Annual Work Plan and Budget 2017

Annex 5. Environmental Management System

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Investing in Infrastructure (3i), Cambodia

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Acronyms and abbreviations

3i	Investing in Infrastructure
AWP	Annual work plan
DFAT	Department of Foreign Affairs and Trade
EA	Environmental assessment
EIA	Environmental impact assessment
EMP	Environmental management plan
EMS	Environmental management system
EPBC	Environmental Protection and Biodiversity Conservation Act 1999
EPP	Environmental protection policy
IEIA	Initial environmental impact assessment
MIS	Management information system
MAFF	Ministry of Agriculture, Forestry and Fisheries
MoE	Ministry of Environment
MoWRAM	Ministry of Water Resources and Meteorology
PCB	Polychlorinated biphenyls
PSP	Private sector partner
RCG	Royal Government of Cambodia
UXO	Unexploded ordinance (munitions)
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation

Definitions

Term	Definition
Climate change	A change in the state of the climate that can be identified (for example, by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC 2007).
Disaster risk reduction	The concept and practice of reducing disaster risks (such as floods, storm surge, earthquakes, cyclones, etc) through systematic efforts to analyse and manage the causal factors of disasters by, for example, reducing exposure to hazards, lessening the vulnerability of people and property, wisely managing land and the environment, and improving people's preparedness for adverse events (United Nations (UN) International Strategy for Disaster Reduction 2009).
Environment	The *EPBC Act* defines the environment as: a) ecosystems and their constituent parts, including people and communities b) natural and physical resources c) qualities and characteristics of locations, places and areas d) heritage values of places e) social, economic and cultural aspects of a thing mentioned in a, b, c or d.
Environmental Assessment (EA)	An EA is a process of environmental analysis to assess the environmental risks associated with a project; it is a relatively simple exercise used for projects that are less complex and risky than those requiring a full EIA. The purpose of an EA is to confirm the findings of the environmental screening, determine if a more comprehensive EIA is needed, and inform the EMP. An EA is most often appropriate if there is potential for a negative environment impact of a size and type that can be readily identified and is unlikely to be 'significant'.
Environmental Impact Assessment (EIA)	An Environmental Impact Assessment (EIA) is a detailed and in-depth study undertaken by an appropriately qualified expert that identifies and evaluates the foreseeable environmental impacts of a proposed activity. An EIA concludes with an expert opinion on whether the activity should go ahead based on the foreseeable environmental impacts and if so, how these impacts should be mitigated and managed.
Environmental Management Plan (EMP)	An EMP is used to outline how environmental risks identified in the EA (or EIA if one is prepared) will be managed and mitigated. It will identify who is responsible for implementation and specify conditions to be included in the PSP contract. The EMP describes how monitoring, trigger points and corrective actions will be undertaken and reported on. The depth and coverage of the EMP should be proportionate to the complexity and risk of the project.

Term	Definition
Environmental impact	Any direct or indirect change to the environment, whether negative or positive, or wholly or partly resulting from one or more activities. This may involve cumulative or combined changes to the environment (AusAID 2012).
Direct impact	A change (physical, chemical or biological) to the environment because of an activity (for example, building a road, funding an irrigation canal, establishing a waste-water system, protecting natural resources, or introducing a plant or animal species (AusAID 2012).
Indirect impact	Where changes in policy or behaviour flowing from an activity will affect the environment in the future or 'downstream' (for example, designing a road system, funding land titling, providing environment education, or strengthening an institution in the natural resource sector) (AusAID 2012).
Positive impact	A beneficial environment outcome (for example, increased biodiversity or better health as a result of a clean water supply) (AusAID 2012).
Negative impact	An adverse environment outcome (for example, a contaminated water table from sewage systems, erosion from poorly planned infrastructure activities, or decimation of existing vegetation through the introduction of livestock). Such outcomes can sometimes be irreversible and have a chain of impact on poverty, such as poor health or a reduction in livelihood potential (AusAID 2012).
Environmental integration	The incorporation of environmental considerations, including climate change and disaster risk reduction, into policies, programs and related activities. It requires the incorporation of environment decision-making into core institutional thinking.
Environmental screening	An initial systematic approach to document the environmental effects of a proposed project; can be used to recommend if further assessment and planning is required.
Impact	Impact is what will happen if the 'Risk' occurs (or 'eventuates'). See also 'Risk'.
Facility	In the context of this EMS, a facility is the combined, jointly funded infrastructure project, and constitutes both the 3i and PSP funded components.
Initial Environmental Impact Assessment (IEIA)	A specific type of EIA as described by the Cambodian EIA sub-decree.
Private sector partner	Private sector organisation or company who works with 3i through a co-funded investment agreement.
Project	In the context of this 3i EMS, a project refers to a single infrastructure project that is co-funded between 3i and a private sector partner (PSP). A project will have a specific start and end point and is intended to accomplish a specific objective.
Risk	Risk is an event that may or may not happen and expose (someone or something valued) to danger, harm, or loss. Also see 'Impact'.

Term	Definition
Safeguards	Operational policies put in place to prevent or mitigate adverse impacts of projects or programs on people and the environment.
Significant impact	This term has special meaning under the *EPBC Act* and for the Australian aid program. A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts. All of these factors should be considered when determining if an action is likely to have a significant impact on the environment. For guidance on how to determine 'significant impact' see the Department of the Environment document entitled "*Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies - Significant Impact Guidelines 1.2 Environment Protection and Biodiversity Conservation Act 1999*".

1. Introduction

1.1 Program background

Investing in Infrastructure (3i) is a five year, nationwide, social investment program funded by the Australian Government and being implemented by Palladium International. The program is designed to promote and catalyse business growth in the infrastructure sector of Cambodia. It will expand the delivery of key infrastructure services by partnering with the private sector to expand household and business access to utilities and other services. This will create new enterprise opportunities in rural towns and more remote parts of Cambodia, and will generate health and welfare benefits for Cambodians, including the poor[1].

Initial partnerships will be with businesses in the drinking water and electricity sectors where the potential is already proven.

3i will catalyse business investments in ways that incentivise them to expand service coverage as rapidly as possible, and to sustainably operate and maintain the systems to the highest standards. The program will achieve this through three models of partnership with businesses and other actors in chosen sectors:

1. Co-funding infrastructure in direct partnership with private operators
2. Facilitating co-investment with private equity and/or social impact funds
3. Catalytic interventions to address infrastructure market constraints.

1.2 Head contract requirements

As per the head contract with the Department of Foreign Affairs and Trade (DFAT), 3i is required to develop an Environmental Management System (EMS) that is consistent with the *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)*[2] and the Environment Protection Policy for the Aid Program (DFAT 2014b)[3]. This EMS is to be submitted prior to the first investment commencing and thereafter updated with the Annual Work Plan (AWP).

1.3 Desired outcomes

As a result of this EMS, the 3i team will have:

1. A comprehensive system that meets DFAT and head contract requirements and is fully compliant with the EPBC Act, Australian aid environmental policy and national environmental laws.
2. A comprehensive environmental screening checklist and procedure that can be used to assess risks and impacts of infrastructure projects.
3. A system that identifies and manages negative environmental impacts (if any) so that interventions and projects do not lead to unacceptable environmental and social effects and where possible contribute to positive environmental and social outcomes.
4. A system that identifies potential positive environmental and social impacts and that can be used to showcase the benefits of the program.

[1] DFAT (2014a) 3i Program Design Document - http://dfat.gov.au/about-us/grants-tenders-funding/tenders/business-notifications/Pages/proposed-program-in-cambodia-3i-investing-in-infrastructure-investment-design.aspx

[2] https://www.environment.gov.au/epbc

[3] http://dfat.gov.au/about-us/publications/Pages/environment-protection-policy-aid-program.aspx

5. A system whereby environmental and social considerations are integrated into the 3i project management cycle, planning and day-to-day operations.
6. Greater awareness and understanding about environmental management and particularly the Cambodian and Australian Government laws and policies that influence infrastructure development.

1.4 Structure of the EMS

The EMS is structured as follows:

- Section 1 introduces the program and the aims and structure of the EMS.
- Section 2 outlines the legal and policy context including an overview of how the Australian policies and laws, and Cambodian laws affect the program.
- Section 3 explains what is covered and what is outside the scope of the EMS.
- Section 4 describes the broad design principles of 3i and the implications for environmental management.
- Section 5 identifies the inherent environmental risks associated with typical 3i projects.
- Section 6 provides an overview of how environmental management will be undertaken and integrated with the 3i project management cycle.
- Section 7 describes the environmental management process that 3i staff are to follow when assessing a new project. It explains how risks will be identified and assessed in the places where 3i supports infrastructure projects, and how negative impacts will be prevented, mitigated, monitored and reported.

A series of **annexes** support the main body of the EMS and include:

1. EIA process as per Cambodian law.
2. Environmental screening list that identifies activities subject to environmental impact assessment (EIA) as per Cambodian law.
3. Environmental management checklist: the checklist is the core of the 3i EMS and enables staff and managers to identify the environmental risks and potential positive outcomes of each intervention. The checklist also enables managers to determine what, if any, additional actions are required to comply with legislation and policy and minimise environmental impacts.
4. Site inspection and monitoring plan template for use by 3i staff when monitoring projects.
5. Characteristics and application of EIA, environmental assessment (EA) and environmental management plans (EMP).
6. Compendium: this is a separate resource document that includes important information (legislation and maps) that staff and managers can access and use when completing the environmental management checklist.
7. Further guidance on significant impact procedures under Australian law.

2. Legal and policy context

2.1 Australian legislation

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is Australia's principal legislation for the protection of the environment. It governs the environmental management of any programs and projects funded under the Australian aid program by DFAT.

The EPBC Act defines the environment as:

a) ecosystems and their constituent parts, including people and communities
b) natural and physical resources
c) qualities and characteristics of locations, places and areas
d) heritage values of places
e) social, economic and cultural aspects of a thing mentioned in a, b, c or d.

This definition recognises that biological and physical surroundings are not isolated from people and the way people interact with their surroundings.

Under the EPBC Act, proposed actions, following avoidance and mitigation (with a degree of certainty), that are *likely* to have a 'significant impact' on the environment may require a referral to the Australian Minister for the Environment for advice. A 'significant impact' is one that is important, notable or of consequence, depending on:

- the sensitivity, value and quality of the environment, and
- the intensity, duration, magnitude and geographic extent of the impact.

Guidelines are available for interpretation in this complex area (refer Annex 7; DSWEPC 2013).

Australia has legal obligations under a number of international agreements that also apply to DFAT-funded programs. Table 1 outlines the agreements to which the Australian and Cambodian governments are signatory and that are relevant for 3i.

Table 1. International agreements ratified by Australia and Cambodia

Agreement	Year of ratification	
	Australia	Cambodia
Convention on Biological Diversity	1993	2003
United Nations Framework Convention on Climate Change	1994	1995
UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage	1974	1991
Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar convention)	1975	1999
Convention on the Conservation of Migratory Species of Wild Animals	1991	-
Agreement on the Cooperation for the Sustainable Development of the Mekong River Basin	NA	1995
Convention on International Trade in Endangered Species of Wild Fauna and Flora	1976	1997

2.2 DFAT policies and procedures

As one of DFAT's funded programs, 3i operates within the provisions of the 2014 environmental protection policy (EPP) on Australia's aid (DFAT 2014a). This policy outlines the requirements of development programs to help Australia meet its legal and policy obligations and apply best practice in environmental management.

The EPP uses six principles as follows:

- Principle 1: Do no harm
- Principle 2: Assess and manage environmental risk and impact
- Principle 3: Disclose information transparently
- Principle 4: Consult stakeholders
- Principle 5: Work with partners
- Principle 6: Promote improved environmental outcomes.

The Australian Government requires that climate change and disaster risk management considerations be factored into the design of new interventions. The 3i EMS integrates environmental considerations with climate change and disaster risk reduction under one framework. The environmental management processes described in Section 7 details broad screening questions designed to help managers identify these issues early in the assessment of a project.

Implementation of the EPP is supported by a series of *Good Practice Notes for Environmental Protection,* which provide guidance about compliance with the policy principles[4]. The seven notes covering assessment and management of environmental risk and impact (principle 2) are particularly useful (DFAT 2015a-h). The policy is further supported by Operational Procedures for DFAT's Environment Protection Policy (DFAT 2014c).

The Environment Management Guide for Australia's Aid Program (AusAID 2012), although replaced by the EPP, still provides very useful ideas and information that, where appropriate, have been incorporated into the 3i EMS.

2.3 National legislation

The Cambodian Government has its own environment legislation, regulations, standards and policies. The Australian Government requires that its aid programs and activities comply with this national legislation. The main legislation that has bearing upon 3i is described below.

Environmental impact assessment

The *Law on Environmental Protection and Natural Resource Management* (1996) regulates the protection of the environment in Cambodia. The *EIA Sub-Decree (1999)* regulates the process of environmental impact assessment, and provides a process overview (Annex 1) and screening list to determine the projects or activities that are subject to the preparation of an Initial or full Environmental Impact Assessment (IEIA and EIA respectively) [5] (Annex 2).

Practical interpretation of the screening list and associated thresholds in the sub-decree (refer Annex 2) indicate that few anticipated 3i projects would ever trigger the need for an EIA under Cambodian law.

[4] Available from http://dfat.gov.au/aid/topics/safeguards-risk-management/environmental-protection/Pages/environmental-protection.aspx

[5] And as further detailed in Prakas No. 49 on Guidelines for Conducting Environmental Impact Assessment Report, 2009

The Ministry of Environment (MoE) have advised that they are preparing an environmental code of which a new regulation on EIA will be part. Once finalised and approved by the RGC (not expected until 2017 at earliest), the 3i EMS may then need to be reviewed and updated.

Other legislation

Other laws and regulations related to environmental safeguarding that are potentially relevant to 3i include the following:

- *Royal Decree on Establishment of Natural Protected Areas* (November 1, 1993)
- *Royal Decree on Establishment of Community Fisheries* (May 29, 2004) (NS/RKT/0505/240)
- *Royal Decree on Establishment of the Tonle Sap Authority* (June 29, 2009) (NS/RKT/0609/705) as amended by Royal Decree (March 24, 2010) (NS/RKT/0310/258)
- *Law on Protection of Cultural Heritage* (January 25, 1996) (NS/RKM/26)
- *Law on Fishery Management for the Kingdom of Cambodia* (May 21, 2006) (NS/RKM/0506/011)
- *Law on Land* (August 30, 2001) (NS/RKM/0801/14)
- *Law on Forest* (August 31, 2002) (NS/RKM/0802/016)
- *Law on Water Resources Management* (June 29, 2007) (NS/RKM/0607/016), subsequent sub-decrees and regulations
- *Law on Protected Areas* (January 02, 2008)
- *Sub-decree on Water Pollution Control* (April 06, 1999) (ANKR/BK/27)
- *Sub-decree on Solid Waste Management* (April 27, 1999) (ANKR/BK/36)
- *Sub-decree on Establishment and Management of Tonle Sap Biosphere Reserve* (April 10, 2001) (NS/RKT/0401/070)
- *Sub-decree on Community Forestry Management* (December 02, 2003) (ANKR/BK/79)
- *Sub-decree on Community Fisheries Management* (March 20, 2007) (25 RGC)
- *Sub-decree on Flooded Forest Demarcation* (August 28, 2011) (ANKR/BK/197).

From an environmental safeguarding perspective, of the above mentioned regulations the EIA Sub-Decree is the most prominent regulation for the implementation of 3i.

Protected areas

The *Royal Decree on Natural Protected Areas* was issued for the RGC to manage, plan and develop a national protected area system for the protection of environment, land, forests, wetlands and the coastal zone. The 23 protected areas in four categories (National Park, Wildlife Sanctuary, Protected Landscape and Multiple Use Area) are under the jurisdiction of the MoE. This system of protected areas is currently under great pressure and increasingly large parts are designated for other purposes such as mining, hydropower development, tourism, entertainment infrastructure and agriculture concessions.

Additional protected areas - protected forests and landscapes, fish sanctuaries and fish habitat conservation areas - are under the control of the Ministry of Agriculture, Forestry and Fisheries (MAFF).

The *Law on Protected Area Management* (2008) applies to all 23 protected areas under the control of the MoE. An 'environmental and social impact assessment' is required for any development activities within or adjacent to the protected areas, and this is to be submitted to MoE.

The Law further identifies four additional categories of protected areas: Ramsar sites[6], biosphere reserves[7], natural heritage sites and marine parks. Each natural protected area is divided into four management zones: core zone, conservation zone, sustainable use zone and community zone.

The *Royal Decree on the Establishment and Management of the Tonle Sap Biosphere Reserve* (2001) established the UNESCO-backed reserve that encompasses the Tonle Sap Lake and its floodplain, including an extensive buffer and transition zone.

Activities that otherwise have little or no inherent environmental risks may still entail significant risks just by virtue of being when located within or in the vicinity of a protected area.

Archaeological and cultural heritage sites

The extensive complex of temples and cultural heritage sites in the Angkor-Siem Reap area are covered by World Heritage Area designation and protected area legislation. The protection of historical temples in three zones outside the Angkor-Siem Reap area is regulated by the Ministry of Culture and Fine Arts Decision No. 01D of 6 January 1996.

Activities in the vicinity of known or suspected sites of archaeological and cultural interest needs to be considered in environmental screening and planning.

Tonle Sap area

The *Sub-decree on Flooded Forest Demarcation* (2011) aims to demarcate and protect the flooded forest area (with a total area of 647,406 ha) surrounding the Tonle Sap Lake in Kampong Chhnang, Pursat, Battambang, Banteay Meanchey, Siem Reap and Kampong Thom provinces. This area is under the jurisdiction of the Ministry of Water Resources and Meteorology (MOWRAM). For the area between the national highways and the Tonle Sap lake system, it stipulates a zoning system that defines the nature of activities that are permitted and banned in each zone.

Community fisheries

Over the past 10 years, the management of the fisheries resources of Cambodia has progressively shifted towards mechanisms of co-management involving 'community fisheries' and 'fish sanctuaries'. Most of the commercial fishing waters in Cambodia are now covered by such areas that have legal status. Community fishers are the rightful managers and custodians of the fishery resources in their designated areas. Extracting water from within a community fishery or a fish sanctuary could affect the fishing activities or create the perception of affecting fishing activities. Hence it is important to ensure that water extraction or other 3i-funded investments that take place inside or in the immediate vicinity of such a community fishery or fish sanctuary identify the risks associated therewith.

A map and list of the formally established community fisheries and fish sanctuaries is included in the EMS compendium.

[6] The Ramsar Convention on Wetlands http://www.ramsar.org/wetland/cambodia

[7] UNESCO http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/

Other sensitive areas

A number of water bodies, including major rivers, lakes, reservoirs and pools, are considered sensitive due to their very nature and/or by excessive extraction of water. Environmental risks here may be exacerbated by cumulative, secondary or indirect risks. An analysis and overview of water sources that are considered sensitive is included in the 3i EMS Compendium.

International agreements

Cambodia is also party to a number of international conventions and agreements (Table 1).

EMS compendium

The compendium document includes legislation, maps and other resources that staff and managers can access and use when undertaking the environmental management process (refer Section 7).

3. Scope of EMS

It is important to recognise that the EMS fits within a broader framework of policies, procedures and tools that are used to design, plan, assess, approve and implement individual projects across the 3i program. The EMS is not and is not intended to be the sole tool used to assess an individual project. Instead, projects are assessed using a diversity of interrelated tools and systems including:

- open and transparent grant management process including call for and submission of expressions of interest and detailed project proposals from private sector partner (PSPs), and thorough evaluation of proposals
- extensive market research and intelligence into the business capacity, history and performance of individual PSPs
- development of a project feasibility study that includes comprehensive analysis of the technical and financial feasibility of the project and extent of consumer demand for service connection (whether drinking water or electricity)
- due diligence assessments of a PSP before any formal business relationship and contract is entered into
- robust contract agreements between the PSP and Palladium International, including a comprehensive code of conduct (for contracts valued at AU$100,000 and over, approval by DFAT)
- independent assessment and evaluation of project proposals by the 3i Oversight Committee
- strategic oversight of the program, its plans and processes by a Program Management Board comprising executive-level officials from the Royal Government of Cambodia and DFAT.

From the above it can be seen that the 3i EMS has a specific and discrete purpose and forms part of a comprehensive and integrated system for project assessment and management.

The remainder of this section explains what is covered and what is outside the scope of the EMS.

3.1 Environmental coverage

The EMS covers:

- infrastructure development practices that affect the 'environment' as defined in the *EPBC Act (*see Definitions section)
- climate change and disaster risk reduction
- community and household livelihoods (such as fishing, use of forests, tourism and so forth) and cultural practices that might be negatively affected by 3i interventions and projects.

3.2 Infrastructure coverage

DFAT recognises that "investments may have indirect as well as direct environment impacts and that support for trusts and facilities, for example, could have environmental risks if adverse impacts could reasonably be predicted to result from DFAT support" (DFAT 2014, p5; DFAT 2015a).

The EPP also specifies that:

> *"Harmonising this Policy's principles and requirements with those of other donor partners will enhance development effectiveness, reduce transaction costs, and encourage collaborative behaviour. For example, most donors have a policy of assessing associated facilities. Addressing this requirement in the aid program is most efficiently achieved through international good practice, which involves conducting a due diligence review of environmental compliance"* (DFAT 2014a, p5).

In this context, *associated facilities* are defined as "facilities not funded as part of an activity but whose viability and existence depend exclusively on the activity, or whose goods or services are essential for successful operation of the activity" (DFAT 2014a, p5).

When assessing and managing environmental risk and impact, the EPP also requires that program managers:

> *"Conduct an assessment of each proposed activity to identify potential direct and indirect impacts on the environment and the potential significance of any identified impacts. Undertake due diligence reviews of associated facilities where appropriate"* (underlining given to provide emphasis) (DFAT 2014a, p6).

This policy direction has direct relevance and important implications for 3i. The policy has been interpreted to mean that the 3i EMS has a scope across the entire infrastructure project (ie. both the 3i and private sector partner (PSP) elements).

3.3 Sectoral coverage

3i requires a comprehensive, context-specific EMS for screening, implementing and monitoring environmental impacts. For the time being, the focus of 3i will be interventions in the drinking water and electricity sectors. The EMS should be able to deal with the expected diversity in the program's current portfolio including a variety of PSPs and geographic areas.

The EMS considers the potential negative environmental impacts arising from the diverse range of construction activities that a PSP - in conjunction with 3i - might undertake as part of a 3i intervention or project. The 3i activities that are considered are those of constructing **new** and **expanded** infrastructure for piped drinking water and electricity generation and distribution[8].

[8] For electricity generation, this EMS covers solar and diesel generation infrastructure. In the event that 3i considers small-scale hydropower schemes, the EMS will need amendment. The EMS is not designed to consider electricity generation through gasification processes (eg. coal-fired, solid wastes, biomass).

It is possible in the future that other sectors will be added to the program. The current EMS is tailored for the present target sectors and would have to be adapted and expanded to accommodate other sectors.

3.4 Outside scope

Aspects that are not covered by the EMS are:

- Technical standards for supply of potable water and electricity (drinking water quality; safety and supply standards for power) (note that the 3i contract with PSPs and the accompanying code of conduct will also cover these aspects).
- Environmental health protection (such as drinking water quality, air quality and human health, noise, radiation exposure from power lines, householder risks of electrocution, WHS, etc).

These aspects are outside scope because there are already national laws and standards in place for assessing and managing such impacts. Where national laws and standards fall significantly short of international best practice, 3i will endeavour to meet international best practice where reasonably practicable.

4. Program design and strategic implications

The 3i program design document (DFAT 2014a) and head contract establish the principles and approaches that determine how the program will operate and how individual projects will be designed and implemented.

All 3i projects will be implemented through outputs-based, cost-sharing agreements with private sector partners (PSP). 3i payments will be made to PSPs who develop water and electricity infrastructure so as to increase the number of household and business connections. In the majority of cases, PSPs will be investing more capital than 3i itself.

The PSP will have responsibility for infrastructure construction, and will own and operate the assets after the 3i contract is finished. Therefore, 3i will not directly undertake any construction and/or maintenance work – it will not be a service provider or direct project.

In practice, 3i control and involvement ends when the final payment is made to the PSP (ie. once an output/s are constructed to an agreed standard). However, DFAT policy makes it clear that aid programs do have some specific responsibilities for environmental management across jointly-funded infrastructure projects ('facilities') (refer Section 3.2).

This policy and design context has important implications for the manner in which environmental management is undertaken. Given the lack of 3i control and involvement post-construction, emphasis must be placed on early screening of risks, comprehensive planning, and making decisions based on what can be reasonably anticipated to occur throughout the whole-of-project life cycle - prior to approval of the project contract.

This approach is known as 'front-loading' whereby greatest effort is apportioned at the beginning of the project cycle. The front-loading strategies that this EMS will adopt are as follows:

- Environmental screening across the entire 'facility' and across the full project lifecycle, not just the 3i funded components and not just the construction stage.
- Use of EAs and EMPs for projects that are identified as medium to high risk (full details in Section 7.3).
- Completion of comprehensive due diligence checks of PSPs including history of environmental compliance and performance; this will minimise the chances of working with operators of poor character and reputation.

- Inclusion of conditions in the contract and a code of conduct that aim to alert the PSP to post-construction risks and that endeavour to influence their behaviour and practices so that operation of the facility is sound practice and compliant with Cambodian legislation.
- Provision of support, advice and capacity development to PSPs so they understand their obligations and implement sound environmental management practices throughout the project lifecycle.
- Environmental monitoring by 3i staff at strategic times in the construction stage.

It is in this way that 3i can best meet its environmental safeguarding requirements, minimise and mitigate environmental impacts, and limit reputational risks.

5. Inherent environmental risks

In the following sections, the environmental risks inherently associated with the extraction, storage, production and distribution of drinking water, and the generation and distribution of electricity are identified. The extent to which any or all of these risks are present in any given project depend on multiple inter-related factors including:

- specific geographic location in which a project takes place
- site environmental values
- resilience and susceptibility of that place to absorb impacts
- specific characteristics of the project (eg. the type and scale of infrastructure and works; whether a new facility, or an upgrade or expansion of an existing facility)
- management measures taken to prevent or mitigate impacts.

5.1 Potable water

The 3i interventions in the potable water sector include four different process stages: extraction, storage, treatment and distribution, each with their specific inherent risks. A 3i project may involve one, some or all of these process stages.

Water extraction

The extraction of raw water involves pumping from a source into the treatment plant. The source may be surface or ground water: lake, river or stream, natural or artificial reservoir, or a drilled well. Some operators use a combination of these, and may for example pump water from a river during the rainy season to fill a constructed reservoir. In addition to ground and surface water, rainwater and floodwater may be used.

Activities associated with this process stage include:

- Installation or construction of extraction facilities (such as submersible or floating pumps in the water body, pump shed on a river bank, pipes between the extraction point and treatment plant).
- Drilling of new wells, and refurbishment or expansion of the capacity of existing wells.
- The actual operational extraction of raw water from the source (surface or ground water) using pumps.

Environmental risks associated with the extraction of raw water include but not limited to:

- Clearance, disturbance and impacts on land, biodiversity, and/or crops as part of the construction process (at intake point and along any pipelines).

- Soil erosion arising from construction activities (eg. riverbank erosion at intake point, pipeline).
- Overuse of the surface water resource and downstream impacts on hydrology, other users, and biodiversity[9].
- Overuse of the groundwater resource and alterations to the water table which may have consequences for other users and natural resources on the surface.
- Mobilisation of arsenic by alterations to groundwater (eg. through drilling wells).
- Interference with fishing and river navigation arising from in-stream placement of extraction equipment.

Water storage

Water storage projects could involve the construction of new storage facilities (pond, reservoir, dam, flood retention facilities, rainwater collection) and/or expansion or refurbishment of existing storage facilities. Activities associated with this process stage include:

- Clearance of natural vegetation and/or agricultural land.
- Major earthworks to reshape the land so that water drains or is diverted overland into the storage facility and is then retained.
- Digging of a pond that water is pumped into.
- Erection of tanks that collect rainwater that is shed from building roofs.

Environmental risks associated with this process are largely associated with ***construction*** of water storage infrastructure and include but not limited to:

- Localised vegetation clearance and impacts on biodiversity or agricultural production
- Soil erosion from lack of or unsuitable drainage structures
- Explosion or disturbance of unexploded munitions (UXOs)
- Disturbance of archaeological sites
- Disturbance of floodwater progression and recession
- Impediments to fish migration
- Inappropriate landfill and disposal of excavated soil
- Impact on landscape amenity (especially large facilities)
- Disturbance and mobilisation of acid sulphate soils
- Mobilisation of arsenic by alterations to groundwater.

Water treatment

The treatment of raw water is typically undertaken in a small plant and involves the basic processes of flocculation, chlorination and filtration. Coagulation and sedimentation take place in an integrated concrete tank facility and are used to remove turbidity and reduce biological activity of the raw water. Usually, an aluminium salt is used as the primary coagulant; some operators also use lime as a solid-producing chemical or to control pH. At the same time the coagulant(s) are added, the raw water is chlorinated.

[9] Overuse of surface and ground water can be a direct result of the project or in accumulation with extraction activities by other users.

The second treatment step involves rapid filtration with a combined sand and graded gravel filter. The sedimentation sludge or alum sludge is removed from the plant at regular intervals, and the filters are backwashed. The sludge is gathered in a sedimentation tank or pond, or may be directly discharged into a water body or canal. Chemicals used in the treatment process are usually stored on-site.

Activities associated with water treatment infrastructure include:

- Clearance of natural vegetation and/or agricultural land to make space for the plant.
- Construction of the water treatment plant and associated infrastructure.
- Operational production of drinking water through application of chemicals, filtration, and sludge disposal.

Environmental risks associated with the ***construction*** of water treatment infrastructure include but not limited to:

- Localised vegetation clearance and impacts on biodiversity or agricultural production
- Explosion or disturbance of unexploded munitions (UXOs)
- Disturbance of archaeological sites
- Noise and dust pollution; impacts from additional vehicle traffic
- Inappropriate landfill and disposal of excavated soil and construction waste
- Impact on landscape amenity (especially water towers in sensitive landscapes, for instance near temples and tourist sites).

Environmental risks associated with water treatment ***operations*** (post-construction) include but not limited to:

- Pollution of the recipient land or water body from the inappropriate disposal of chemicals, sludge and effluents from the plant. Sludge may also contain contaminants such as arsenic.
- Inappropriate storage and use of hazardous chemicals and fuels including spills that result in localised pollution, storage of chlorination agents together with acids may lead to the release of chlorine gas (safety risk for workers), and solid waste disposal (drums, chemical packing, etc).

Water distribution

Drinking water is pressurised in the distribution network by direct pumping or by pumping water into a water tower (typically 20-30 m tall) and then gravity-fed and distributed through an underground network of pipes to end-consumers (households, businesses, other institutions).

Activities associated with this process stage include the installation (often over long distances) of an underground pipe network with its associated valves and other structures.

Environmental risks associated with this process are largely associated with ***construction*** of the underground pipes distribution network and include but not limited to:

- Vegetation clearance and disturbance of soil, and impacts on biodiversity, agricultural production and natural water flow.
- Temporary disturbance of private land use, road use and household/business access (eg. through construction of underground pipelines).
- Impact on built structures (houses, farm buildings, roads, fences, electricity lines).
- Explosion or disturbance of unexploded munitions (UXOs) during pipe installation.

- Disturbance of archaeological sites.
- Noise and dust pollution; impacts from additional vehicle traffic.
- Inappropriate landfill and disposal of excavated soil and construction waste.
- Disturbance and mobilisation of acid sulphate soils.

5.2 Electricity supply

Activities that may be supported by 3i in the electricity sector include **generation** (only solar and diesel schemes are within the scope of this EMS) and expansion of the **distribution** of electric power at medium- and low-voltage levels. The nature and severity of the environmental risks depend on the implementation phase of the project – construction, operation and decommissioning.

Electricity generation

3i may support development of ***solar energy generation*** systems, mainly through industrial size, large scale projects (solar farms) but also through solar home systems for individual households.

A solar farm is of utility scale and can produce from 100 kW to 10 MW or more of electricity. Projects may be installed on the ground or on rooftops of large buildings (eg. factories). Systems involve the installation of solar photovoltaic (PV) modules which take up significant space: typically up to 1 ha per 1 MW installed.

Systems may or may not be tied to the grid and can supply electricity to off-takers including:

- factories, industrial areas, and special economic zones
- rural electricity enterprises (REEs) that distribute electricity to consumers
- national grid
- households for off-grid applications.

The construction process involves site preparation, erection of mounting structures, installation of solar panel modules, inverters, cable connections, and construction of control systems. For ground-mounted systems, vegetation may be cleared and systems may be installed on land which could otherwise be utilised for agricultural purposes. An electricity distribution system (described below) is also built to supply electricity to the consumer.

A solar home system (SHS) is small in size, generating from 300 W to 5 kW or more. It typically has one or more solar PV modules mounted on the rooftop of a house with a battery connected to a limited number of electrical appliances, wires and switches.

In the operation phase, a solar farm may require replacement and disposal of solar PV modules, batteries, inverters and transformer oil (used in transmission equipment). Home solar most often requires battery replacement and cleaning of the module.

A typical ***diesel generator*** requires housing and fencing. Site preparation involves clearing a plot of land and construction of a wooden or concrete building and a perimeter security fence. A step-up transformer is installed, power poles are erected, and suspension cables are laid to feed power into the transmission-distribution network. In the operational phase, diesel fuel is burnt in the combustion chamber of the generator to turn an alternator producing electricity. The electricity is then fed into the transmission lines with stepped-up voltage using a transformer.

Environmental risks associated with ***construction of electricity generation*** infrastructure include but not limited to:

- Clearance or trimming of shade trees in the vicinity of home rooftops (for solar home systems), clearance of natural vegetation for construction of diesel generator plants, and at times clearance of natural forest and/or productive agricultural land for solar farms. This may result in soil compaction, potential alteration of drainage channels and increased runoff, biodiversity losses and reduced agricultural production.
- Impact on built structures (houses, farm buildings, roads, fences, electricity lines) and disturbance of private land use, road use and household/business access.
- Cultural, archaeological and national heritage sites may also be disturbed by the construction of solar and diesel generator facilities.
- Noise and dust pollution; impacts from additional vehicle traffic.
- Inappropriate landfill and disposal of excavated soil, construction waste and spent batteries.

Environmental risks associated with ***operational*** and ***decommissioning phases*** include but not limited to:

- Improper storage and/or disposal of diesel fuel, used batteries, photovoltaic panels, inverters, and transformer oil may cause harmful chemical substances to leak and impact on the surrounding environment.
- Collected photovoltaic energy could result in the inverter connector to be overheated, causing fire.
- Noise pollution from the operation of a diesel generator.

Electricity distribution

During the construction phase above-ground concrete poles are erected and cables suspended; the required transformers, switches, metres and other apparatus are installed. The construction methods used vary depending on the soil conditions, land issues, flood risk, distances between posts and line voltage. Typically, power poles are placed along public roads and in most cases within the right of way associated with that road. Vegetation in the vicinity is cleared or trimmed as it may damage cables and poles, cause short circuits and result in electrocution. The extent to which this is done in practice varies.

Environmental risks associated with ***construction*** include but not limited to:

- Clearance of natural vegetation and crops underneath and in the vicinity of the power lines, and impacts on biodiversity and crop production.
- Disturbance of private land use, road use and household/business access (eg. through construction of new transmission lines).
- Removal of important shade trees.
- Impact on built structures (houses, farm buildings, roads, fences, electricity lines).
- Explosion or disturbance of unexploded munitions (UXOs) during clearance of the easement or installation of poles.
- Disturbance of archaeological sites.
- Exposure of the soil to erosion.
- Noise and dust pollution; impacts from additional vehicle traffic.
- Inappropriate landfill and disposal of excavated soil and construction waste.
- Diminished landscape amenity from the creation of an elevated linear landscape element, and alteration of vegetation.

During the ***operational*** and ***decommissioning*** phases, the environmental risks include but not limited to:

- Maintenance of the easement through the periodic slashing or clearance of vegetation underneath and in the vicinity of the power lines.
- Spills of transformer oil may cause localised pollution of soils and more widespread pollution when located above and spilling into surface water. It is unclear if polychlorinated biphenyls (PCBs) are still in use as dielectrics in transformers in Cambodia; until recently their use was widespread. Inappropriate disposal of PCBs is a potential environmental risk during decommissioning.

6. 3i project management cycle and environmental management

A 3i project management cycle (Figure 1) has been adopted to provide a consistent and structured approach to the planning and implementation of all 3i interventions and individual infrastructure projects.

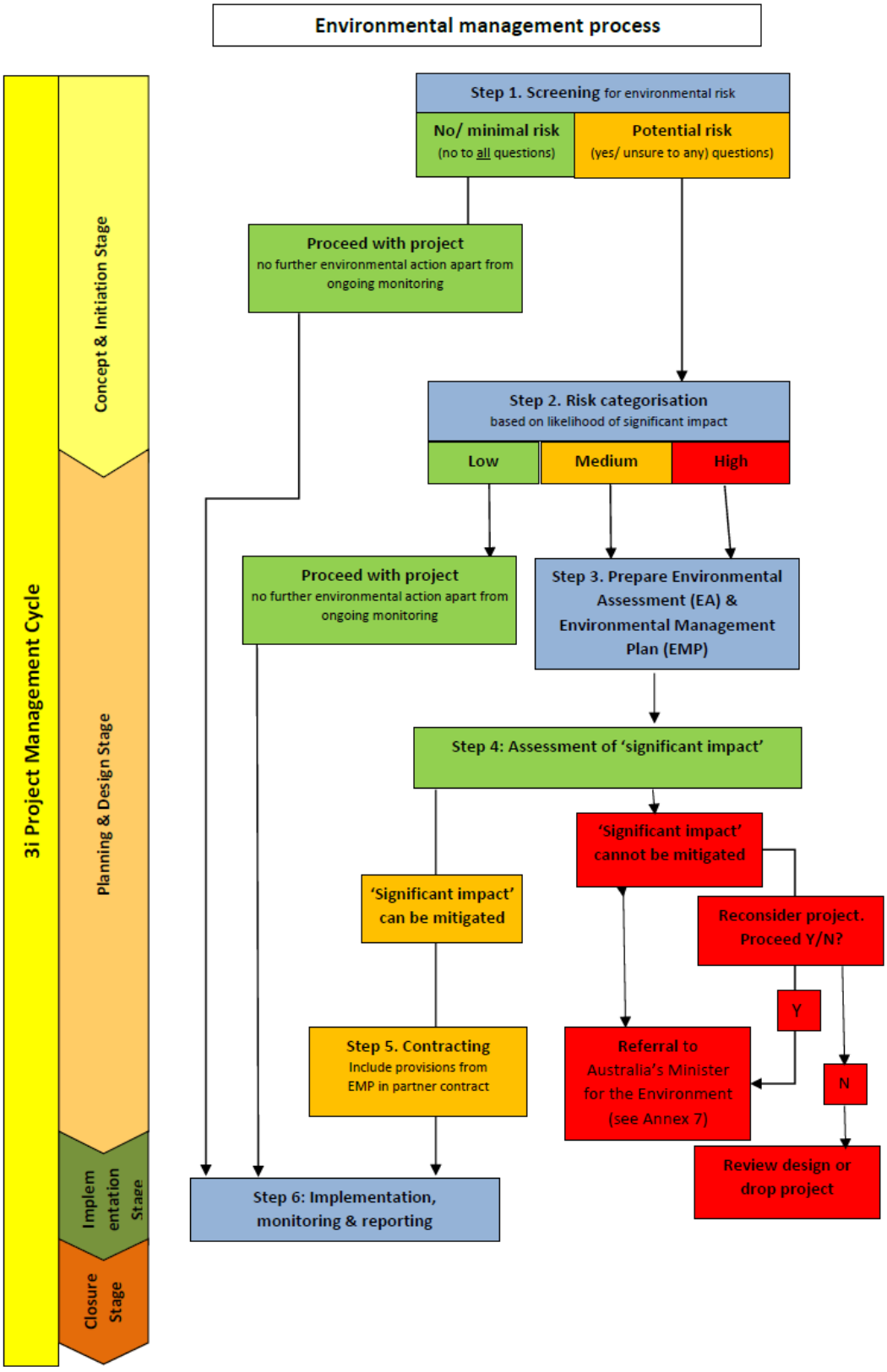
Four stages will be used to plan and report all projects:

1. Concept and Initiation Stage
2. Planning and Design Stage
3. Implementation Stage
4. Closure Stage.

The specific processes and activities within each stage vary somewhat depending on the sector (water, electricity) and sub-sector (licence and permit status with RGC) that is being considered; these differences are described in the 3i Grants Management Manual.

This EMS has as one of its aims the integration of environmental management activities into the broader operational cycle being used by 3i. Figure 1 outlines how the main environmental management processes will be incorporated into the broader 3i project management cycle.

Figure 1: Key environmental management steps in 3i project management cycle



7. Environmental management processes

This section describes in detail the main environmental management processes to be undertaken for each 3i intervention and project. The six key steps are:

- Step 1: Environmental screening
- Step 2: Risk categorisation
- Step 3: Environmental assessment and environmental management planning
- Step 4: Assessment of 'significant impact'
- Step 5: Contracting
- Step 6: Implementation, monitoring and reporting.

7.1 Step 1: Environmental screening

Purpose

All 3i projects need to be screened for environmental risk regardless of their financial value, scale, mode of delivery, or perceived environmental risk and impact. Importantly, screening and any subsequent environmental assessment and planning (see step 3 below) must consider:

(a) the whole 'facility' and not just the elements or outputs that 3i is funding; and

(b) the full project lifecycle (refer Section 3.2 for explanation of rationale and policy basis for this).

Screening allows program managers to make an early determination of the potential for environmental risk, and to categorise and respond appropriately and commensurate with the level of risk. Screening is the first step used to determine if any environmental assessment and planning is required; where such assessment and planning **is** required, screening will provide guidance about the appropriate extent and type of such work.

Screening is a critical tool and at the heart of the 3i EMS; it is the primary tool for 'front-loading' environmental management (refer Section 4) and will be comprehensive and thorough in its application.

Structure

Screening will be undertaken at three discrete levels of assessment:

1. Strategic: the EMS establishes a set of five strategic-level environmental screening questions.
2. National: the screening checklist at this level focuses on whether national legislation is triggered or not.
3. Project: the screening checklist at this level focuses on the individual project.

When to undertake screening

The specific timing for screening depends on the sector and sub-sector; the 3i Grants Management Manual gives details. However, as a general principle, the screening checklist should be completed for each 3i intervention or project as early as possible in the Concept and Initiation Stage or the Planning and Design Stage (see Figure 1). It must be fully completed before the project proposal is developed and forwarded to the 3i Oversight Committee.

The screening checklist is included at Annex 3 and has instructions embedded to guide completion.

Screening outcomes

Potential outcomes from the screening process and required actions are described in Table 2.

Table 2. Screening outcomes and next steps

Response to the screening questions	Assessment	Required actions
NO to ALL questions	Project is unlikely to have impacts on the environment, including social and cultural aspects.	• Record on the checklist that there is no/minimal environmental risk. • Include a summary of results in the package of information provided for approval by the 3i Oversight Committee. • Prepare a simple environmental monitoring plan (not mandatory) (refer Annex 4 for template). • Continue with project planning as per the 3i Grants Management Manual.
YES or NOT SURE to any questions	Project *may* have impacts on the environment, including social and cultural aspects.	• **Go to step 2 risk categorisation** (see section 7.2 below).

The outcomes of the environmental screening should be recorded in the 3i MIS.

7.2 Step 2: Risk categorisation

If a response of 'yes' or 'unsure' was given to one or more screening questions, the next step is to categorise project environmental risk. Taking account of the project characteristics and the responses to the screening questions, assess and categorise the overall project risk; Table 3 provides guidance. This categorisation should be made on the basis that there is no mitigation or management measures put in place.

Table 3. Environmental risk categories (adapted from DFAT 2014a)

Risk category	Description of risks	Required actions
Low	Project is considered to have minimal or no adverse impact (direct or indirect) on the environment (including social and cultural aspects).	• Record on the checklist that there is low environmental risk. • Include a summary of results in the package of information provided for approval by the 3i Oversight Committee. • Prepare a simple environmental monitoring plan (not mandatory) (refer Annex 4 for template) • **Go to Step 5**
Medium	Project might have a major impact on the environment (direct or indirect), (including social and cultural aspects), particularly in the absence of avoidance and mitigation measures. Impacts are typically local and short-term and are not in environmentally sensitive areas. Projects where risks are uncertain are likely to fit into this category.	• Record on the checklist that there is medium environmental risk. • **Go to Step 3**
High	Projects that trigger the Cambodian EIA sub-decree are considered high risk.	• Record on the checklist that there is high environmental risk. • **Follow the IEIA/EIA process as specified in the legislation.**
	Project considered likely to have a major impact on the environment (direct or indirect) (including social and cultural aspects). Impacts typically affect a large or sensitive geographic area or have permanent and long-lasting effects.	• Record on the checklist that there is high environmental risk. • **Go to Step 3**

7.3 Step 3: Environmental assessment and management planning

Where the risk categorisation process (as outlined in Step 2) indicates that the project is a medium or high risk – without the use of avoidance and mitigation measures – then this triggers further assessment and planning (Table 4).

Table 4. Potential outcomes from the risk categorisation process and required actions

Environmental risk category	Required actions
Medium	• Ensure that an **environmental assessment** (EA) is undertaken and an **environmental management plan** (EMP) is developed[10]. Both the EA and EMP should be proportional to the potential environmental impact. This means that an EA and EMP for a less complex, medium risk project should be brief, concise and readily prepared in-house. • Engage the expertise needed to conduct an EA and EMP. This expertise can be internal or external and depends on risk, complexity and expertise available in-house. • Ensure the key issues from the EA are addressed in the EMP. The EMP should include details of the environmental mitigation and management measures required plus any ongoing consultation and monitoring that will need to be taken during implementation. • If, following the development of the EA and EMP with associated mitigation measures, you consider that your project is not likely to have a 'significant impact' on the environment, **go to step 5.** • If, following the development of the EA and EMP you consider that your project is likely to have a 'significant impact' on the environment even with mitigation measures, **go to step 4.**
High[11]	• Develop an EA and EMP following the approach above for **medium risk** projects. • Given the complexity and risk, it will be necessary to engage specialist expertise to undertake these tasks. • Ensure the key issues from the EA are addressed in the EMP. The EMP should include details of the environmental mitigation and management measures required plus any ongoing consultation and monitoring that will need to be taken during implementation. • If the project design can be modified and/or mitigation measures put in place through the EMP that gives a high degree of confidence that the project is not likely to have a 'significant impact' on the environment, it will not need to be referred. **Go to step 5.** • If, following the development of the EA and EMP you consider that your project is likely to have a 'significant impact' on the environment even with mitigation measures, **go to step 4.**

[10] Annex 5 outlines the purpose and typical contents of an EMP

[11] It is necessary to reinforce the difference in meanings between 'high risk' and 'significant impact'. A project could be assessed as high risk yet not have 'significant impact': in such a case, a high risk project need not be referred to the minister.

7.4 Step 4: Assessment of 'significant impact'

Following the development of the EA and EMP as per step 3, if it is considered that a **medium** or **high risk** project is likely to have a 'significant impact' on the environment – following avoidance and mitigation measures (with a degree of certainty) – such a project will be categorised as a 'significant impact' project**.**

This is a complex area – legally and technically[12]. The terms 'likely'[13], 'significant impact'[14], and 'environment'[15] have specific meanings under the EPBC Act and it is important that the risk categorisation reflects these meanings.

In the event that environmental assessment and planning indicated that 'significant impact' might occur, then the 3i Team Leader would have the prerogative to require that the project was comprehensively redesigned or did not proceed at all.

If at the end of this process, a 'significant impact' was still considered likely and the project was required to continue, the activity must be referred to the Minister for the Environment for advice. The DFAT Environmental Safeguards Section would guide the 3i team through this process. Table 5 outlines the process.

Table 5. Required actions for 'significant impact' projects

Environmental risk category	Required actions
Significant impact	For these projects, there are three courses of action: 1. Refer the project to the 3i Team Leader and recommend that it is redesigned; or 2. Refer the project to the 3i Team Leader and recommend that it is dropped; or 3. Continue with the project. Under sections 160 and 161 of the EPBC Act, a contract cannot be entered into if a project is likely to have a 'significant impact' on the environment, without first referring the aid investment to Australia's Minister for the Environment and considering the advice of the Minister.

12 Refer to DSEWPC (2013) and DFAT (2015c) for significant impact guidelines.

13 To be **likely**, it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility. If there is scientific uncertainty about the impacts of your action and potential impacts are serious or irreversible, the precautionary principle is applicable. Accordingly, a lack of scientific certainty about the potential impacts of an action will not itself justify a decision that the action is not likely to have a significant impact on the environment.

14 Whether or not an action is likely to have a **significant impact** depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

15 The EPBC Act's definition of **environment** is broad and includes ecosystems, heritage values of places, and socio-economic and cultural aspects of people and communities.

7.5 Step 5: Contracting

Environmental management will be integrated into 3i project management. For projects with a screening checklist (and EA and EMP), actions, responsibilities and conditions will be included in 3i contracts. Standard clauses about compliance with national government environmental laws, standards, and requirements will also be included. In this way, 3i will ensure that PSP responsibilities and accountabilities are identified in advance and clearly communicated to the PSP through the contract.

7.6 Step 6: Implementation, monitoring and reporting

Monitoring implementation

For no and low risk projects, no formal environmental monitoring or reporting needs to occur. A simple environmental monitoring plan can be used (Annex 4) however that is not mandatory. If the scope of the project changes or new information comes to light this may change the risk level of the project and necessitate additional planning and monitoring. For medium and high risk projects, an EMP will be developed (see Step 3, Section 7.3) and this should identify specific monitoring requirements.

During the implementation stage, the main responsibilities are:

- Ensure mitigation measures as per the PSP contract are implemented.
- Where there is one, monitor compliance with the EMP.
- Assess and monitor any new or emerging risks; include in a revised EMP as appropriate.
- Where needed (for instance, monitoring detects significant new risks or there are compliance problems), prepare and negotiate a formal contract amendment with the PSP.

Lessons learned and reporting

As 3i will have no involvement after the contract is completed (facility operation, repairs, maintenance, are the responsibility of the PSP), monitoring will mostly be ‘after the fact’ and targeted at system performance, lessons learned and adaptive management rather than compliance. The emphasis will be on the following:

- learning lessons from implementation of individual projects
- evaluation of the effectiveness of any environmental safeguarding conditions in PSP contracts particularly the extent to which conditions were implemented
- effectiveness of any capacity building that was provided to the PSP
- periodic assessment of overall system performance.

The 3i annual program report will be used to:

- summarise project-specific environmental issues and compliance
- assess the overall performance of the EMS and how effective it is in addressing and mitigating environmental risks and impacts
- recommend any changes required to the EMS.

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DFAT (2015d) Good Practice Note – 2.4 How to assess environmental risks to an aid activity.

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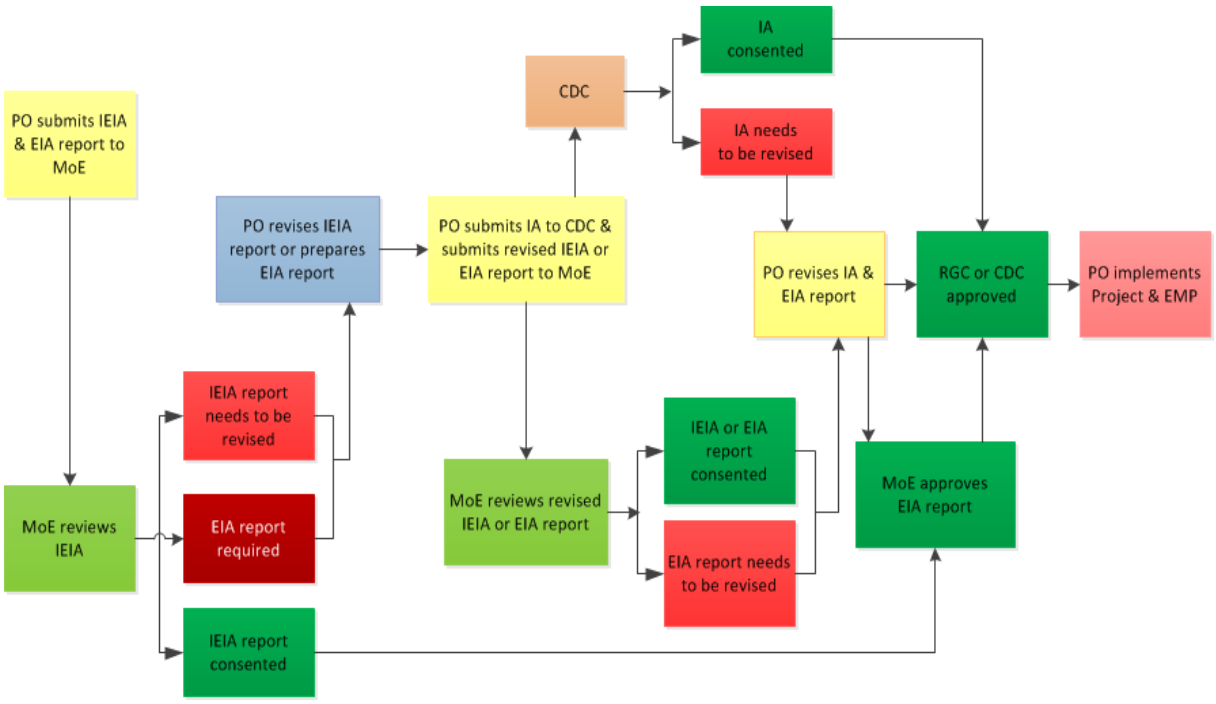
Annex 1. EIA process as per Cambodian law[16]



Notes:

CDC: Council for the Development of Cambodia
EIA: Environmental Impact Assessment
EMP: Environmental Management Plan.
IA: Investment Application
IEIA: Initial Environmental Impact Assessment
MoE: Ministry of Environment
PO: Project Owner
RGC: Royal Government of Cambodia

[16] As per RGC Environmental Impact Assessment Sub-Decree of 11 August 1999

Annex 2. Screening list from the Sub-Decree on Environmental Impact Assessment

The list below is based on an unofficial translation provided by MoE of the Annex to the *Sub-decree on Environmental Impact Assessment Process* (August 11, 1999) (ANKR/BK/72), listing the activities and projects that are subject to an IEIA/EIA, together with the threshold at which the IEIA/EIA becomes mandatory. If no threshold is specified, the IEIA/EIA requirement applies to all activities under that category, regardless of their size.

Activities that are potentially within the scope of the 3i target sectors (drinking water and electricity) are highlighted yellow.

No.	Type and Activities of the Projects	Threshold size/capacity
A	Industrial	
I	**Foods, Drinks, Tobacco**	
1.	Food processing and caned	**≥ 500 tonnes/year**
2.	All fruit drinks manufacturing	**≥ 1,500 litres/day**
3.	Fruit manufacturing	**≥ 500 tonnes/year**
4.	Orange juice manufacturing	**all sizes**
5.	Wine manufacturing	**all sizes**
6.	Alcohol and beer brewery	**all sizes**
7.	Water supply	**≥ 10,000 users**
8.	Tobacco manufacturing	**≥ 10,000 boxes/day**
9.	Tobacco leave processing	**≥ 350 tonnes/year**
10.	Sugar refinery	**≥ 3,000 tonnes/year**
11.	Rice mill and cereal grains	**≥ 3,000 tonnes/year**
12.	Fish, soy bean, chili, tomato sources	**≥ 500,000 litres/year**
II.	**Leather Tanning, Garment and Textile**	
1.	Textile and dyeing factory	**all sizes**
2.	Garments, washing, printing, dyeing	**all sizes**
3.	Leather tanning, and glue	**all sizes**
4.	Sponge- rubber factory	**all sizes**
III.	**Wood Production**	
1.	Plywood	**≥ 100,000 m^3/year (log)**
2.	Artificial wood	**≥ 1,000 m^3/year (log)**
3.	Saw mill	**≥ 50,000 m^3/year (log)**
IV.	**Paper**	
1.	Paper factory	**all sizes**
2.	Pulp and paper processing	**all sizes**
V.	**Plastic, Rubber and Chemical**	
1.	Plastic factory	**all sizes**
2.	Tire factory	**≥ 500 tonnes/year**
3.	Rubber factory	**≥ 1,000 tonnes/year**
4.	Battery industry	**all sizes**
5.	Chemical production industries	**all sizes**
6.	Chemical fertilizer plants	**≥ 10,000 tonnes/year**
7.	Pesticide industry	**all sizes**

No.	Type and Activities of the Projects	Threshold size/capacity
8.	Painting manufacturing	**all sizes**
9.	Fuel chemical	**all sizes**
10.	Liquid, powder, solid soaps manufacturing	**all sizes**
VI	**Mining Production other than Metal**	
1.	Cement industry	**all sizes**
2.	Oil refinery	**all sizes**
3.	Gas factory	**all sizes**
4.	Construction of oil and gas pipeline	**≥ 2 km**
5.	Oil and gas separation and storage facilities	**≥ 1,000,000 litres**
6.	Fuel stations	**≥ 20,000 litres**
7.	Mining	**all sizes**
8.	Glass and bottle factory	**all sizes**
9.	Bricks, roofing tile manufacturing	**≥ 150,000 pieces/month**
10.	Flooring tile manufacturing	**≥ 90,000 pieces/month**
11.	Calcium carbide plants	**all sizes**
12.	Producing of construction materials(Cement)	**≥ 900 tonnes/month**
13.	Cow oil and motor oil manufacturing	**all sizes**
14.	Petroleum study research	**all sizes**
VII	**Metal Industries**	
1.	Mechanical industries	**all sizes**
2.	Mechanical storage factory	**all sizes**
3.	Mechanical and shipyard enterprise	**all sizes**
VIII	**Metal Processing Industrials**	
1.	Manufacturing of harms, barbed wires, nets	**≥ 300 tonnes/month**
2.	Steel mill, Irons, Aluminium	**all sizes**
3.	All kind of smelting	**all sizes**
IX	**Other Industries**	
1.	Waste processing, burning	**all sizes**
2.	Waste water treatment plants	**all sizes**
3.	Power plants	**≥ 5 MW**
4.	Hydropower	**≥ 1 MW**
5.	Cotton manufacturing	**≥ 15 tonnes/month**
6.	Animal's food processing	**≥ 10,000 tonnes/year**
B.	**AGRICULTURE**	
1.	Concession forest	**≥ 10,000 ha**
2.	Logging	**≥ 500 ha**
3.	Land covered by forest	**≥ 500 ha**
4.	Agriculture and agro-industrial land	**≥ 10,000 ha**
5.	Flooded and coastal forests	**all sizes**
6.	Irrigation systems	**≥ 5,000 ha**
7.	Drainage systems	**≥ 5,000 ha**
8.	Fishing ports	**all sizes**
C.	**TOURISM**	
1.	Tourism areas	**≥ 50 ha**
2.	Golf course	**≥ 18 holes**

No.	Type and Activities of the Projects	Threshold size/capacity
D.	**INFRASTRUCTURE**	
1.	Urbanization development	**all sizes**
2.	Industrial zones	**all sizes**
3.	Construction of bridge-roads	**≥ 30 tonnes weight**
4.	Buildings	**height ≥ 12 m or floor ≥ 8,000 m^2**
5.	Restaurants	**≥ 500 seats**
6.	Hotels	**≥ 60 rooms**
7.	Hotel adjacent to coastal area	**≥ 40 rooms**
8.	National road construction	**≥ 100 km**
9.	Railway construction	**all sizes**
10.	Port construction	**all sizes**
11.	Airport construction	**all sizes**
12.	Dredging	**≥ 50,000 m^3**
13.	**Dump site**	**≥ 200,000 people**

Annex 3. Environmental management checklist

The checklist is available as a separate file; please contact the 3i program management office at email info@3icambodia.org for the latest version.

Annex 4. Monitoring report template

This template can be used to monitor and report any environmental impacts that are detected during the construction stage of a jointly funded project.

Project details

3i project number	
3i project name	
Site inspection completed by:	
Site inspections to be carried out how often? (monthly, six-monthly, annually)?	

Site inspection checklist

Date and time of this inspection:	
Inspection completed by:	
Date of last inspection (if any):	
Date for next inspection (if any):	
Have you reviewed the records of the previous inspections if any? *(there may be actions that were agreed that you will need to follow-up on)*	

Instructions:

Do a thorough walk-through survey of the project site. Preferably do the tour with a manager from the site who can answer questions that may come up. Pay special attention to:

1. Any waterways that may be on the site and how water is likely to travel over the site if there is a spill or heavy rainfall.

2. Any natural vegetation on the site that may be acting as wildlife habitat.

3. Anything that might be leaving the site as a liquid, solid or gas. This could be: spilled or leaking chemicals or fuel; construction waste; etc).

4. Anything being brought onto the site (e.g. raw materials) or taken away from the site (eg. waste materials).

You are looking for any sign that the project may be having a <u>significant negative</u> environmental effect. Check for the following signals of concern:

Question	Yes/No	Comments
Q1. Are there any signs of uncontrolled erosion going into a waterway, drain, natural habitat or road? *Erosion is fairly common especially on a construction site. Erosion can be contained using a number of simple methods. It is important to control and contain erosion so that it does not lead to soil and sediments entering waterways, smothering natural habitats or effecting traffic. Note: if you are at all concerned that erosion may be leading to the above then answer yes to this question.*		
Q2. Is there any sign that dust levels are high enough to: • Smother any natural environments on or near the site? • Effect human health on or near the site? • Cause a nuisance to neighbours?		
Q3. Are any chemicals being used on the site? **If yes:** • Are they being stored and handled in a safe way? • Is there any risk being posed to natural environments (pollution) or human health?		
Q4. Are there any signs of leaks and spills? • Liquid leaks or spills could take the form of: discoloured water, cleaning products, herbicides, pesticides, other chemicals, animal waste, human waste). • Gas leaks could take the form of: smoke, bad smell, possible chemical outlet from a machine.		
Q5. Is there any sign of disturbance to vegetation arising from construction activity, especially undisturbed forest?		
Q6. Is surface water on the site being channelled to safe areas? If there was heavy rainfall: • Would the water running over the site carry any pollutants into waterways or vegetation? Would it cause erosion of any steep dirt slopes? • Would it pose any other kind of hazard you can think of? *Note: Storm water should be channelled into drains and then (if needed) channelled into ponds so that sediment and contaminants can settle to the bottom and relatively 'clean' water can then*		

Question	Yes/No	Comments
feed from the top of the pond into the surrounding area.		
Q7. Solid waste management • Is there any sign of litter or poor management of solid waste? • Is the solid waste on the site being sent to an approved landfill?		
Q8. Liquid waste management • Is there any sign that waste water (used tap water as well as sewage) is not being well-managed?		
Q9. Local community/neighbours Talk to any direct neighbours if you can and ask: • Is the project having any effect on their ability to access normal services such as water and power supply, sewage disposal, public transport, use of public roads, footpaths etc. • Are there signs that odour, dust or noise might be affecting neighbouring communities?		
Q10. Traffic • What kind of traffic volumes are being generated by the development? • Are they having an effect of local public safety? • Are they causing a nuisance (dust, noise)?		
Q11. Have any signs of cultural or sacred or archaeological heritage been uncovered?		
Q12. Are nearby sites of cultural or sacred or archaeological heritage being affected by the project?		
Q13. Have the actions that were agreed to at the last inspection (if any) been implemented?		
Q14. Are there any other issues, risks or concerns that you have about construction activity? *<enter text here>*		

Environmental management plan as a result of this inspection:		
Actions	**Lead person**	**Deadline**
(add other lines as required)		

Annex 5. Description of environmental assessments and planning

(adapted from AusAID 2012 and Cardno 2014)

Type	Application/use in 3i	Characteristics
Environmental Impact Assessment (EIA)	Used as part of a statutory EIA process as required under national law, and for 'significant impact' projects that are being referred to the Australian Minister as per the EPBA Act. An EIA can be used: • after environmental screening identifies a requirement, or • if in the early stages of project investigation and planning, it is evident that the project may have a negative 'significant impact'.	An Environmental Impact Assessment (EIA) is a detailed and in-depth study undertaken by an appropriately qualified expert that identifies and evaluates the foreseeable environmental impacts of a proposed activity. An EIA concludes with an expert opinion on whether the activity should go ahead based on the foreseeable environmental impacts and if so, how these impacts should be mitigated and managed. The EIA process must involve all relevant stakeholders including partner government, affected community, national environment agency in-country, and local environment agency.
Environmental Assessment (EA)	An EA is required for all medium and high projects.	An EA is a process of environmental analysis to assess the environmental risks associated with a project; it is a relatively simple exercise used for projects that are less complex and risky than those requiring a full EIA. The purpose of an EA is to confirm and expand upon the findings of the environmental screening, determine if a more comprehensive EIA is needed, and inform the EMP. An EA is most often appropriate if there is potential for a negative environment impact of a size and type that can be readily identified and is unlikely to be 'significant'. An EA typically has the following scope: a) description of the project b) description of the existing physical and social environment at the development site c) summary of the potential environmental risks of the project and how these can be avoided, remedied or mitigated d) determine if a more comprehensive assessment is needed and if so what the scope of that assessment should include.

Type	Application/use in 3i	Characteristics
		It typically involves a desk study and targeted field studies. It might conclude that further environmental assessment be undertaken in the form of an EIA. For a simple EA, this can be done in-house; a more complex EA may need an appropriately qualified environmental expert. While an EA can appear like a large undertaking, in most cases a simple checklist or table is all that is required.
Environmental Management Plan (EMP)	An EMP is prepared for all medium and high projects.	An EMP is used to outline how environmental risks identified in the EA (or EIA if one is prepared) will be managed and mitigated. It will identify who is responsible for implementation and specify conditions to be included in the PSP contract. The EMP describes how monitoring, trigger points and corrective actions will be undertaken and reported on. The depth and coverage of the EMP should be proportionate to the complexity and risk of the project. For medium risk projects, the EMP can be a concise and action-orientated plan. For complex high risk projects, the EMP should be detailed and comprehensive, and should involve all relevant stakeholders including partner government, affected community, national environment agency in-country, and local environment agency. DFAT (2015e) and ADB (2009 & 2012) provide a useful outline of the purpose and contents of an EMP.

Annex 6. EMS Compendium

This is a separate resource document that includes important information (legislation and maps) that staff and managers can access and use when completing the screening checklist.

Available by contacting:

Email: info@3icambodia.org

Annex 7. Significant impact procedures as the Australian EPBC Act

Under the EPBC Act, proposed actions, following avoidance and mitigation (with a degree of certainty), that are *likely* to have a 'significant impact' on the environment may require a referral to the Australian Minister for the Environment for advice. A 'significant impact' is one that is important, notable or of consequence, depending on:

- the sensitivity, value and quality of the environment, and
- the intensity, duration, magnitude and geographic extent of the impact.

The EPBC Act (section 28) specifies that - An action taken by a Commonwealth agency anywhere in the world that is *likely* to have a significant impact on the environment.

Step 3 of the *Significant Impact Guidelines 1.2 (*page 6) state that

> "Impact avoidance and mitigation: Will any measures to avoid or mitigate impacts ensure, with a high degree of certainty, that impacts are not significant?"

If the proposed impact is still above the **significant impact** threshold then a section 160 referral under the EPBC Act may be submitted to the Department of the Environment for advice. However it is important to note the EPBC Act is a self-assessment process, and it is up to the proponent to determine if a referral is required.

Guidelines are available for interpretation in this complex area (DSWEPC 2013).