

## Environmental and Social Review Summary (ESRS) Floating Storage and Regasification Unit (FSRU) - EL SALVADOR

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### 1. General Information and Overview of Scope of IDB Invest's Review

The Project involves the purchase and conversion of a liquefied natural gas (“LNG”) carrier (“LNGC”) to a Floating Storage and Regasification Unit (“FSRU”). The FSRU will be permanently moored at the port of Acajutla in the Department of Sonsonate, in El Salvador, to provide liquefied natural gas regasification services to Energia del Pacifico Limitada de CV (“EDP”), a 378-megawatt combined cycle thermal power plant financed by IDB Invest in 2019. The FSRU is an essential piece for the operation of the LNG-to-power plant, which is expected to be the lowest cost thermal generator in El Salvador, a country heavily reliant on imported heavy fuel oil-fired generators for its dispatched power, and to provide reliable energy, reduced carbon emissions and increased foreign investment.

The Project sponsors are BW Gas Ltd (“BW”) and Invenergy Investment Company LLC (“Invenergy”). BW is a global maritime company involved in the infrastructure development, production, and shipping of natural gas. Invenergy is a global developer and operator company for provision of diverse energy solutions (natural gas, wind, solar, storage). The Project developer companies (the “Borrowers”) are: i) FSRU, Ltda. de C.V, a Salvadorian company; and ii) FSRU Development Pte Ltd, a Singaporean firm. Both borrower companies are jointly owned by the sponsors.

FSRU Development Pte Ltd is the current owner of the liquid natural gas carrier (LNGC) ship ‘BW Tatiana’, a moss-type tanker previously owned by Shell (and named SS Gallina) and which will be converted into an FSRU. Once converted, the FSRU will then be transferred from the shipyard in Singapore and moored at the project location in Acajutla, El Salvador, as part of supply gas infrastructure to EDP’s LNG-to-power plant. Ownership of BW Tatiana will be transferred to FSRU Ltda. de C.V. for the operational phase of the Project.

The Environmental and Social (E&S) Due Diligence (ESDD) process for the FSRU was conducted remotely due to the travel restrictions imposed by the new Corona Virus Pandemic (Covid-19). The ESDD utilized a risk-based analysis approach that covered the three key stages of Project development: i) conversion, ii) transport, and iii) preparation works and operations to identify significant issues in relation to the Project based on their potential compliance risk and/or reputational risk. The ESDD included the review of relevant environmental, health, safety and social information provided by the sponsors and shipyard contractor; as well as virtual interviews and conference calls with the companies’ and sponsors’ senior representatives that took place in June and July 2020. The ESDD took full advantage of the existing comprehensive ESIA studies carried out for EDP’s thermal power plant, which included the FSRU ship.

## **2. Environmental and Social Categorization and Rationale**

The Project has been classified as a category B in accordance with IDB Invest 's Environmental and Social Sustainability Policy because of the limited scope of its environmental, social, and health and safety risks and impacts related to: i) health and safety aspects of shipyard's conversion process for the vessel; ii) labor and working conditions for the shipyard's conversion contractor; iii) crew's health and safety aspects of the ship's re-vaporization process (from LNG to NG) and LNG/NG maintenance and storage systems during gas dispatch operations; iv) generation of cold and warm effluents (seawater) utilized for the re-vaporization and engine cooling processes of the FSRU, respectively, with potential localized biodiversity impacts; v) establishment of permanent mooring and maneuvering exclusion zones for FSRU/LNGC operations, with limited impacts on local fisheries; vi) generation of solid waste and domestic effluents; vii) air emissions and generation of GHG gases from onboard energy systems and boil-off gas generated during commissioning (cooling down), LNG transfer and gas dispatch operations; and viii) security risks associated with the FSRU transfer journey and permanent mooring. These risks and impacts are deemed to be of medium magnitude and importance, and can be managed with available and tested design, engineering and operational control technologies which are feasible to implement in the context of the proposed Project.

The Performance Standards (PS) applied to the Project are: i) PS-1: Assessment and Management of Environmental and Social Risks and Impacts; ii) PS-2: Labor and Working Conditions; iii) PS-3: Resource Efficiency and Pollution Prevention; iv) PS-4: Community Health, Safety and Security; v) PS-5: Land Acquisition and Involuntary Resettlement (due to need for an FSRU exclusion zone for fisheries); and vi) PS-6: Biodiversity Conservation and Sustainable Management of Living Natural Resources.

## **3. Environmental and Social Context**

The conversion of the BW Tatiana from an LNGC ship to an FSRU will take place in Singapore at the Keppel Tuas Shipyard, owned by Keppel Shipyard Limited and part of the Keppel Offshore & Marine group. Keppel Offshore & Marine are qualified in offshore rig design, construction and repair, ship repair and conversion, and specialized shipbuilding (including LNG related projects). Keppel Shipyards is composed of three facilities: Tuas, Benoi and Gul. The Tuas shipyard is a 443,423m<sup>2</sup> yard built in the 1970's, and located in the southwest of Singapore at the corner of the Tuas Basin in the Jurong Industrial Estate, the largest industrial estate in the nation. The Shipyard is surrounded by other smaller shipyards, heavy industries, and a naval base. There are no communities nearby; the nearest residential area is approximately 8.5km from the Shipyard. As a heavy industry site, Keppel Tuas shipyard is a heavy regulated by the National Environment Agency (NEA) of Singapore. According to the Project sponsors and information gathered as part of the ESDD, Keppel possesses all the necessary licenses and permits to conduct the conversion process, and that to date there have been no instances of fines issued by NEA.

Two integrity inspections were performed on the SS Gallina for the purpose of determining the yard conversion scope (in 2018 and 2019). The reports indicated that the SS Gallina was in generally good condition and well maintained, with no specific problems anticipated for the conversion to an FSRU. After takeover of the SS Gallina the In-water Class Survey (ICS) for BW Tatiana was completed in June 2020, and it confirmed that the hull is in generally good condition.

## 4. Environmental Risks and Impacts and Proposed Mitigation and Compensation Measures

### 4.1 Assessment and Management of Environmental and Social Risks

#### 4.1.a E&S Assessment and Management System

Both BW and Invenergy are global companies that have their own ESMS systems. BW's E&S management system is third-party independently certified (ISO 14001:2015) and complies with the requirements of the International Maritime Organization ("IMO"). EDP's ESMS has been designed and implemented in accordance with PS-1, and the company intends to have it independently certified to ISO (International Organization for Standardization) standards. Keppel Shipyard's ESMS also has independent certifications for E&S management (ISO 14001:2015) and health and safety (ISO 45001:2018).

For the period during the conversion, BW/FSRU Development Pte Ltd will implement a limited-scope ESMS to cover E&S issues at the shipyard, for which the contractor's (Keppel) environmental and social management system (ESMS) will be the main guidance document. E&S aspects related to the transportation phase of the Project (journey from Singapore to Acajutla, El Salvador) will be managed by BW's specialized crew and corresponding corporate ESMS that adheres to international requirements and guidelines as established by the IMO. The E&S performance of the FSRU during operation will be managed by both EDP and BW/FSRU Ltda de C.V. EDP will implement its ESMS for the FSRU, and BW/FSRU Ltda de C.V. will provide plans and controls as required. Under this arrangement, BW/FSRU Ltda de C.V. will be contractors (lessors) of the FSRU to EDP (lessee). Besides seeking ISO certification, EDP's ESMS for operations must include the required process safety management considerations as per good international industry practice and best available technology.

#### 4.1.b Policy

A Project-specific E&S policy is not yet available. However, both sponsors and EDP have corporate-level E&S policies that together cover the core of the PS requirements.

#### 4.1.c Identification of Risks and Impacts

The environmental data and risk assessments as well as social impacts and risks of the FSRU Project have been assessed, with key impacts and mitigation and compensation measures identified, through a comprehensive ESIA prepared for the LNG-to-power thermal plant project which contains an analysis of alternatives that includes the FSRU. The full ESIA study has been publicly disclosed by IDB Invest.

The project is fully permitted by El Salvador's Ministry of Environment and Natural Resources<sup>1</sup>.

##### 4.1.c.1 Direct and indirect impacts and risks

The ESIA prepared for the LNG-to-Power project does not evaluate the potential E&S impacts for the conversion phase. However, given that Keppel Shipyards has: i) substantial experience of conducting the same type of ship conversion; ii) an E&S risk matrix which also includes a hazards identification for the conversion activities; iii) a third-party certified ESMS system with associated ESMP; and iv) a shipyard that is a fully permitted and regulated heavy industry site with the necessary licenses; an ESIA for the conversion phase of the Project is considered unnecessary.

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<sup>1</sup> Resoluciones MARN-20250-1104-2017 and MARN-20250-516-2018.

The ESIA also does not evaluate the potential E&S impacts for the transportation phase of the Project. However, such study is not considered necessary given that: i) this stage of the Project is a temporary phase carried out under BW's standard operational procedures (ESMS); and ii) the identification of E&S risks and impacts relating to navigation is already included in the ship's corresponding specific health, safety and environmental (HSE) plan, which adheres to international requirements and guidelines as established by the IMO.

Given that the FSRU was evaluated as part of EDP's thermal power plant ESIA study, and that EDP holds the environmental license and concession to operate which includes the FSRU, several E&S risk identification and associated management aspects relevant to the FSRU's operational phase will be managed by EDP, in conjunction with BW/FSRU Ltda. de C.V. The ESIA contains a cumulative impact assessment (CIA) for the LNG-to-Power, which includes the FSRU. However, additional information is needed regarding cumulative impacts of resuspended sediments from installation of the mooring system in the area of the Port of Acajutla (which is already affected from riverine input runoff).

The impact evaluation information available for the FSRU only covers decommissioning activities at a high level; but given that the FSRU will be in operation for 21 years the detailed decommissioning evaluation is not needed at this stage and can be done towards the end of the operational phase.

#### 4.1.d Management Programs

BW will implement a limited-scope program to cover E&S issues at the Shipyard to oversee the contractor. Keppel will spearhead E&S management at the shipyard, and in addition to implementing its existing ESMS and E&S management plan (ESMP), it will prepare a Project specific health, safety and environmental (HSE) bridging plan for the FSRU conversion to meet BW's additional E&S requirements, which will include the PS.

BW will implement its ESMS for navigation during the transportation phase<sup>2</sup> and has already prepared a high-level EHS plan for the journey, which will be further elaborated in terms of environmental procedures.

EDP utilizes a bridging document matrix to compare its ESMPs (which are compliant with the PS) with those prepared by its contractors -in this case, the FSRU- to define which content should prevail and what gaps require filling to comply with the PS, relevant World Bank Group EHS guidelines, Salvadoran regulations, approved ESIA's, and MARN (Ministry of Environment and Natural Resources) Resolutions. This bridging tool will be utilized to fully align BW's/FSRU Ltda de C.V.'s ESMP with that of EDP.

#### 4.1.e Organizational Capacity and Competency

Given the nature, structure, and number of parties involved throughout the development of the Project and involved in overseeing management of its E&S aspects, a comprehensive E&S governance

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<sup>2</sup> BW's ESMS addresses pollution prevention measures through comprehensive risk evaluation of its operations to ensure zero spills to sea. The ESMS includes strict adherence to the IMO Conventions applicable to the Project: i) International Convention on Load Lines, 1966 with the Protocol of 1988; ii) International Convention for the Safety of Life at Sea, 1974 with the Protocol of 1978/1988 and Amendments up to 2000 including International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code); iii) International Convention for the Prevention of Pollution from Ships, 1973 (Annex I, IV, V & VI) as modified by the Protocol 1978/1997 and Amendments up to 1997 (also known as "MARPOL 73/78"), iv) Convention on the International Regulations for Preventing Collisions at Sea, 1972 with the Amendments up to 1993; and v) International Convention on Tonnage Measurement of Ships, 1969. The BW documentation reviewed (e.g. Certificates) is considered generally sufficient to demonstrate alignment with key IMO requirements.

memorandum establishing the respective roles and responsibilities of each party responsible for the E&S management of the Project (from conversion to decommissioning) will be prepared by the Project sponsors. The memorandum will also briefly describe the ESMSs and ESMPs that the Project will comply with and implement during its life cycle, in alignment with the applicable international standards. An associated action is included the Project's ESAP.

BW's Conversion Execution Plan includes a Project-specific organization chart and a description of roles and responsibilities. For that purpose, BW has a corporate HSEQ team that will work alongside the BW team supervising the conversions work, as well as with the site HSEQ officer which will be appointed or contracted. Keppel will also have its own E&S team on site for the Project, which will consist of one HSE manager, two HSE officers, two HSE coordinators, and various HSE supervisors (workers who will be trained on HSE matters). The main point of contact between BW and Keppel will be the HSE manager along with the HSE officers.

E&S matters related to the transport phase will be managed by the BW E&S team, but details on the respective roles and responsibilities have not yet been finalized but given the Project timeline this is considered low risk, while those associated with the operation phase will be managed by the EDP and BW/FSRU Ltda de C.V. E&S teams. The organizational chart of EDP has been evaluated as part of the LNG-to-power project and is considered adequate and compliant with PS-1. Details on the E&S structure and team of BW/FSRU Ltda de C.V. for the operational phase have not yet been defined.

#### 4.1.f Emergency Preparedness and Response

An independent engineering company has conducted a comprehensive review of the Project's risk and safety management assessments to assure the safe operation of the FSRU. These: i) hazard identification (HAZID), ii) hazard and operability (HAZOP), iii) qualitative risk assessment (QRA), iv) Fire and Explosion Risk Analysis (FERA), v) FSRU Safety Integrity Level (SIL)/Layer of Protection Analysis (LOPA), vi) Escape, Evacuation, and Rescue Assessment (EERA), vii) Cryogenic Risk Analysis (CRA), and viii) Gas Dispersion Analysis (GDA) studies. These studies were considered adequate and have informed the preparation of the corresponding emergency preparedness and response plans.

Keppel Shipyards has an adequate emergency plan that identifies roles and responsibilities, emergency contact details including local authorities and medical facilities, drills and types of emergencies and actions to be taken.

BW has a well-developed emergency plan template available for Project-specific updating prior to commencement of the journey, as well as environmental management procedures for environmental emergencies. Communication with external parties is also addressed in the documentation.

EDP has prepared a framework Emergency Preparedness and Response Plan (EPRP) for the LNG-to-power project that, although currently compliant with PS-1, will need to be further developed into a Project-specific EPRP to include the FSRU.

#### 4.1.g Monitoring and Review

Keppel Shipyards will prepare weekly HSE reports to BW/FSRU FSRU Development Pte. Ltd. on the Project's HSE performance (e.g. accident statistics). BW will provide any additional plans and controls necessary through their onsite supervision in Singapore.

BW's ESMS will collect HSE performance data from its entire fleet to ensure adherence to the company's policies and international standards and certification requirements.

EDP has comprehensive HSE monitoring and compliance reporting requirements for the LNG-to-power project, which includes oversight by an independent E&S consultancy company. The EDP monitoring plans and compliance reports will be revised to incorporate the FRSU's own E&S operational plans.

IDB Invest will conduct its own regular supervision of HSE aspects during the Project's conversion, transport, preparation, and operational phases.

#### 4.1.h Stakeholder Engagement

Full stakeholder engagement was undertaken as part of the LNG-to-power ESIA and is considered appropriate for this stage of the Project. Annual feedback by EDP to communities is included in the Stakeholder Engagement Plan (SEP) as well as annual reporting on its KPIs. Due to movement restrictions caused by the Covid-19 pandemic, site visits to Keppel's shipyard in Singapore and the port of Acajutla were not conducted as part of the ESDD exercise for the FSRU. Consequently, interviews with local stakeholders (e.g., community members, neighbors, shipyard workers and local authorities) were not undertaken as part of the ESDD. Notwithstanding, IDB Invest did conduct visits to Acajutla as part of the full ESDD appraisal process for EDP's LNG-to-power project, which included both the port of Acajutla and the onshore sites related to the FSRU (e.g. pipeline approach).

Given the Shipyard's location in an industrial area, and that the refurbishment is one of many services and activities, significant or specific stakeholder engagement and consultation with local communities are not anticipated.

Stakeholder engagement is not considered necessary for the transport phase given the nature of the vessel's journey.

As mentioned above, a PS-1 compliant SEP has been prepared by EDP and will have to be updated prior to the operation phase to reflect any changes from incorporating the FSRU.

#### 4.1.i External Communication and Grievance Mechanisms

Project-specific external communications are not anticipated. The Project will rely, as a regular activity part of an industrial site, in Keppel's corporate mechanism and sustainability reporting.

External communications with stakeholders during transport are not applicable. BW has a corporate grievance mechanism accessible to crewmembers.

For the preparation works and operation, a comprehensive community grievance mechanism (GM) has been prepared by EDP, which meets the PS requirements. The GM foresees inclusion of the FSRU once moored and will allow anonymous complaints. In addition, EDP has conducted inclusive project disclosure and public consultation activities as part of requirements of the ESIA and environmental licensing process in El Salvador, and has an external communications protocol in place as part of the LNG-to-power SEP.

## 4.2 Labor and Working Conditions

### 4.2.a Working Conditions and Management of Worker Relationships

#### 4.2.a.1 Human Resources Policies and Procedures

Approximately 60% of the Keppel's Shipyard workforce are nationals of nearby countries such as Bangladesh, India, Malaysia, and the Philippines. Across the entire workforce, 8% are women. Keppel's corporate HR documentation include: i) a code of conduct; ii) statements on diversity and human rights; iii) the prohibition of withholding of workers' passports; iv) commitments to principles of nondiscrimination; v) commitment to meet national minimum wage; and vi) the prohibition of child and forced labor and harassment. The contract between the sponsor (BW/FSRU Development Pte Ltd.) and Keppel also includes labor rights provisions that Keppel must comply with, relating to forced and child labor, right to organize, non-discrimination, rest periods, and wage payments. Additional documentation with details the specific terms of employment that will be applied for conversion activities (particularly for migrant workers) which should also reflect the impacts of Covid-19 was not available at the time of the ESDD.

The 2006 Maritime Labor Convention (MLC) establishes the labor standards that all ships sailing the flag of ratified states need to meet, pertaining to topics such as minimum age, terms of employment, accommodation facilities, medical care, and social security. The BW Tatiana meets all requirements of the Certificate of Maritime Compliance (CMC), based on the owner's existing manuals and procedures.

EDP has a corporate HR policy, as well as a HR policy that is applicable to contractors, subcontractors, and its supply chain, that comply with PS-2 requirements.

#### 4.2.a.2 Working Conditions and Terms of Employment

The LNG-to-power project ESIA indicates that approximately 100 full time staff will be required to operate the overall Project, with a minimum of 28 crew expected for the FSRU. While EDP has a local hiring plan and is committed to maximizing local employment opportunities, the crew will mainly comprise overseas workers.

During FSRU operations, crew will be stationed on the ship during the "on" rotations, while being based on land during the "off" rotations. Each rotation will last a fixed number of weeks. During "off" rotations, non-local workers will be based at home and no local accommodation will be provided.

Migrant workers in Singapore are vulnerable to labor rights abuses such as lack of adequate health and safety equipment and training, adequate and clean accommodation facilities, wage deductions, poor pay, excessive work hours, and inability to change employers. Shipyard workers receive some of the lowest wages in the country and, in case of migrant workers, there are usually recruitment fees that must be paid to brokers. Keppel's corporate HR management policies and procedures are considered appropriate and include human rights commitments. Keppel's internal HR management procedures also comply with Singapore's Ministry of Manpower (MOM) requirements. No allegations of labor rights violations were found during the ESDD. Standard working hours at the shipyard include a day shift and night shift per day. Onsite worker facilities include a canteen, rest area, and toilet cubicles/changing rooms. BW's HSE manual requires inspections of contractors to verify working

conditions relating to night work and work near hazardous areas, which will be locally enforced through their HSEQ officer.

Most of the vessel's junior workforce will be sourced from the Philippines and India, while senior officers from Europe and India. This aiming at predominantly using existing seafarers employed within the BW LNG fleet. Based on documentation provided, sufficient management procedures are in place to handle working conditions and terms of employment in line with PS-2. Working hours are to be set as per the applicable collective bargaining agreements (CBAs).

For the Preparation works and operation, EDP has developed a local hiring plan to maximize employment opportunities for local workers, which complies with the requirements of PS-2. For operations, crew member/s will be mostly foreign.

#### 4.2.a.3 Workers' Accommodation

Approximately 200,000 migrant workers reside in 43 dormitories in Singapore. There have been reports by residents of cramped, unsanitary conditions in some accommodation facilities provided by employers. This was compounded by the Covid-19 outbreaks that occurred in such complexes in April 2020, when some residents were placed in temporary accommodation facilities to contain the spread.

Keppel Shipyard workers are housed in three dormitories located between approximately 7 to 17km away from site. These facilities have residential and recreational services available including counselling and canteens, and housekeeping rules. Keppel Shipyard experienced two covid-19 outbreaks in April and June 2020. The Shipyard has adopted MOM's "Advisory for dormitory operators on implementation of Safe Living measures in foreign worker dormitories", which requires measures such as tightened control of entry, strengthened health monitoring and contact tracing, to minimize transmission risks. Workers have continued to be paid basic salaries during the accommodation lockdown imposed by the government and are able to get in touch with Keppel's housing management team to file grievances or requests.

For the transport, each crew member has its own cabin with bathroom and shower facilities, and full meals that are served daily. Stringent procedures are in place to maintain hygienic standards onboard and minimize Covid-19 risks. BW works in partnership with a variety of global partners for travel, medical and insurance support, to ensure that crew changes and medical emergencies are handled efficiently when covid-19 causes delays or challenges in repatriation.

#### 4.2.a.4 Workers' Organizations

Anti-union discrimination is prohibited in Singapore. However, certain limitations are in place for migrant workers<sup>3</sup>. The Keppel Employees Union is active on site, and there are appropriate corporate provisions in place to allow union participation.

Marshall Islands, flag state for the vessel, allow for the general right to associate and all crew members will have contracts as per collective bargaining agreements.

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<sup>3</sup> Such as not being able to serve as officers/trustees/staff of unions without prior approval

EDP's HR policy and procedures include statements of the rights of workers to organize. El Salvador allows for the right of workers to organize and associate. The crew members will not be part of any local union in El Salvador, but all have contracts supported by various collective bargaining agreements that will apply during operations, the same as during the transport phase

#### 4.2.a.5 Non-discrimination and Equal Opportunity

Keppel's corporate HR documentation include commitments to principles of non-discrimination in recruitment and employment practices. BW's HR resourcing plan includes non-discrimination principles for recruitment processes. EDP's HR policies as well as the local hiring plan include commitments to non-discrimination and equal opportunities for recruitment processes.

#### 4.2.a.6 Retrenchment

Retrenchment is not anticipated for the Conversion, Transport and Preparation and Operation phases since most of the workers will be rehired. However, EDP's HR policies include commitments to undertaking a retrenchment planning process if necessary.

#### 4.2.a.7 Grievance Mechanism

Keppel's whistleblowing policy and 24-hour crisis helpline are in place to manage worker grievances and issues, with cases reviewed on a weekly basis by the HR Department and management. Claims can be submitted either via a hotline, online or email. Workers can also refer disputes or complaints to the union representatives, or directly contact MOM.

BW has an onboard complaints procedure, in line with the IMO requirements for the safeguarding of confidentiality and protection of claimants from retribution.

A worker grievance mechanism compliant with PS-2 has been put in place by EDP.

### 4.2.b Protecting the Workforce

#### 4.2.b.1 Child Labor

Despite Singapore's Employment Act allows children aged 14 to 16 to work (with certain restrictions) in industrial activities if medically deemed to be fit, Keppel has a corporate commitment not to employ child labor.

BW's resourcing plan commits to not employing persons under the age of 18 if they are not part of a cadet training program.

El Salvador has set the minimum age of work at 14 for non-dangerous occupations and 18 for dangerous occupations. Child labor appears to be prevalent in the country's agricultural sector and industry. EDP's HR policies also include clear commitments to not employing any child labor and monitoring its supply chain for risks associated with this issue.

#### 4.2.b.2 Forced Labor

Slavery and forced labor are prohibited under Singapore's Constitution. Keppel has corporate policies that commit to not employing forced labor, and monitoring procedures in place to verify this on site. BW corporate HR policies and contract documentation commits also to not employing forced labor<sup>4</sup>.

While forced labor and slavery is illegal in El Salvador, it seldom occurs in the agricultural and industry sector. Notwithstanding, EDP's HR policy includes a commitment not to not use forced labor and to monitoring its supply chain for risks associated with this issue.

#### 4.2.c Occupational Health and Safety

Singaporean health and safety regulations include governmental notification and registration requirements that cover shipyards as industrial sites. The ESDD documentation review demonstrates alignment with the regulatory requirements applicable to shipyards.

Keppel has: i) a HSE policy; ii) a project-specific HSE plan; iii) performance measurement and monitoring procedures; iv) occupational health and safety (OHS) program and plans; and v) a training plan, with details on mitigation of specific OHS hazards such as heat stress, fatigue and traffic, and topics of training to be provided<sup>5</sup>; which are deemed to be appropriate for the scope and nature of the Shipyard conversion activities to take place.

The shipyard area, located in an industrial site with no nearby communities, has worker rest areas and onsite medical facilities available.

BW has an OHS policy, a HSE plan template, a contingency procedure, a risk matrix, a training matrix, a Covid-19 management guidelines and performance, and monitoring procedures, which provide appropriate details on management and monitoring of relevant OHS risks and measures to be taken in case of different types of OHS incidents. BW's preliminary EHS plan includes general guidelines for the reduction of continuous exposure to noise; these measures will be further elaborated in the final EHS plan.

EDP has developed and is implementing a health and safety management plan, a HSE policy, a hazard register, and training and awareness plans (amongst others). Policies and procedures to manage risks associated with Covid-19 have also been developed based on guidance from the World Health Organization (WHO).

#### 4.2.d Workers Engaged by Third Parties

Keppel will supply a sample of HR and labor documents applicable for third party workers for review. All seafarers on board will be subject to BW's HR policies and procedures. EDP has an HR policy that applies to contractors, subcontractors and suppliers that is considered compliant to PS-2.

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<sup>4</sup> In the context of maritime shipping, cases of forced labor typically entail seafarers not receiving financial support with costs of repatriation or maintenance, or failure to pay wages for at least two months.

<sup>5</sup> Such as working in confined spaces, handling hazardous materials (HAZMATs) and marine metal scaffolding, among other.

### 4.3 Resource Efficiency and Pollution Prevention

#### 4.3.a Resource Efficiency (water and fuel consumption)

The conversion phase is not considered water or fuel intensive and is therefore considered a low risk item (i.e. a Project-specific resource efficiency plan is not necessary).

The LNG carrier has a Ship Energy Efficiently and Management Plan (SEEMP) in compliance with regulation 5.4 of Annex VI of MARPOL, that has received the international energy efficiency (IEE) certificate issued in June 2020.

For the preparation works and operation, a freshwater generator of approximately 45 tons per day (t/d) will be installed to supply the needs of personnel on board and for engine boilers. The FSRU will generate 6t/d of fresh water for personnel needs. Seawater will be used for the regasification and cooling process and it will be returned to the sea. A flow of approximately 10,000m<sup>3</sup>/h will be used for regasification and 1200m<sup>3</sup>/h for cooling of the engines. EDP has prepared a water use and monitoring plan which includes the FSRU.

##### 4.3.a.1 Greenhouse Gases

The GHG emissions of the Project during the conversion phase are low and hence not relevant.

In line with MARPOL<sup>6</sup> considerations to control GHG emissions, the LNG carrier has a SEEMP in compliance and has received the IEE certificate issued in June 2020.

The ESIA for the LNG-to-Power project includes a quantification of annual GHG emissions during operations for an FSU, which adopted conservative approach i.e. a worst-case scenario using fuel oil for its operation instead of natural gas, which is the actual fuel that will be used<sup>7</sup>. EDP has a commitment for quantifying annual GHG emissions during the operational phase of the LNG-to-Power project and this will include the FSRU.

#### 4.3.b Pollution Prevention

##### 4.3.b.1 Wastewater/Effluents

Keppel's environmental operational control plan includes specifications to manage wastewater and minimize water pollution, including prohibitions to discharge oil mixtures into the sea, use of drainage systems with treatment tanks in the workshops, and control measures to reduce discharge of contaminated dock water and other residues into the sea. The conversion activities are not considered to generate large amounts of effluents, and therefore this item is of low risk.

BW Tatiana has received the international sewage pollution prevention certificate as well as the international ballasts water management certificate, in alignment with the corresponding international maritime conventions of IMO.

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<sup>6</sup> Regulation 5.4 of Annex VI

<sup>7</sup> The calculations were conducted in line with Good International Industry Practice ("GIIP"), and the results showed an estimated annual GHG emission of between 26.89 and 36.17 kilotons (kt) of carbon dioxide (CO<sub>2</sub>) equivalent CO<sub>2e</sub> (kt/year), which is above the 25 CO<sub>2e</sub> (kt/year) threshold established by PS3. The ESIA Addendum, where the FSRU was evaluated as the final alternative, used the GHG calculations presented for the FSU. The use of natural gas by the FSRU would alter the CO<sub>2e</sub> kt/year results to below the IFC threshold.

The main sources of wastewater/effluents for the Project during operation include cooling and regasification water, desalination brine, sanitary wastewater and stormwater runoff<sup>8</sup>. Approximately, 11,200m<sup>3</sup>/h of seawater are to be discharged from regasification and cooling activities at  $\pm 5^{\circ}\text{C}$  from ambient seawater temperature. The FSRU will have a wastewater treatment unit with a 14-day storage capacity. It is estimated that 7m<sup>3</sup>/day will be discharges in accordance with MARPOL 73/78 Annex C specifications and national requirements, which is considered in alignment PS-3.

#### 4.3.b.2 Thermal Water Plumes

During the operation of the FSRU a flow of about 10,000 m<sup>3</sup>/h of cooled seawater (approx. 5°C colder) will be released into the surrounding waters. The cooling of the engines will require roughly 1,200 m<sup>3</sup>/h of seawater that will be returned to the sea 5°C warmer. Dispersion analysis prepared for EDP confirmed that the warm and cold discharges from the FSRU will allow maximum mixing of the thermal plume to ensure that the temperature is within 3°C of ambient temperature at the edge of the mixing zone, as indicated in WBG EHS guidelines for LNG<sup>9</sup>.

#### 4.3.b.3 Solid Waste & Hazardous Materials Management

Keppel has a procedure for managing waste in the yard aligned with PS-3. The shipyard also has guidelines and a plan for the management of HAZMATs, which include requirements for the registry storage, control, and movement as well as a list of prohibited substances, keeping an inventory and registries of all hazardous material used in the yard. Safety data sheets (SDS) accompany the delivery of any hazardous substance purchases. The use of chlorofluorocarbons (CFCs), halon and ozone depleting substances is prohibited in the yard.

BW has guidelines for its shipyard contractors, including maintaining strict control and monitoring of combustible materials and cleaning solvents at the work sites, review of SDS, and implementation of proper procedures to handle and work with HAZMATs.

The BW Tatiana has a garbage management plan and a garbage record book that comply with MARPOL 73/78. The vessel also possesses international certificates of: i) fitness for the carriage of liquefied gases in bulk; and ii) oil pollution prevention (IOPP) in alignment with MARPOL. BW's preliminary HSE plan for the FSRU states that procedures for the prevention of pollution will be maintained to avoid incidents that can cause damage to the environment.

EDP has prepared: i) a preliminary EHS management plan for the operation of the FSRU; ii) a waste management plan applicable to the preparation works of the FSRU; and iii) a HAZMATs management plan that is applicable to all the activities related to the LNG-to-Power project including the FSRU.

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<sup>8</sup> EDP has prepared a liquid effluents management and monitoring plan for the construction and commissioning phases of the LNG to Power project, which includes general guidelines for the management of effluents from the pipeline's hydrostatic testing activities, which will be conducted as part of commissioning activities for the gas pipeline.

<sup>9</sup> The study is conservative because it was based on the early FSRU design which included a cofferdam structure. The ambient sea water temperature used was 28°C and the cold-water temperature at the point source, i.e. the outfall, was 23°C (delta -5°C from ambient); the warm-water temperature at outflow is also delta +5°C from ambient. The warm water plume impacts the first 2-3m deep layer and dissipates quickly i.e. the water temperature is less than 0.5°C from ambient within 70m from the FSRU outflow. Cold water, being denser, tends to sink; the plume stays within a 2m bottom layer and the temperature is within 0.5°C of ambient within 250m from the FSRU.

#### 4.3.b.4 Air Quality and Atmospheric Emissions

A Project-specific resource air quality and emission plan has not yet been prepared for the conversion phase of the Project. However, the main sources of emissions during conversion are expected to include those produced by heavy equipment, vehicles, machinery, engine generators, gas compressors, open air grit blasting, etc. BW has an overarching ESMP to guide the conversion contractor. Keppel also has an environmental operational control plan, which includes general specifications to minimize air pollution.

The LNG carrier has received the International Air Pollution Prevention Certificate (IAPP), which was issued in June 2020 in alignment with Annex VI of MARPOL.

Overall the air quality risks from FSRU operations are generally low, as it has relatively small emission sources, and it is located far enough from the shore that the emissions will have a negligible effect at sensitive receptors for which air quality standards are set.

EDP's proposed monitoring plan for the LNG-to-power project (which includes the plant and the FSRU) will need to be updated to confirm the monitoring requirements in accordance with the WBG EHS guidelines<sup>10</sup>.

#### 4.3.b.5 Noise

The operations of the FSRU will generate permanent underwater noise impacts from pumping equipment to transfer the gas to the pipeline, and temporary noise from moored LNG carriers while ship-to-ship LNG transfers occur. However, noise impacts to aquatic biota and to the protected marine area (located at ~4.5km) are considered to be low and localized.

Preparatory marine works related to the construction of the subsea pipeline by EDP will also generate temporary underwater noise impacts<sup>11</sup>. EDP's ESMP for the LNG-to-power project includes a noise, vibration and air quality management plan with general mitigation measures and controls for the drilling activities such as the implementation of low noise and vibration drilling techniques, verification of the presence of divers and marine mammals before drilling activities, use of soft start drilling tasks, and delay of drilling activities if divers or marine mammals are detected within the marine mitigation zone.

### 4.4 Community Health, Safety and Security

#### 4.4.a Community Health and Safety (CHS)

Conversion activities will take place in Tuas Yard, an existing Shipyard in the Jurong Industrial Estate, the largest industrial estate in Singapore. CHS risks generally associated with port activities such as

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<sup>10</sup> The current air quality assessment does not confirm if the emission performance of the FSRU's dual fuel combustion engine meets the emission guidelines set out with the WBG EHS General Guidelines, which are applicable for engines with a thermal input between 3-50MW.

<sup>11</sup> These activities (directional drilling) are not usually associated with very high levels of underwater noise. Based on the marine baseline information provided in the LNG-to-power ESIA, there are no particularly sensitive species (e.g. turtles, mammals) in the immediate vicinity of the nearshore approach to the pipeline site that might display avoidance behavior during drilling. The risk of underwater noise impact on people and communities, which are located at approximately 1km from the construction activity, is also considered low

marine safety, visual impact and noise and air pollution are therefore not considered to be significant for the specific conversion activities.

General potential CHS risks associated with shipping activities as per WB EHS Guidelines include transmission of communicable disease through ballast water discharge, exposure to HAZMATs, and risk of fire or explosion. However, the likelihood of these risks is considered quite low for this journey given that the transit route is industrial and encounters with non-industrial vessels are not expected.

The cooldown of the FSRU's LNG tanks and initial fill with LNG will be done at site in the Port of Acajutla. The cooling down process of the can produce significant amounts of boil-off gas (BOG) that will need to be managed adequately, so as to prevent a release of natural gas to the atmosphere that could pose a potential safety risk due to a flammable methane vapor cloud. Management of BOG for the FSRU will involve a gas combustion unit (GCU) which, in combination with the onboard engines and the LNGC, will combust the BOG generated during the cooldown process<sup>12</sup>. The management of BOG during operation of the FSRU is aligned to the IFC EHS Guidelines for LNG Facilities.

Potential CHS risks that might appear during the FSRU normal operations include risks of port marine safety, security, and risks of marine traffic collisions between fishermen and vessels (especially if exclusion zones are disregarded), as well as risks arising from accidents, blowout, loss of containment and spills.

The LNG-to-power ESIA indicates that CHS risks will primarily be related to noise pollution and air pollution, both of which, according to the assessment study included in the ESIA, are within acceptable limits. Various mitigation measures were discussed with between MARN, EDP and the Port of Acajutla to identify and minimize these risks<sup>13</sup>.

#### 4.4.a.1 Infrastructure and Equipment Design and Safety and Community Exposure to Hazardous Materials

No CHS impacts associated with these aspects are expected as the conversion activities will take place in a major industrial area. Also, no CHS impacts are expected as a transit route commonly used by industrial vessels will be used for the journey. The HSE plan template requires development of Project-specific procedures to prevent and mitigate incidents of oil spills, and to manage sewage and waste in compliance with MARPOL requirements.

No CHS impacts associated with the preparation and operation stage are expected as the FSRU is located near an existing port facility, and a 300m exclusion zone will be implemented around the marine terminal. The HSE plan needs to be expanded to include Project-specific procedures around incidents of sewage, waste, and oil spills.

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<sup>12</sup> At the time of writing of this report, it has not yet been determined whether the BW Tatiana will sail from Singapore unloaded or partially loaded with LNG, which influences the cooling down process at Acajutla. Management of BOG also involves slowing down the cooling rate such that the GCU can fully combust the methane gas produced during the cooldown of the FSRU.

<sup>13</sup> Noise from moored ships affecting the community has been evaluated in conjunction with the noise impacts of the Plant as part of the ESIA. The noise impacts are relatively minor with respect to the port operations in the area. Moreover, the FSRU lease agreement states that noise requirements are 55 dBA at 250 m from the FSRU in a line between the center of the FSRU to a specified onshore receptor.

#### 4.4.a.2 Ecosystem Services

No CHS impact on ecosystem services is expected as the conversion activities will take place in a major industrial area. Also, no impact is envisaged during transportation given that a transit route commonly used by industrial vessels will be used for the journey.

Nearby fishermen harvest seafood from Project affected areas and will be affected by the establishment of the FSRU and the associated exclusion zones. A fishermen livelihood restoration plan (LRP) has been developed by EDP to mitigate these impacts.

#### 4.4.a.3 Community Exposure to Disease and Other Risks

The existing Shipyard workforce who will work on the conversion Project already reside in workers' dormitories nearby. As detailed in section 4.2.a.3, there have been Covid-19 outbreaks within Keppel Shipyard accommodation facilities. While the Shipyard and accommodation are in an industrial area, there is still a likelihood of transmission to the wider local communities as workers move around the city. However, as of the date of this report the accommodation facilities continue to be in lockdown as mandated by authorities. Thus, the risk of transmission from the facilities to wider Singapore is low at this time, and a gradual relaxation of measures will also have to follow government sanitary instructions and procedures in place to minimize transmission within the accommodation facilities and in wider Singapore.

No crew change will take place in route. A BW crew management plan details the training, self-isolation and social distancing measures required for all crew members before embarkment and following disembarkment. The provisions are considered adequate to address potential CHS risks arising from transmission of Covid-19.

The LNG-to-power project aims at maximizing local employment for operations, which reduces the risks of community exposure to disease. EDP has prepared and adopted measures to minimize risk of contagion aligned with WHO guidelines and described in the Covid-19 contingency management plan and procedures.

#### 4.4.a.4 Emergency Preparedness and Response

Keppel's emergency response plan identifies roles and responsibilities, emergency contact details including local authorities and medical facilities, drills and types of emergencies and actions to be taken.

An emergency plan template is available for Project-specific updating prior to commencement of the transportation journey.

A framework EPRP has been developed by EDP and will need to be further enhanced to incorporate the FSRU.

#### 4.4.b Security Personnel

Keppel's security department manages security and surveillance of the shipyard, with port facilities regulated by Singapore's Maritime Port of Authority and the Singapore Police Force's coast guard. Management procedures include controlled access via passes, induction processes for vessel officers, patrols throughout office buildings, shipyard and shoreline, loss prevention operations, security

awareness briefings for workers and posters across the site, CCTV surveillance through 300 security cameras, incident logging and security drills.

Piracy and robbery risks may arise in the transit route from Singapore to El Salvador. BW's corporate security requirements for vessels include security risk assessments, individual roles and responsibilities, due diligence for the selection of the Private Maritime Security Contractor ("PMSC"), management and monitoring of the PMSC's performance, and preparation of the vessel for anti-piracy protection. Although route-specific planning will be required, the latter documentation is considered sufficient considering the risks associated with the route.

The FSRU will develop a detailed security plan in line with the SOLAS (Safety of Life at Sea) convention and its associated ISPS regulations (Transnational Ship and Port Facility Code). EDP has developed a detailed security management plan for the operation phase of the power plant, which will need to incorporate the FSRU security plan once this becomes available.

#### **4.5 Land Acquisition and Involuntary Resettlement**

##### 4.5.a Project Design, Impact Analysis and Consultation

No land acquisition will take place given that the conversion is being carried out in an existing shipyard.

According to the LNG-to-power ESIA, various alternative project options were considered as part of the design, and the option with the least impact that meets the required deadlines was selected. Displacement impacts were considered as part of the options analysis. Extensive consultation was undertaken with the affected fishermen to inform them of the project and its likely impacts (e.g. exclusion zone). Further consultation was held to develop the fishermen's LRP. Ongoing consultation regarding the exclusion zone will be required.

##### 4.5.b LRP and Resettlement Action Plan (RAP) implementation

The fishermen's LRP is a detailed document that meets the requirements of PS-5. At the time of the preparation of this document a census of the potential affected fishermen was being undertaken.

#### **4.6 Biodiversity Conservation and Sustainable Management of Living Natural Resources**

##### 4.6.a Marine Biodiversity Baseline and Impact Assessment and Conservation of Biodiversity

Marine baseline studies were conducted by EDP as part of the ESIA for the LNG-to-power project, and a first draft Marine Biodiversity Management Plan (MBMP) developed in early 2020. Some key observations from the studies include presence of: i) the hawksbill turtle inhabits coastal areas where they feed on coastal sedentary organisms, increasing the potential for impact by the FSRU's plumes from cooling and regasification systems; ii) an IUCN listed endangered species of sea cucumber (*Isostichopus fuscus*); and iii) the sierra fish (*Pristis pristis*), critically endangered globally on the IUCN Red List. However, the ESIA provides insufficient information on the specific habitats where the FSRU will be moored, such as potential occurrence of seagrass beds (which provide important ecosystem services) which would be impacted by currents carrying resuspended sediments from the pipeline dredging area.

The designed chest shell for the FSRU seawater intake will have a mesh size of 25x12mm. This shell will prevent the entrapment of fish and other marine organisms (although some might be impacted by the suction effects). The most important impact will occur on smaller (planktonic) organisms, including fish eggs and larvae. Current available information is insufficient to determine if those larvae are from coral reef species or of protected fish species under conservation laws. Hence, a better understanding of the impacts is needed through additional plankton surveys around the FSRU, particularly during the reproductive season of reef fishes but also prior to construction activities (mooring installation).

#### 4.6.b Invasive Alien Species

The project has received the international ballasts water management certificate, in alignment with the Ballast Water Convention of IMO, in June 2020<sup>14</sup>.

### 5. Local Access of Project Documentation

The information about the LNG-to-power project can be accessed in the link: <http://www.energiadelpacifico.com/>; about the sponsors BW (<https://www.bw-group.com/>) and Invenergy (<https://invenergyllc.com/>). The BW Tatiana:

[https://www.marinetraffic.com/en/ais/details/ships/shipid:728700/mmsi:538008991/imo:9236626/vessel:BW\\_TATIANA](https://www.marinetraffic.com/en/ais/details/ships/shipid:728700/mmsi:538008991/imo:9236626/vessel:BW_TATIANA)

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<sup>14</sup> Ballast water is an essential safety component for the stability of unladen ships in open waters. However, ballast waters also represent an environmental risk since the intake of coastal waters in one location could represent a vector for the transport of invasive species to other destinations. IMO has adopted the international ballast water management convention, known as the BWM Convention. Compliance with the IMO BWM Convention is a legally binding requirement and adherence to its guidelines is necessary to operate in the maritime sectors.