropriate manner.	All generated solid waste is removed from the site during construction.	Site inspections to record on site waste.
No waste is to impact nearby premises.	No complaints related to construction waste effecting nearby premises during construction.	Environmental incidents relating to waste.
Maximise Landfill Diversion.	Target of 80% by weight.	Waste Reporting by waste contractor.

19.4 Management actions for waste

Parameter	Action	Timing	Responsibility
Induction	During inductions, all personnel shall be made aware of individual responsibilities regarding waste management, including the understanding personal waste and incidental construction waste generated will be disposed of within the designated disposal facilities.	Prior to commencing work on site	Environmental Advisor
Waste disposal	Appropriate waste disposal facilities (e.g., bins, skips) shall be provided in strategic locations onsite. Facilities shall contain waste and prevent windblown waste (e.g., lids). Waste bins shall be located within contained designated waste are Waste recycling will be encouraged.	During construction	Environmental Advisor / Supervisor
	Waste will be collected or emptied by site waste contractor in accordance with site requirements.	During construction	Environmental Advisor / Supervisor
Construction Waste	Concrete waste to be recycled where possible. Concrete waste and concrete washouts shall be contained in plastic lined bunds if required and shall be constructed prior to concrete works.	During construction	Environmental Advisor / Supervisor
	Windblown waste to be regularly picked up.	During construction	Environmental Advisor / Supervisor
	Controlled/Hazardous waste to be transported and removed from site by licensed contractor, and records retained.	During construction	Environmental Advisor / Supervisor
	Chemicals, hydrocarbons, or other controlled wastes shall be stored in bunded areas and comply with site requirements and regulatory guidelines.	During construction	Environmental Advisor / Supervisor

Parameter	Action	Timing	Responsibility
	Fireproof receptacles shall be provided adjacent to crib rooms and offices to enable disposal of cigarette butts.	During construction	Environmental Advisor / Supervisor
	All commercially viable waste materials generated during construction shall be recycled.	During construction	Environmental Advisor / Supervisor
	Contractors waste disposal procedures including waste types. The recycling of waste will follow best practice guidelines. We aim to eliminate landfill through reducing waste at source, increasing recycling and educating the workforce.	During construction	Environmental Advisor
Hazardous Waste	Hazardous waste will be managed and disposed of as per the SDS requirements and Environmental Protection (Controlled Waste) Regulations 2004.	During construction	Environmental Advisor / Contractor
Recycling / Waste Reduction	Recycling waste will be implemented onsite. This may include dedicated bins for different waste streams.	Prior to and during construction	Environmental Advisor
Servicing	Plant and equipment will be serviced off-site Hydrocarbon generated waste onsite will be monitored for potential contamination and containment.	During construction	Environmental Advisor / Contractor
Reporting	Waste removed from site, via a licensed waste contractor, will be recycled where practicable. Waste volumes will be recorded and reported to IGE by the waste contractor. Reporting of waste data will be via waste type, volume and weight. Waste report data will be made available to Stakeholders if required.	During Construction	Waste Contractor / Environmental Advisor
Environmental incident reporting	Environmental incidents related to waste will be managed in accordance with Section 27 Environmental Incident Reporting and Investigation	During Construction	Environmental Advisor

19.5 Monitoring actions for waste management

Parameter	Frequency	Location	Purpose	Responsibility
Waste disposal facilities (including liquid effluent)	Weekly or more often if required	project site and adjacent areas	To ensure waste is being disposed of in designated disposal facilities. To ensure waste disposal facilities are correctly containing waste and that frequency of collection/ disposing is sufficient. To relocate waste disposal facilities as construction progresses to ensure easy access for personnel.	Environmental Advisor / Contractor
Waste target	Monthly	Project site	To ensure the recycled waste target is met every month.	Environmental Advisor
Site waste	Weekly or more often if required	Project site and adjacent areas	To ensure waste generated from the project site is not accumulating on or off-site.	Environmental Advisor/ Contractor

19.6 Remedial actions for waste management

Trigger	Action	Responsibility
Waste not being disposed of in designated disposal facilities	Investigate cause. Alter management actions accordingly (e.g., relocate disposal facilities). Re-train all personnel in waste management responsibilities. An Environmental Incident Report shall be completed.	Environmental Advisor
Disposal facilities/recycling containing incorrect waste streams	Investigate cause. If due to misuse re-inform all personnel of correct use of facilities. If due to facility fault mitigate immediately (e.g., replace or modify facility). If due to collection frequency, then make necessary arrangements with waste collection contractor to implement. An Environmental Incident Report shall be completed.	Environmental Advisor
Construction activities progressed away from waste disposal facilities	Determine and update disposal locations for facilities and moved to workface.	Environmental Advisor
Waste recycling and separation targets not being achieved.	Investigate data. Investigate further recycling options.	Environmental Advisor
Public complaints relating to waste	Investigate cause. Complaints will be managed in accordance with IGE Communications procedures. Alter management actions accordingly to mitigate. If waste is accumulated off-site then prompt collection of the waste shall be arranged.	Environmental Advisor

20. Stormwater and Surface Water Management

Refer to Stormwater Management Sub-Plan

20.1 Introduction

Civil development of the Project Area will impact surface water movement and drainage lines that may have downstream environmental impacts. The stormwater generated on the Project Area is required to be collected and managed on site, as per the IGE Environmental Basis of Design documentation.

IGE will give particular consideration to the most appropriate forms of drainage to suit the project site conditions. The use of flexible and open drainage design during earthworks will be implemented. Particular attention will be given to the consequences of stormwater drainage flowlines, to enable water catchment on site.

Earthworks Aspects Management

During civil works, site contours will be altered to accommodate project infrastructure, Surface Water run-off will be managed, to mitigate impacts to nearby premises and/or sensitive receptors. A management program for surface water management has been developed to avoid or minimise impacts, as detailed below:

- Earthworks within the Project Area have the potential to impact water quality due to increased sediment loading;
- Contouring and profiling of the surrounding topography may disrupt drainage channels and generate surface water overflow into areas that would not normally receive excess water and may impact receiving bodies (remnant vegetation, roads, etc.);
- Access roads or heavy equipment could potentially compress surfaces, thereby Decreasing water infiltration, increasing flow rate and erosion potential;
- Surface contaminants/spills maybe absorbed by surface waterflow and transported to sensitive areas;
- Waste and excess sediment may cause stormwater systems to fail and cause pooling or blocking to the existing ground water regime;
- Dewatering has the potential to introduce acid sulphates and waterborne contaminants to the surface, impacting soil structure, water quality and flora and fauna values; and
- Project site excavations may potentially obstruct surface water runoff, if placed within drainage channels. This may impact vegetation and fauna or interfere with surface water capture structures.

20.2 Management actions for surface water

Parameter	Action	Timing	Responsibility
Sediment	Place silt fences if required in or along drainage lines to reduce speed of flow and reduce sediment load/ establish suitable site constraints and practical limitations.	During construction	Construction Manager Environmental Advisor / Contractor
	Sediment pond to collect water before main pond to ensure minimal sediment collection in main ponds/infiltration basins.	During construction	Construction Manager Environmental Advisor / Contractor
Waterflow	Observe/conceptualise the existing flow paths.	During construction	Construction Manager Environmental Advisor / Contractor
Stormwater collection	Collect stormwater generated on project site in collection ponds/infiltration system/catchment, define the objective of the drainage system.	During construction	Construction Manager Environmental Advisor / Contractor
	Civils will be graded to capture significant stormwater and directed into the site water catchment area.	During construction	Construction Manager Environmental Advisor / Contractor
	No stormwater drainage shall be discharged Until IGE approval is granted.	During construction	Construction Manager Environmental Advisor / Contractor
Environmental incident reporting	Environmental incidents related to surface water will be reported in accordance with this plan.	During Construction	Environmental Advisor
Monitoring	It is the Environmental Advisor's responsibility to ensure that stormwater monitoring is implemented. If monitoring targets are not achieved then remedial actions will be implemented.	During construction	Environmental Advisor
	The contractor's environmental checklist will include the parameters as detailed: Sediment loading in the water catchment area assessment; Water catchment: erosion controls/runoff area monitoring; Hazardous materials storage facility monitoring and management; Water pooling on site; and Functioning catchment management	During construction	Environmental Advisor/Construction manager

20.3 Monitoring actions for surface water management

Parameter	Frequency	Location	Purpose	Responsibility
Sediment load within sediment catchment	Weekly or after large storm water events	Sediment/water catchment	Checking if sediment pond requires to be discharged.	Environmental Advisor / Contractor
Erosion/ runoff	Weekly or post-stormwater events	project site particular to drainage lines	No physical signs of erosion or scour. To ensure run-off does not directly enter wetlands or across roads. Check for signs of sediment in or around existing drainage systems.	Environmental Advisor / Contractor
Water pooling	Weekly or pos- stormwater events	Project site	To ensure hydrology and drainage paths are not damaged or obstructed in some way.	Environmental Advisor / Contractor
Infiltration basin/catchment	During and after rain events when possible	Infiltration catchment	Ensure clear of obstructions and minimal water pooling. Ensure that water is not flowing outside site boundary.	Environmental Advisor / Contractor

20.4 Weed Management

Weeds are plants that are either not endemic to an area or in an area where they are not desired, and which can invade and establish themselves in natural ecosystems. Weeds are species listed in Appendix 3 of the *Environmental Weed Strategy for Western Australia* published by the Department of Conservation and Land Management (1999), and plants Declared under section 37 of the *Agricultural and Related Resources Protection Act 1976*.

Weeds are unsightly, increase fire risk and can be detrimental to native vegetation. when established weeds frequently modify natural processes resulting in a decline of vegetation quality in the communities they invade. The potential environmental impacts of weeds on ecosystem function include:

- Resource competition;
- Prevention of native seedling recruitment;
- Alteration to geomorphologic processes;
- Alteration of hydrological cycle;
- Changes to soil nutrient status;
- Alteration of fire regime; and
- Changes to the abundance of indigenous fauna.

Aspects Management

Weeds can be introduced and spread throughout the site by several different mechanisms including:

- Vehicles and equipment from other sites could potentially import weed seeds into the Project Area if not washed down prior to arriving at the Project Area; and
- Imported road building materials, mulch or fill could contain weed seeds.

20.5 Management actions for weeds

Parameter	Action	Timing	Responsibility[1]
Induction.	Induction shall include information on: The need to control and prevent the spread of weeds; Wash-down procedures for all construction vehicles, equipment and equipment prior to entering the site; and Procedures for weed control management.	Prior to commencing work on site	Environmental Advisor / Contractor
Operational Procedure	A Weed and hygiene procedure shall be developed for the following: Prevention of weed introduction; Certification of imported materials; and Plant/Vehicle hygiene.	Prior to commencing work on site	Environmental Advisor
General requirements.	All construction vehicles, equipment and equipment will be washed down prior to arrival to site (ensuring vehicles, equipment and equipment have clean floors and trays, and are free of soil and plant material).	During construction.	Environmental Advisor / Contractor
	Ensure materials (e.g., Aggregate, sand, or fill) brought into the site are certified weed free.	During construction.	Environmental Advisor / Contractor
	All waste materials shall be correctly disposed to onsite waste disposal bins.	During construction.	Environmental Advisor / Contractor
Environmental incident reporting	Environmental incidents related to weeds will be reported in accordance with weed management procedures.	During Construction	Environmental Advisor / Contractor
Monitoring	Environmental Advisor is responsible to ensure that ongoing monitoring is implemented. If monitoring targets are not achieved then remedial actions described will be implemented.	During construction	Environmental Advisor

20.6 Aboriginal Heritage Management

The Project Area has had a desk-top survey completed and no Aboriginal heritage sites have been discovered within the project footprint. However,(although unlikely as the site has been previously disturbed), by comparing the results of the background research and archaeological investigations previously undertaken within the surrounding area It is possible that there will be tangible or intangible cultural heritage inside the activity area.

Aspects Management

It is possible that construction activities may uncover archaeological artefacts. Artefacts discovered during construction require immediate protection and notification to IGE and relevant authorities.

Objectives targets and indicators for archaeological management

Management objectives	Target	Performance indicator
Comply with the requirements of the Aboriginal Heritage Act 1972.	Protection of Aboriginal Heritage sites or demarcated areas	Immediate reporting of archaeological remains if discovered. Level of disturbance to significance sites recorded.
Minimise impacts : Aboriginal Heritage.	As above.	As above.

Management actions for archaeological management

Topic	Action	Timing	Responsibility
Induction	Aboriginal Heritage protection guidelines shall be included in workforce inductions.	Prior to commencing work on site	Environmental Advisor
Object discovery	Objects found during construction works: Works shall cease immediately, and the project Manager notified, and works shall not recommence until directed by senior IGE management.	During construction	Stakeholders

Topic	Action	Timing	Responsibility
	Location and nature of objects shall be reported to IGE, and the WA Museum, the Department of Indigenous Affairs (DIA) if required. The boundary will be demarcated with pink and black flagging denoting a heritage area. .	All phases	Stakeholders
Skeletal remains	If suspected skeletal remains are found – works shall cease immediately and reported to IGE. Work shall not recommence until permission is granted by IGE, the Police, DIA and an archaeologists and the boundary delineated with black and pink flagging.	During construction	Environmental Advisor / Contractor
	If Aboriginal Heritage matter is found, it shall be left in situ until a Decision is made on a heritage management strategy.	All phases	Stakeholders
Environmental incident reporting	Environmental incidents related to Aboriginal heritage will be reported in accordance with regulatory heritage guidelines.	During Construction	Environmental Advisor

Remedial actions for the archaeological management plan

Trigger	Action	Responsibility
Non-Conformance with established Aboriginal Heritage management measures, including: Evidence of inappropriate handling of culturally significant artefacts.	Immediately investigate the probable cause of the non-conformance. Take preventative actions to prevent further non-conformance. A review shall be conducted of Aboriginal Heritage management measures and/or further education of staff/contractors to ensure that all possible mitigation strategies are implemented to prevent reoccurrence. Environmental incidents related to Aboriginal heritage will be reported in accordance with heritage regulatory guidelines.	Environmental Advisor
Uncovering of potential Aboriginal artefact	Report suspected heritage material to IGE management, and the Department of Indigenous Affairs (DIA) if required. Leave all suspected heritage material in-situ. If significant under section 5 of the heritage act then consent pursuant to section 18 of the act is required to recommence work.	Environmental Advisor
GD permit Audits and Inspections	GD Permit and inspections to be completed in accordance with the site inspection checklist and audit compliance.	Environmental Advisor

21. Spills and Hazardous Chemical Storage Management

The storage of hydrocarbons and chemicals on site during construction creates the risk of environmental contamination from spills or leakage.

vehicle servicing and refueling on site similarly creates the risk of environmental contamination from spills.

All permanent fuel, hydrocarbon storage and refueling facilities shall be designed in accordance with IGE issued Environmental Basis of Design.

The transport, storage and handling of fuel, chemicals, explosives, and a contaminated site will be in accordance with legislative requirements and incorporate the following standards and guidelines where possible:

- AS 1940 – 2004, "(Incorporating Amendment No 1 & 2) The Storage and Handling of Flammable Liquids";
- AS 1940 – 2004, "The Storage and Handling of Flammable and Combustible Liquids";
- NFPA 30, "Flammable and combustible liquids code", 2003 Edition; and
- DWER "Contaminated Sites Act 2003".

21.1 Aspects Requiring Management

The transportation and storage of chemicals and hazardous substances can present environmental risk if incorrectly managed.

Aspects of the project that may represent risk include discharges to the environment shall be in accordance with the Dangerous Goods Act 2004 and include:

- Handling and storage of fuel and chemicals (fuel, lubricants and incidental chemicals required for maintenance of vehicles and equipment);
- Refuelling of vehicles/trucks and equipment (hydrocarbons – fuel, hydrogen);
- Maintenance of light vehicles and equipment (hydrocarbons – fuel, lubricants; coolant);
- Transfer of hydrogen to mobile fuel tankers;
- Handling and treatment of a contaminated site (e.g., asbestos found onsite);
- Emptying of waste storage containers, hydrocarbons and chemical waste bins;
- Excavation work close to gas/sewer pipelines; and

  Malfunction of construction equipment (e.g., break in hydraulic hose).

Topic	Action	Timing	Responsibility
General/induction	Prepare and maintain a Hazardous Materials Register for all hazardous materials kept on site. The Register to include descriptions of materials and their uses, handling procedures, storage regulations and standards, quantities stored onsite and Material Safety Data Sheets (SDS's) for all hazardous materials. The Register shall be located on site and accessible to all personnel.	Prior to and during construction	Environmental Advisor
	Inductions for all site construction personnel shall include briefing in the handling and storage of fuels and chemicals, transferring of fuel and the refueling of vehicles and equipment, vehicle maintenance procedures and details of the onsite location of the Hazardous Materials Register.	Prior to construction	Environmental Advisor
Storage and handling	Storage and handling of fuels and chemicals will follow closely to the guidance statement from the Department of Industry and Resources (2003), Australian Standards AS1940:2004 the Storage and Handling of Flammable and Combustible Liquids and follow the relevant standards.	During construction	Environmental Advisor
	All temporary fuel storage shall be double skinned and self-bunded, fitted with recording metres to be recorded daily and refueling area spillage serviced by an oil separation pit, contaminated soil shall be disposed of at the direction of IGE.	During construction	Environmental Advisor / Contractor
	All chemicals are to be stored in a bunded area capable of containing 110% of the containers volume, all storage bunds and other containment equipment shall be normally closed.	During Construction	Environmental Advisor / Contractor
	Suitable spill kits will be kept on site in an accessible location, in service vehicles and at areas as detailed in risk assessments, spill management equipment shall be of suitable size, all service personnel shall be trained in the use of equipment and spill cleanup.	During Construction	Environmental Advisor / Contractor
Disposal	All hazardous materials shall be correctly classified prior to disposal. All stormwater within bunding shall be authorised for disposal by IGE Environmental Manager prior to disposal via suitable equipment	During construction	Environmental Advisor / Contractor
	Re-use or recycling of waste materials shall be the preferred method of management (e.g., batteries, 200 litre drums, scrap metal). Wherever practicable solid waste will be separated.	During construction	Environmental Advisor / Contractor

Topic	Action	Timing	Responsibility
	When disposal of waste hydrocarbons, chemicals or septic is required, the waste shall be collected by a licensed operator as required and shall be disposed of at a waste management facility licensed to accept the waste, documentation received prior to leaving site.	After construction	Environmental Advisor
Transfer of fuel from storage tank to mobile tanker	Fuel transfer pump shall be equipped with an appropriate device to prevent overfilling.	Prior to construction	Environmental Advisor
	Handling of chemicals/fuels shall take place in areas where there is no potential for runoff off the Site or to contaminate groundwater.	During construction	Environmental Advisor / Contractor
Maintenance	There shall be regular preventative maintenance of vehicles and equipment.	During construction	Environmental Advisor / Contractor
Usage	All diesel fuel usage shall be reported to IGE on a weekly basis	During construction	Environmental Advisor
Contaminated Site	material found onsite that is classified as a contaminant (e.g., asbestos) shall be treated and handled in accordance with the Mines Safety Inspection Act 1994.	During Construction	Environmental Advisor / Contractor
Environmental incident reporting	Environmental incidents related to hydrocarbon and chemical spills will be reported to the PMC immediately.	During Construction	Environmental Advisor / Contractor
Monitoring	It is the Environmental Advisor responsibility to ensure that monitoring is implemented If monitoring targets are not achieved then remedial actions described are not met.	During construction	Environmental Advisor / Contractor
	The contractor's environmental checklist will include the parameters as detailed which are: Integrity of valve, pumps and connections used in the transport of fuels and chemicals; Safety checks; and Compliance to Dangerous Goods License shall be maintained.	During construction	Environmental Advisor / Contractor

21.2 Objectives, targets, and indicators for spill management

Management objective	Target	Performance indicator
Minimise the risk of spillage or escape of hazardous materials from chemical storage areas.	No release of chemicals/pollutants as listed under the Environmental Protection (Unauthorised Discharges) Regulations 2004 to the environment during construction.	Number of environmental incidents related to spills or leakage. Equipment integrity. Chemical storage facilities inspection results.
To minimise the risk of spillage from vehicle or equipment servicing and refueling.	No spillage of fuels or oils on natural surfaces not designed to deal with spills during construction	Number of environmental incidents related to spills.

Management actions for the prevention of hydrocarbon & chemical spills

21.3 Monitoring program for hydrocarbons and chemicals

Parameter	Frequency	Location	Purpose	Responsibility
Hazardous materials register	As required (e.g., as a new material is required or used onsite)	Onsite office	To record all hazardous materials stored and used onsite along with procedures for handling, storage, and emergency response procedures in case of spillage or accident involving worker exposure.	Environmental Advisor
Integrity of valve, pumps and connections used in the transport of fuels and chemicals	As part of project site inspections	Entire project site	To ensure equipment is free from faults and leaks.	Environmental Advisor / Contractor
Integrity of storage vessels and containers	As required	Entire project site	To ensure vessels and containers are in good condition and continue to meet applicable standards and regulations.	Environmental Advisor / Contractor
Hydrocarbon and chemical storage containment areas	As required	Entire project site	To ensure containment areas are in good condition and continue to meet applicable standards and regulations. To ensure that accumulated water is periodically removed.	Environmental Advisor / Contractor
Safety checks	As part of project site inspections	Entire project site	To ensure equipment is safe and meets the necessary standards and regulations and that work practices are in accordance with construction management actions detailed in the EMP.	Environmental Advisor / Contractor

21.4 Remedial Actions for hazardous materials spills or leaks

Trigger	Action	Responsibility
Spill incident	Appropriate spill response equipment shall be located such that it is available for immediate use. Further loss of material shall be prevented either by addressing the process control problem or by undertaking repair of faulty pipe, valve, or other components. Spillages shall be immediately contained by constructing earthen bunds or using other containment methods. Pooled material shall be removed as soon as practicable by pumping into an appropriate storage facility or withdrawn using an absorbent material. Contaminated soil or material shall be removed off-site and disposed of in an approved landfill facility or at the direction of the PMC Person(s) involved in the incident (or witness to) shall notify the PM who shall notify the Environmental Advisor if not already aware of the incident An Environmental Incident Report shall be completed for spills	Environmental Advisor
Chemical storage facility/equipment as non-adherence	Investigate cause Rectify problem Monitor success	Environmental Advisor

22. Groundwater Management

Project activities have the potential to impact groundwater levels, flow, and water quality without correct management. Activities that could impact on groundwater levels and quality include dewatering and pollution via refueling, servicing and spills.

Aspects requiring management

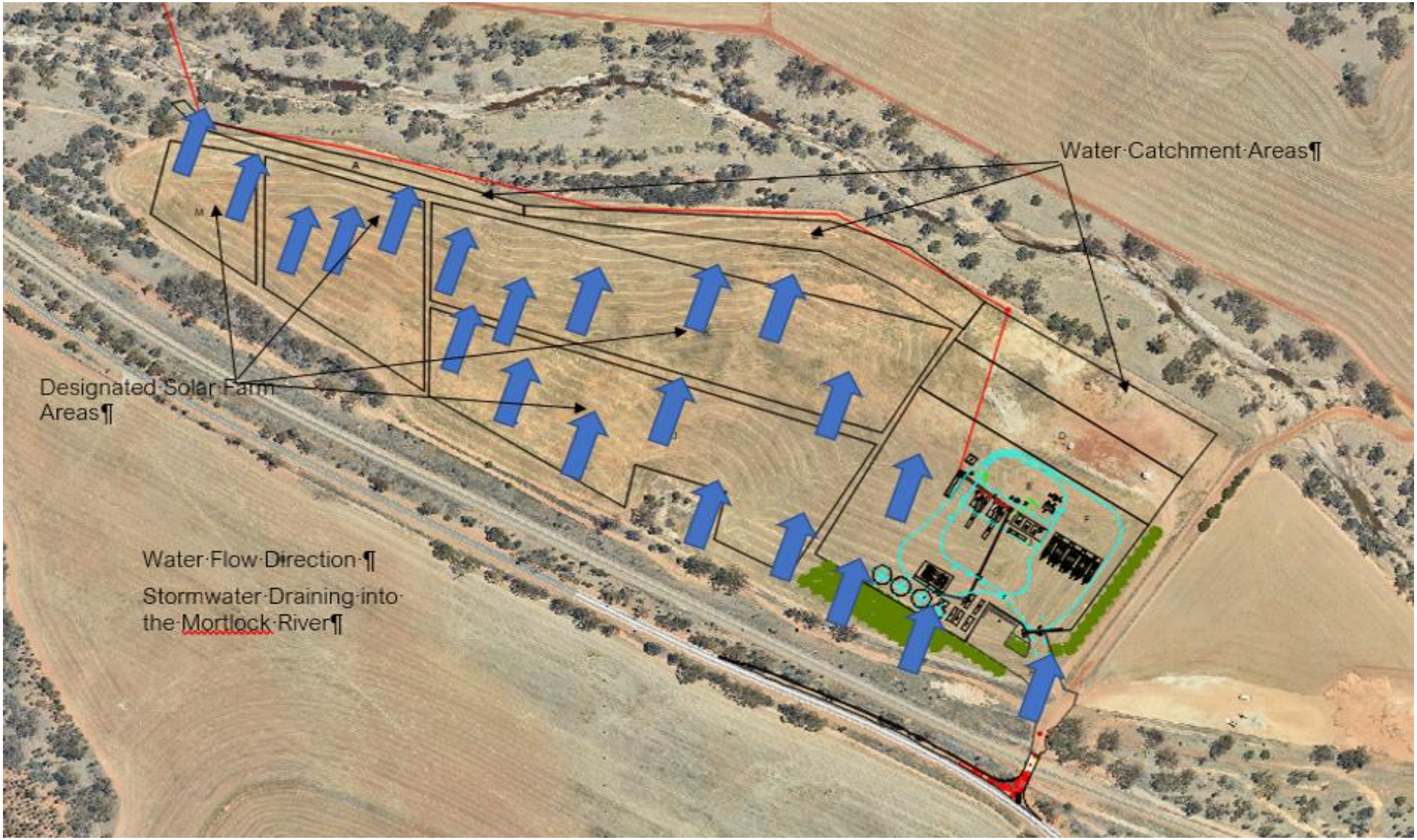
The ground water management program has been developed to avoid or minimise the risk of the following to occur:

- Dewatering may disturb groundwater levels and water quality;
- Impermeable surfaces may alter infiltration rates and therefore alter the hydrology and water balance of the area;
- Flooding is a possibility as fill being placed into low lying areas could potentially impact the local hydrology and increase flood risks in the precinct;
- Excavations which intersect the groundwater could provide a vector for groundwater contamination;
- Leakage of wastewater or liquid effluent may pollute groundwater and adjacent wetlands; and
- Extraction of groundwater could potentially impact groundwater dependent vegetation.

Objective, targets, and indicators for groundwater management.

Management objective	Target	Key Performance Indicator
Ensure that groundwater quality or height is not significantly impacted by the construction.	No significant change in groundwater levels during dewatering activities, all bores to be fitted with flow metres (if applicable).	Develop and implement a Water Management Plan (if applicable).
	Water efficiency measures to be implemented wherever possible	Utilise dust suppression inhibiter wherever suitable.
	No significant change in baseline levels of Total Suspended Solids, turbidity, pH, metals, nutrients, hydrocarbons, total acidity and Dissolved Oxygen in groundwater under project area during construction.	Groundwater quality at existing and new bores.

Figure 3 -Construction and Operational area



22.1 Management actions for groundwater management

Parameter	Action	Timing	Responsibility
Induction	Construction staff shall be aware of the risk to groundwater contamination.	Prior to construction	Environmental Advisor
Contaminants entering groundwater	When excavating close to sewage/gas pipelines ensure that there is a second person watching digger to reduce the risk of accidental breakage.	During excavation in suspected close proximity to pipelines	Environmental Advisor / Contractor
	Ensure all piping installed underground is correctly tested and in accordance with relevant standards and regulations (e.g., pressure testing).	After completion of piping	Environmental Advisor / Contractor
Saline Water	No saline water to be used unless at the direction of IGE.	During Construction	Environmental Advisor
Dewatering	All works will be implemented in accordance with an approved Dewatering Management Plan.	During Construction	Environmental Advisor / Contractor
Environmental incident reporting	Environmental incidents related to groundwater will be reported in accordance with Table 7 of this plan.	During Construction	Environmental Advisor
potential for excessive sediment mobilisation	Monitoring waterflow.	During earthworks	Construction manager
Monitoring	If monitoring targets are not achieved then remedial actions described will be implemented. Levels of ground water will be monitored weekly Ground water abstraction will be monitored against groundwater licenses weekly; and Compliance audits and inspections.	During construction	Environmental Advisor

Parameter	Action	Timing	Responsibility
	The contractor's environmental checklist will include the parameters as detailed which are: Contamination or leakage; and Compliance with Dewatering Management Plan.	During construction	Environmental Advisor
Drainage	Design controls		
Erosion			
Earthworks	Design Waterflow	Pre-Construction	
Sediment	Control sediment movement	Pre-Construction	
Stormwater 1/100	Create flood design parameters	Pre-Construction	

22.2 Earthworks

Bulk earthworks will be implemented to control, water runoff and drainage control within the project site. Bulk earthworks will prepare for the foundations of the project site and infrastructure that are to be erected that include site offices and an electrolysis plant. IGE will reinstate the natural site contours of the site to enable stormwater to drain into the natural creek channel at the northern end of the project site.

22.3 Erosion and Sediment Control Measures

Earthworks activities may increase the risk of the disturbed soils being eroded — mostly by water. The loss of soil can result in the earthworks impacting upon the receiving environment. Erosion and sediment control measures will be implemented during earthworks to effectively manage erosion and sediment control issues. An approved Stormwater Control Plan will be implemented for the project earthworks aligning with state legislation and/or local authorities planning schemes.

Key risks in the implementation of stormwater controls include:

- Excessive stormwater containment on project site reducing yield to downstream catchment;
- Poor separation of clean and contaminated stormwater requiring excessive containment;
- Drainage lines intersected by project infrastructure;
- Unacceptably high additional sediment load flowing to Mortlock River; and
- Control structures with excessive maintenance requirements and are inadequately maintained.

23. Flora and Fauna Management

The Project Area contains zero native vegetation. Measures are proposed to reduce deaths /injury of individual fauna and flora during construction activities.

Aspects requiring management

The project area contains different types of fauna, and construction activities will impact fauna in different ways. Clearing of vegetation will remove fauna habitat (including breeding habitats) and, as such, will cause fauna displacement in advance of construction and will likely cause injury or death to some species:

- Construction vehicles may collide with animals causing injury or death;
- Unauthorised access to 20m heritage exclusion zone around the Mortlock River;
- Animals particularly feral species may be attracted to waste from construction;
- Disturbance or degradation of areas may impact on fauna habitat;
- Construction activities may create noise that may disrupt fauna; and
- Contamination of ponds may impact on birds and other wildlife.

23.1 Objective and KPI's, for flora and fauna management

Objective	Target	Key performance indicator
Minimise the impact of construction on local terrestrial fauna populations.	Translocate reptiles found during construction activities.	Reptile captures.
	No death or injury to fauna caused from vehicle collisions or entrapment in construction excavations after the site has been cleared and construction begins.	Environmental incidents relating to collisions with fauna.
	Minimal impact from feral animals during construction, all trenches to have escape routes every fifty metres and not exceed 2.5 km in length and checked as per the IGE guidelines and checked and back filled.	Number of feral animal encounters.
Ensure that no native vegetation outside designated clearing areas is removed or damaged.	All clearing if undertaken will be in accordance with the Approved Ground Disturbing Clearing Areas**. (No Clearing Required within project area)** No clearing or disturbance during construction outside of pre-defined clearing lines as outlined in detailed design plans.	Number of occurrences of clearing outside designated clearing areas. Areas fenced and topsoil locations in correct positions.

Management actions for flora and fauna protection

Parameter	Action	Timing	Responsibility
Induction	Prepare and deliver an Induction Program to all personnel, which includes information on: Requirement to remain within marked site footprint line; Potential for construction activities to impact flora and fauna and fauna habitat; Fauna encounter procedures; Pets, off road driving recreational vehicles and firearms not permitted on site. Feeding of fauna and feral animals not permitted on site; Dead animals (i.e., Roadkill shall be removed from the vicinity of project activities; Barbed/razor wire not permitted on site; and Injured or sick animals to be reported to IGE.	Prior to construction.	Environmental Advisor
	All construction staff, contractors and other personnel working on site will complete the Induction Program prior to commencing work on the project site.	Prior to construction and ongoing.	Environmental Advisor
Clearing of vegetation	Pre-start meeting must be held between PMC, BME&I, and contractors, including a site walk, to ensure areas of works are clearly identified. This will be surveyed and documented.	Prior to Clearing	Environmental Advisor / Contractor
	A handover between contractor and supervisors (BME&I) must be complete prior to works commencing.	Prior to Clearing	Environmental Advisor
	A Clearing Permit must be obtained and approved from the construction Manager and Environmental Advisor prior to clearing works undertaken.	Prior to Clearing	Environmental Advisor / Contractor
Construction management	Install a fence around retained bushland areas prior to clearing operations to ensure that remnant vegetation is protected from accidental clearing.	Prior to Clearing	Environmental Advisor
	Restrict construction vehicles and personnel to designated areas.	During construction.	Environmental Advisor / Contractor

Parameter	Action	Timing	Responsibility
	Egress devices to be placed in all open water storage areas		Environmental Advisor / Contractor
	Open excavations wherever practicable shall be cover or barricaded, pipe ends to be capped during pipe laying		Environmental Advisor / Contractor
	Dispose of food waste into covered waste facilities to ensure that feral or other animals are not attracted to the site.	During construction.	Environmental Advisor / Contractor
Fauna encounter procedures	Native animals encountered onsite shall be given the opportunity to move on if there is no threat to personnel safety in doing so. If required, fauna will be relocated by fauna handling personnel. Snakes may require additional management.	During construction.	Environmental Advisor / Contractor
Fauna	Vehicle and material storage lay down areas will be constructed in existing cleared or disturbed areas if possible within the site boundary, to limit impacts on the remaining fauna habitat.	During construction	Environmental Advisor / Contractor
	Confine clearing of vegetation to designated clearing areas only.	At all times	Environmental Advisor / Contractor
	Maintain wild care and informational species signage.	Prior to ground disturbing activities	Environmental Advisor
	Inspect the project site each morning, prior to starting plant or equipment, as fauna may have migrated during the night.	Every morning, prior to starting-up equipment	Environmental Advisor / Contractor
	The feeding of fauna, hunting, or keeping of pet's onsite shall be prohibited.	At all times	Environmental Advisor / Contractor

Parameter	Action	Timing	Responsibility
	All vehicles shall remain on designated roads and shall not be permitted to drive off designated roads unless in an emergency.	At all times	Environmental Advisor / Contractor
	All personnel shall observe onsite vehicle speed limits to prevent the likelihood of roadkill.	At all times	Environmental Advisor / Contractor
	All waste materials shall be correctly disposed of within the required onsite waste disposal bins designed with fauna access restrictions.	At all times	Environmental Advisor / Contractor
Feral animals	If feral animals are detected on the site then steps will be taken to eradicate them.	During Construction	Environmental Advisor
Environmental incident reporting	Environmental incidents related to fauna will be reported in accordance with this EMP.	During Construction	Environmental Advisor
Monitoring	It is the Environmental Advisor's responsibility to ensure that monitoring is implemented. If monitoring targets are not achieved then remedial actions described will be employed.	During construction	Environmental Advisor
	The contractor's environmental checklist will include the monitoring of feral animal (including signs of feral animal activity) as detailed.	During construction	Environmental Advisor

23.2 Monitoring program for flora and fauna protection

Parameter	Frequency	Location	Purpose	Responsibility
Adequacy of clearing boundaries if required	Project site inspection (during clearing activities).	Clearing boundaries.	To ensure the clearing boundaries are clearly marked. Ensure there is no breach in boundaries.	Environmental Advisor / Contractor
Reports of fauna encounters/collisions.	Opportunistic.	Project Area.	To determine if further fencing or warning signs are needed beyond those existing.	Environmental Advisor
Feral animals.	Opportunistic.	Project Area, specifically focusing on the remaining native vegetation at the site.	To determine the requirement to undertake control of feral animals.	Environmental Advisor
Trapped animals	As required by wildlife Regulations 2019	Turkeys nest dams and excavations	Free trapped Fauna and administer help to injured Fauna	

23.3 Remedial actions for flora and fauna protection

Trigger	Action	Responsibility
Breaching vegetation clearing lines or oversight of markings to protect particular vegetation	investigate cause. Undertake rehabilitation of area cleared. Implement remedy to prevent further breaches and unnecessary impacts, which could include: Review effectiveness of management action and identify opportunities for improvement; Install additional fences, extending length; Improve methods for marking clearing lines or exclusion zones; and Erect signs. Monitor effectiveness of remedy.	Environmental Advisor / Project Manager
Vehicle collisions with fauna	Investigate reason Undertake intervention or remediation works (e.g., further reduce speeds, fauna relocation effort). Monitor success.	Environmental Advisor
Feral animal encounters	Investigate cause. Undertake intervention or remediation works (e.g., reduce bins, trapping). Monitor success.	Environmental Advisor / Project Manager

24. Monitoring and Measuring

Environmental inspections and audits are conducted to ensure compliance is achieved. Inspections and audits may consist of IGE internal audit and inspection program, Stakeholder audits and inspection, regulatory inspections, and surveillance audits. Environmental performance inspections and audits shall be conducted together with health and safety performance inspections and audits.

Environmental Audits and Inspections will involve the following:

- Daily Environmental Inspections – inspections are implemented and formally documented every day by either a Site Supervisor or Site HSE Advisor;
- Weekly Environmental Inspections – more comprehensive inspection of the work areas will be conducted weekly and focus on broader impacts not covered during the daily inspection; and
- Internal Site Environmental System Audit - audits shall be conducted by the HSE Manager or environmental representative within thirty days of mobilisation and every three months thereafter. Copies of the audit results shall be forwarded to the environmental manager upon request.

Environmental impacts that require corrective action shall be recorded on the Project Hazard Register and shall be closed out as soon as practicable. The Site Environmental/HSE Advisor shall review the hazard register daily to ensure outstanding impacts are closed out as soon as practicable.

24.1 Progress Reporting

IGE has internal and external reporting requirements. Internal progress HSE reports are to be submitted weekly/ monthly and will include a summary of incidents, outcomes from investigations, audits, KPI's and site environmental activity summary. Stakeholder reports will also be submitted on a monthly basis. All documents pertaining to environmental management are required to be maintained though a system of document control.

Monthly environmental reports may include the following information:

- Inspection and audit results;
- Performance against objectives and targets;
- Environmental Incident summary;
- Revised environmental procedures or documents and other changes; and
- Information regarding environmental training or awareness sessions.

24.2 Incident Reporting and Investigation

Incidents that have the potential to damage the environment, impact fauna or flora, or have an adverse effect on the surrounding environment will be reported, recorded, and investigated immediately.

Incidents may include, but are not limited to:

- Hydrocarbon or Other Spillage;
- Excessive Dust, Noise or Vibration;
- Fauna impacts;
- Flora (Destruction, Impacts, Contamination – Weed Infestation);
- Waste Contamination / Pollution;
- Contamination (Soil, Water, Ground);
- Fire / Explosion;
- Environmental Complaints;
- Impacts to Heritage Sites;
- Exposure of Personnel to Hazardous Chemicals / Fibrous Materials; and
- Vegetation clearance and topsoil extraction.

An incident response procedure will be implemented that will describe the type of action applied in response to an incident, including Aboriginal heritage incidents, and the sequence and chronology of measures to be applied.

Environmental incidents shall be reported to the Site HSE/Environmental Advisor, Project Manager and Stakeholder Representative immediately. This shall be followed by timely reporting to the Senior IGE management team. An incident investigation shall take place as soon as possible and as a minimum should involve the Site Supervisor and Site environmental representative. Corrective actions identified during the incident investigation process, shall be entered onto the Project Hazard Register, and closed out in a timely manner. Results from environmental incident shall be discussed at the morning pre-start and toolbox meetings. Significant incidents shall be recorded within an environmental alert and distributed to personnel on site and other project sites where applicable.

Best practice incident prevention is a proactive environmental management approach including environmental hazard reporting, training and awareness sessions, risk assessment tools and ongoing project inspections aligning with an ISO 14001 management practices.

24.3 Complaints

IGE aims to conduct its business activities in a professional manner with minimal impact to the surrounding residents/receptors or the environment.

In the event of a project complaint, a complaint procedure will be implemented, and the complaint will be recorded as an incident and an investigation will be instigated. Upon notification, the Project Manager and project representative will be informed of the complaint. Management will provide a rapid response to the complainant (within 24 hours), acknowledge receipt of the complaint, and outline proposed controls to be implemented. At the completion of the investigation, all corrective actions will be closed out and a follow up of the original complainant conducted to ensure the actions implemented have been effective and closed out.

24.4 Non-conformance Reporting and Corrective Action

Non-conformances and corrective actions will be generated from various sources including incident investigations, hazard reporting, audits, inspections, and complaints. All non-conformances and corrective actions identified will be closed out and addressed in a timely manner to prevent recurrence.

To ensure that non-conformances and corrective actions are effectively implemented, IGE will:

- Record and monitor/track the closure of all actions or non-conformances;
- Determine root causes for the non-conformances / corrective action;
- Ensure accountability is assigned for completion and completion is achieved;
- Verify that actions implemented are effective as part of the continual improvement process;
- Ensure amended procedures and documents are issued in a controlled and traceable manner; and
- Inductions and other workforce communication will be undertaken in a timely manner to minimise the risk of re-occurrences.

Non-conformances to this plan will be reported to the Construction Manager or equivalent within 48 hours of identification and documented in the appropriate register to inform reporting of such impacts. Outstanding corrective actions will be elevated to Senior Management if they are not completed within agreed time limits.

24.5 Continuous Improvement

A proactive approach to continuous improvement is adopted at both at an IGE corporate level and project level. Part of the continual improvement model is to ensure that all corrective actions are recorded, monitored, and closed out with the intention of preventing a recurrence and also improving our Environmental management system.

Project continuous improvement initiatives include, but are not limited to:

- Reviewing outstanding actions on a weekly basis with the project management team;
- Assisting the project management team to organise resources to close out actions; and
- Reviewing the effectiveness of corrective actions implemented.

24.6 Management Review

IGE will conduct an Annual Environmental Review (AER) including environmental reporting, incidents, hazards, corrective actions, KPI's, objectives, targets, and other environmental performance data tracking. Meetings will be chaired by the Environmental Manager and will involve IGE Senior Management personnel. Minutes will be recorded from this meeting and corrective actions are entered onto the project hazard register or corporate HSE database.

This EMP is intended to be dynamic and may be updated to reflect changes in management practices and environmental conditions. This will allow flexibility to adopt new technologies/management measures. The EMP will be reviewed on a bi-annual basis to ensure that the plan remains relevant and effective in mitigating risks identified.

Amendments to management actions and targets will be completed when required. This will include revision/amendment of management actions not meeting desired outcomes.

Continuous monitoring, impact identification, and changes to management procedures to achieve improved environmental outcome will be implemented across the project lifecycle.

25. Environmental Monitoring

Environmental monitoring shall be implemented throughout the project and be completed in conjunction with relevant personnel.

Environmental monitoring should include the following:

- Ground Disturbance compliance and inspections;
- Regular visual dust inspection;
- Topsoil stockpile and earthworks inspections for evidence of weed infestations;
- Regular inspections of excavations and water bodies, including water catchment and evaporation ponds;
- Flora and fauna monitoring;
- Air Emissions monitoring;
- Surface water/stormwater
- Noise and vibration;
- Contaminated Groundwater, containment, and treatment;
- Mobile plant inspections to mitigate noise levels and emission impacts during equipment lifecycle;
- Firefighting equipment testing to ensure correct maintenance;
- Hazardous materials and hydrocarbon management;
- Visual inspection of worksites and waste /facilities for appropriate waste disposal strategies; and
- Volumes and types of waste streams.

26. Environmental Offsetting

26.1 Management Area Objective

The management objective of the environmental offsets for the clearing of native vegetation, to construct the proposed Deceleration Lane approaching the Project site.

To conserve and enhance the environmental values of threatened ecological communities over the long term, by working to increase the extent of both remnant and regrowth vegetation and improving its condition and management.

The management area objective is estimated to be achieved within 5 years, but ecological benefit is expected to occur within 1-2 years. It is recognised that vegetation growth timeframes are subject to natural environmental and climatic conditions, unexpected events and other potential risks.

26.2 Specific Management Actions

The specific management outcome and offset objective will be achieved by the implementation of a range of specific management actions to be performed by (the lessee) IGE, including revegetation regeneration, weed control, tree planting (visual amenity), bushfire management, erosion and sediment control and access restrictions within the offset area.

27. Emergency Preparedness and Response

As part of the environmental site inductions, site personnel shall be instructed to the location and the use of environmental emergency response procedures and emergency response equipment. updates shall be communicated periodically as part of the pre-start meeting and toolbox meetings. The dates and contents and attendance of these training and awareness sessions shall be recorded.

Emergency contact numbers shall be prominently displayed on Site Notice Boards and shall be conveyed at site Inductions. Locations of spill kits, fire extinguishers and other firefighting equipment shall be indicated on the site's emergency plan.

There are several potential emergency environmental impacts including but not limited to significant spills, major storm events or bushfires. Emergency response controls for potential events are outlined below.

27.1 Significant Spill Response

A significant or major spill is defined as one that may have widespread or long-term environmental impacts. Spillage of hazardous materials shall be immediately contained, and appropriate measures taken to prevent further contamination or risk to personnel.

Hydrocarbons and chemicals shall be contained, stored, transported, and utilised in accordance with legislative and regulatory requirements. In the event of a spill, management shall be notified, and the area controlled until made safe. Clean-up spill/contaminated soil. Soil shall be classified, double bagged, labelled, and removed from site to a designated landfill site by IGE or the appropriate authorities, using the correct contaminated soil containment management procedures.

High risk hydrocarbon utilisation areas shall have at least one 240L spill kit nearby, to assist with rapid containment and spill response. Where large quantities of hydrocarbon are stored, multiple kits may be required to ensure adequate spill containment, In the event of a major spill.

The following procedure will be followed in the event of a spill:

- Attempt to isolate the source of the spill;
- Contain the spill;
- Contact Supervision or Project Manager;
- Assess the spill and understand the extent of the impact and the utilisation of emergency services if required.
- Attempt to prevent hydrocarbons migrating into waterways using the appropriate spill response equipment; and
- Remove all contaminated material to a licensed and approved facility.

27.2 Fire Procedures

Fire-fighting equipment shall be available in all mobile plant, light vehicles and for fixed plant. Hydrocarbon Storage Facilities and Hazardous Goods Storage Areas shall be equipped with the appropriate type and size of fire extinguishers. Fire response equipment shall be inspected and certified serviceable every six months and an appropriate register with records shall be maintained within the site office. Sufficient on-site personnel shall be trained in basic operation of fire extinguishers.

Hot work requires an approved hot work permit in accordance with the IGE permit to work System. Smoking is prohibited in site offices, crib rooms and company vehicles. Cigarette butts must be disposed of in approved disposal containers provided around the site.

27.3 Prevention of Unauthorised Activities

Work procedures and permits are administrative controls designed to prevent unauthorised activities being implemented on IGE projects. Unauthorised activities may not be undertaken outside the scope of an authorised permit or for work not covered under a work procedure or SWMS.

Unauthorised activities may include clearing outside of authorised or permitted areas, impacts to threatened species or vegetation communities and other activities that may result in a breach of relevant environmental legislation, regulations, and permit conditions.

It is essential that compliance requirements are discussed with personnel at site induction and re- iterated during toolbox and pre-start meetings. Consequences for not following permit guidelines or procedures and associated action may also be discussed. Permit boundaries are required to be defined and managed by authorised personnel.

28. References

Rundle, P. 2018. “Effective and Efficient Methodologies in the Australian Engineering Construction Industry: Front-End Strategies to Reduce Waste on Australian Construction Projects.”

29. Appendix A – Environmental Impacts/Risk

The following table identifies Project Specific Environmental Actions associated with this Hydrogen Project.

No.	Environmental Aspect	Impact	Action Required	Control	Person(s) Responsible
1	Emergency spill Equipment	Fuel Spills, hydrocarbons contaminating soils, surface water or leaching into groundwater systems	Contain spill: Spill Kits – accessible & stocked Oil and fuel absorbent pads/socks	Daily Inspection/ Weekly Inspection	Environmental Advisor / Site Supervisor
2	Waste Management	Waste Contamination/odour/attracting feral species Windblown waste	Contain waste in designated containers Prevent spillage from containers	Daily inspection	Environmental Advisor / All
3	Hazardous Substances/Materials	Safety/Danger of explosion/Spill contamination	Approved for Site/Appropriate Storage/SDS available	Daily Inspection/ Weekly Inspection	Environmental Advisor
4	Noise	Noise disturbance to adjacent premises	Remove excessively noisy plant from operation & substitute/ repair Ensure operators and personnel wear appropriate hearing protection	Daily	Project Manager / Environmental Advisor
5	Dust	Airborne dust impacting local residents/occupiers of adjacent premises Flora/vegetation within adjacent premises Traffic Visibility on Northam-York Road	Observe dust levels, utilise water cart, suspend operation temporarily pending change of wind direction Water truck to be used to minimise dust levels	Daily Inspection	Project Manager / HSE Advisor

No.	Environmental Aspect	Impact	Action Required	Control	Person(s) Responsible
6	Hydrocarbon and Chemical Storage	Fuel spills, oil etc. contaminating soils, surface water or leaching into groundwater systems	Inspect containment system (bunding, socks, absorbents etc.)	Daily Inspection	Environmental Advisor/HSE Manager
	Hydrogen Storage/Transportation	Possible Gaseous leaks	Containment inspection Protect from direct sunlight. Store in a well-ventilated container. Keep away from heat/sparks/open flames/hot surfaces. No smoking	Daily Inspection	Environmental Advisor/HSE Manager
	Filling Multi Element Gas Containers (MEGCs)	Possible Gaseous leaks	Gas containment Inspection/Monitor	As required	Environmental Advisor/HSE Manager
7	Spills	Fuel Spills, oil etc contaminating soils, surface water or leaching into groundwater systems	Minimise impacted area by bunding, etc. Clean up with spill kit Report incident Investigate occurrence and develop preventative measures	Immediate Response	Project Manager / Environmental Advisor
8	Bushfire	Hot vehicle components (brakes, exhausts) contacting dry vegetation Site personnel/Local community: Health and wellbeing Company Assets	Attempt to control, extinguish, or contain Contact local emergency services, Mobile plant, inspected and maintained according to manufacturer's specifications	Immediately	Project Manager / HSE Advisor / Site Supervisor
9	Traffic	Trailer mounted Multi Element Gas Containers (MEGCs)on adjacent roads disrupting traffic flows	Develop and submit a Traffic Management Plan Construct Deceleration/turning lane	Refer to Traffic Management Plan for details	Construction Manager

No.	Environmental Aspect	Impact	Action Required	Control	Person(s) Responsible
10	Stormwater Drainage	Changes to established surface water flows caused by stormwater or Earthworks	Stormwater water site drainage design parameters Design and construct water catchment areas: Reed bed construction	Refer to Stormwater Management Plan for guidance	Environmental Advisor/Construction Manager
12	Earthworks	Erosion allowing topsoil to be deposited within the Mortlock River exclusion zone	Site Access roads/ maintained to prevent erosion	Daily Inspection	Construction Manager
13	Visual Amenity	Site line obstructions	Rehabilitation/Replanting/ Revegetation Landscaping design	During construction/ Refer to Landscape/ Visual amenity plan	Environmental Manager/Construction Manager
14	Heritage	Archaeological/ethnographic	Monitoring project site Survey/Report	Inspection during earthworks	Construction Manager/Environmental Manager

30. Appendix B – Environmental Aspects Risk Assessment

Activity	Hazard / Risk	Uncontrolled Risk	Action Required	Residual Risk
Site Establishment	Incorrect Waste Management	M	Reduce waste volumes on site. Integrate the 3R's strategy (Reduce Re-use Recycle) Encourage waste separation(Induction) Use approved waste disposal contractors.	L
	Visual Amenity	M	Revegetate and replant native species to improve amenity	L
	Impacts to Flora and Fauna	M	Ensure all personnel follow the correct procedures regarding Flora and Fauna preservation and work within approved construction/access areas.	L
Transport of Equipment to Site	Community Disturbance	M	Conduct Deliveries during approved delivery times (if applicable). Site vehicle speed limit 20km/hr in construction areas.	L
	Dust	M	Daily inspections of traffic flow and dust generating activities. Site speed limit 20km/hr in construction areas. Coordinate resources for dust suppression (water cart) as required.	L
	Noise	M	Assess noise levels prior to site work. Monitor noise levels at site, as required. Conduct site deliveries during approved times. Respond to complaints accordingly.	L
Construction Activities	Dust	M	Daily inspections of traffic flow and dust generating activities. Site speed limit 20km/hr in construction areas. Coordinate resources for dust suppression as required.	L
Civil Works	Dust	M	Site speed limit of 20km/hr. Coordinate resources for dust suppression as required. Water cart/visual monitoring Daily inspections of traffic flow and dust generating activities.	L
	Noise	M	Site works and deliveries conducted during approved times. Respond to complaints accordingly. Assess noise levels prior to site work or operations Remove equipment or service equipment causing excess noise.	L

Activity	Hazard / Risk	Uncontrolled Risk	Action Required	Residual Risk
	Archaeological/ Ethnographic	L	Personnel made aware of potential heritage sites during their site induction. Presence of Archaeological Sites and ethnographic of area to be confirmed with Ballading people/ Heritage Desk top study complete.	L
	Stormwater	M	Civil design/Earthworks/Design catchment area/construct Monitor water flow/surface water migration	L
	Concrete Spillage	M	Utilise truck washout areas/facilities (if required) approved by IGE. Ensure areas are bunded and lined.	L
Project Site-Construction	Noise	M	Assess noise levels prior to site work commencement. Monitor noise levels at site as required. Ensure project Works and site deliveries are managed during approved times. Respond to complaints accordingly. Remove or service equipment causing excess noise.	L
	Hazardous Chemical Spillage	M	Store minimum quantities of chemicals on site. Where possible all refuelling will be off-site. Absorbents available, Clean-up procedures developed as part of the Emergency Management Plan.	L
	Dust	M	Daily inspections of traffic flow and dust generating activities. Site speed limit 20km/hr in construction areas. Coordinate resources for dust suppression as required.	L
	Fire Hazard	M	Control of ignition sources (combustible / flammable material). Obtain appropriate hot work permits. Adequate provision of fire extinguishers. Refuel in controlled areas. Use spill / drip trays under all combustible engines and hydrocarbon storage drums.	L
Refueling	Hydrocarbon spill	M	Where possible all vehicles refuelling will be off-site. Spill kits available Site Emergency Plan/procedures Drip trays: all static combustion engines /machines.	M

Activity	Hazard / Risk	Uncontrolled Risk	Action Required	Residual Risk
Plant Commissioning	Noise	M	As part of the commissioning procedure a separate risk assessment / Commissioning Plan/Environmental Compliance may be required(DWER guidance) Emissions monitoring Noise monitoring.	M
Sewage Management	Soil Pollution	M	Manage portable ablution facilities at adequate intervals to prevent overflow	M
Site Waste Management	Incorrect Waste Disposal	L	Reduce waste volumes on site. Dispose at approved waste disposal site/landfill. Site Induction Reduce, Reuse and Recycle where possible.	L
Site Office and Facilities Demobilisation	Incorrect Waste Disposal	M	Reduce waste volumes. Use approved waste disposal contractors. Transport waste materials to appropriate waste facilities.	L
IGE H2 Plant	Venting Hydrogen: Emissions	M	Nitrogen released from electrolyser, compressor and MEG1" Monitor and recycle.	L
IGE H2 Plant	Venting Emissions from electrolysis plant	M	Oxygen release from the electrolysis plant, Compressor and MEG1: Volumes monitored.	L
IGE H2 Plant	Venting Emissions from electrolysis plant	M	Excess water from the electrolysing process: Capture excess water and recycle.	L
IGE H2 Plant	Venting Emissions from electrolysis plant	M	Hydrogen released/purging from inside the electrolyser, during the electrolysing process to atmosphere: Volumes Monitored and potential capture and recycle.	L

Note: This Environmental Aspects Register shall be read in conjunction with the Hazid/Envid Risk Assessment conducted for this project.

Table: **H** High Environmental Risk / **M** Moderate Environmental Risk /**L** Low Environmental Risk

31. Appendix C – Environment Policy

Vision

Our vision is to be recognised as the global leader in green hydrogen production. Our sustainability framework, together with our net zero strategy, puts our intention into action and together they illuminate how we can collectively rise to the challenge posed by climate change and other environmental concerns, delivering long-term sustainable value to our stakeholders and society.

Environmental Policy

Our environmental policy is established through relevant elements of our company charter, and it is integrated into our operations in particular the sections on 'operating sustainably, responsibly and environmentally'. It focuses on biodiversity and regulatory requirements and guidance, including those comprising our environmental management procedures.

Our policy is to:

- ✓ To provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling people to improve their quality of life without compromising that of future generations.
- ✓ Raise awareness and understanding of environmental principles with our employees.
- ✓ Deliver the integration of environmental and sustainability considerations into the company's
- ✓ activities worldwide, while mitigating and remediating the impacts of our operations.
- ✓ Comply with applicable environmental laws and company policies and procedures to protect the environment wherever we operate.
- ✓ Align our practices with the aims and goals of the United Nations Sustainable Development Goals (SDG's) and international agreements on climate change and protection of the environment.
- ✓ Identify and systematically manage the environmental performance of our operating activities, including conservation of planetary ecosystems and biodiversity.
- ✓ Continuously improve our environmental due- diligence by applying our EMS performance criteria.
- ✓ Understand the requirements at our operating sites to comply with international standard, ISO 14001 Environmental Management Systems, while adopting the application of technologies that are both climate-resilient and value people and ecosystems.

Stephen Gauld
Managing Director

infinite green

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