BARMER TO SALAYA PIPELINE PROJECT

HSE PLAN

BSPL-0000-HS-PLN-0001

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Rev	**Date**	**Purpose of Issue**	**Prepared By**	**Checked By**	**Approved By**

1.0 PURPOSE

The purpose of this document is to describe HSE, Corporate Social Responsibility and Security Management (hereafter referred to as HSE) strategy which, when implemented, will provide the BSPL (Barmar To Salaya Pipeline and Facilities) Project with the assurance that the team have fulfilled the objectives of the Group HSE policies and Cairn Energy India Pty. Limited (CEIL) Health, Safety and Environmental Management System (HSEMS) with regard to the execution of the Project work scope. It is imperative that all management follow CEIL's HSE and other policies.

The steps required to achieve this goal for each phase of the project are described in this document.

1.1 PROJECT HSE VISION

The Project Management Team endorses CEIL HSEQ vision for

- A healthy, safe and secure working environment
- No accidents, no injuries and no harm to people
- Environmental impacts minimized
- A positive contribution to local communities

Shared by all of us

A personal value

'Everyone in CEIL is responsible for HSE'

1.2 HSE KEY PERFORMANCE INDICATORS

The HSE objectives and targets for the BSPL Project shall be disseminated through relevant plans and be the key focal point during all project meetings.

The following HSE Key Performance Indicators (KPI's) are agreed for this project:

Negative Indicators	Positive Indicators
Fatality - None	Managers Tour Program – 100 %
Lost Time Injury frequency Rate – < 0.90	HSE induction for field personnel – 100%
Total Recordable Injury frequency Rate– <4.0	Drills and Exercises - 100%
Environmental Incidents (spills) < 5	HSE Worksite Inspections fully completed at each location as per plan.
Security Incident Frequency Rate < 5.8	All Incidents reported and investigated
Note: - LTIFR = Number / MM Hrs., TRCFR = Number / MM Hrs.	HSE Audits and corrective actions closed out – No critical recommendation > 1 month (reviewed monthly).
SIFR = Number / MM Hrs.	HSE meetings including with contractors to be as per schedule at each location

1.3 PROJECT HSE PLAN SCOPE

The BSPL Project consists of a "soft" element - the Commercial agreements / COSA and a "hard" element - the oil export pipeline system. The oil export system consists of Pipeline from the Mangala Process Terminal (MPT) to the Buyer(s) facility and related facilities such as Pumping / Pigging / Heating stations, etc.

The Scope considered for the BSPL project are:

- Construction of approx. 590 km, 24 Inch , Skin Effect System Current Trace (SECT) heated ,PU insulated , HDPE sealed and buried Oil Export Pipeline to transport 150,000 bbls per day waxy crude, from Mangala Terminal, Barmar District, Rajasthan to Salaya Terminal in Jamnagar District, Gujarat via Viramgam with associated 8 inch gas pipeline for power generation purpose for the heating.
- Establishment of associated facilities like SECT heating stations and Gas Power Generator stations
- Establishment of storage, handling and pumping stations and mixing facilities at Viramgam terminal of 10,000 m3 crude oil capacity and at Salaya terminal of 300,000 m3 crude oil capacity with offshore loading facility option in Gujarat state.
- Export Pumps, sale tie in facilities to nominated buyers at Viramgam and Salaya
- Pipeline cleaning facilities viz pig receiving and launching stations at Viramgam and Salaya stations and at intermediate locations

The current plan is to proceed with the Pipeline and facilities installation in two phases with spreads which may also be merged as per project demand for oil export by March/July 2009.

The scope of the HSE Plan is integrated with the BSPL activities planned and as described above.

BSPL project environmental regulatory approvals and clearances and implementation of the CSR strategy will be coordinated and managed by the 'Environment and CSR 'services group.

The BSPL project support group & similarly will manage other Governmental, joint venture coordination, land, and coordinate other commercial aspects.

1.4 PROJECT HSE PLAN OBJECTIVES

- Conducting safe operations at all the sites during the period of construction and any other simultaneous activities.
- Group HSE, Security & CSR Guiding Principles in the project tendering process, to define HSE and social behaviors expected of contractors and suppliers.
- Integrate HSE, CSR and Security aspects throughout the Project life cycle.
- Ensures HSE, CSR and Security inputs are provided to the deliverables at the agreed milestones under the BSPL project as per Cairn 'Gated process'

- Defines HSE accountabilities and responsibilities for the Project team, and implement a HSE Training Program to deliver outstanding HSE awareness and performance for this Project
- Adopt measures for prevention and mitigation of pollution and safety in the design through HSE and risk engineering, and minimize failure, accident and pollution incidents through adoption of best available technology and deliver 'Fit for Purpose' documents meeting ALARP conditions
- Defines the project HSE assurance process, which ensures that Cairn HSE, Security and CSR policies/ standards /procedures are being implemented throughout the Project life cycle.
- Ensures compliance with all applicable Indian Statutory, Regulatory and Code of Practice (MoEF, RSPCB, GPCB,CCOE, Electrical Inspectorate, Petroleum Rules, Manufacture, Storage and Import of Hazardous Chemicals Rules, OISD, etc).
- The Project related field activities (construction, pre-commissioning / commissioning) are in accordance with international industry codes of practices and safety standards throughout the project life cycle.

1.5 PROJECT HSE MILESTONES

- HAZID study during the project FEED engineering stage
- HAZOP on completion of FEED and P&ID completion fit for initial HAZOP
- PHSERs on FEED Completion , during Detailed Engineering, Construction, Ready for Commissioning
- HAZOP & QRA by EPC contractor during advanced detailed engineering
- COMAH Safety Report verified as 'Fit for Purpose' prior to commencement of pre-commissioning activities, as an option
- HSE Systems and procedures issued by Pre-commissioning
- Operations training program completed prior to Pre-commissioning.
- Operations & HSE systems in place and fully functioning, with trained and competent personnel by start of pre-commissioning for start up
- All regulatory approvals / consents in place prior to appropriate activity.

1.6 STAKEHOLDERS

- **Cairn Energy India Pty Ltd**
- **JV Partner - ONGC**
- **Project Contractors**
- **Regulatory Authorities**
- **District Administration**
- **Central Government & State Government of Rajasthan & Gujarat Departments / Authorities**
- **Local Communities**
- **NGO**
- **Investors**

1.7 PROJECT HSE ASSUMPTIONS

- The FEED Assurance process through the Basis of Design Doc. No. 05-2893-03-G-3-003 and Process Design Basis Doc. No. 05-2893-03-H-3-010, latest revisions, will address concerns regarding change of scope in the Project, if any.
- HSE Plan scope includes all activities connected with the BSPL project only
- Environmental Clearance / Appropriate Permits will be obtained and EMP will be developed to enable compliance and ensure appropriate mitigate measures
- The BSPL Project Team will interface with the upstream project group on matters of Interface.
- The monitoring and reporting of Health, Safety, Environment, Security and CSR performance data is in accordance with CEIL reporting requirements covering the project activities.
- The BSPL project identifies the following :
  - Asset Emergency Response procedures
  - Medical Facilities
  - Journey Management procedures
  - Contractor Management
  - Security
  - Procurement
  - Environmental requirements
  - Waste Management
  - Logistics and Warehousing (material movements)

- Incident Reporting
- Safe Work Procedures

1.8 PROJECT HSE RESOURCES / ORAGNSIATION

The Project requires dedicated HSE support personnel, accountable to the Head of BSPL Project, and be an integral part of the Project Team.

The following model is suggested:

Project HSE Organization –Refer Project Execution Plan Doc No. BSPL-0005-PM-PRO-0002

BSPL Project HSE Manager will regularly interact and consult with other HSE personnel as needed and with Environment and CSR personnel on regular basis.

BSPL Project Team shall work closely with Rajasthan Asset and Northern area development project Managers on various areas ensuring proper interface.

1.9 INTERRELATED PROJECT ACTIVITIES

- Logistics and Warehousing
- Barmer Field Administration Office
- Accommodation Camps
- Northern area and development project interface
- Development of adequate medical / health facilities and resources
- Community project work and CSR

1.10 SAFTEY (HSE) ACTION MONITORING SYSTEM

The purpose of this system is to monitor throughout the phases of the project (i.e. feasibility studies, conceptual design, detail design and engineering, fabrication, commissioning, hook-up and operation.) the methods of raising, recording and reviewing safety actions and the implementation of actions. The management of safety actions will form part of the Project Management System.

The project will utilize appropriate standard soft ware application to formally record and track responses on Issues / Actions / Recommendations / NCR's / from different studies, audits and reviews relating to technical, safety, environmental, CSR, quality and security aspects raised during the life of the project.

1.11 CEIL HSES & CRMS GUIDANCE

HSE, Security and CR Guiding Principles describes Cairn's fundamental values and approach to HSE, Security and CSR management and set out appropriate codes and standards to which the Company aspires as in Section 1. The BSPL project team will promote these values throughout the project activities.

The Project will be supported by the policies and objectives laid down in the CEIL CR Management System. The objective of the CEIL CR MS is to provide uniform direction to the Project in the management of Health, Safety, Environmental, Security and Corporate Social Responsibility issues.

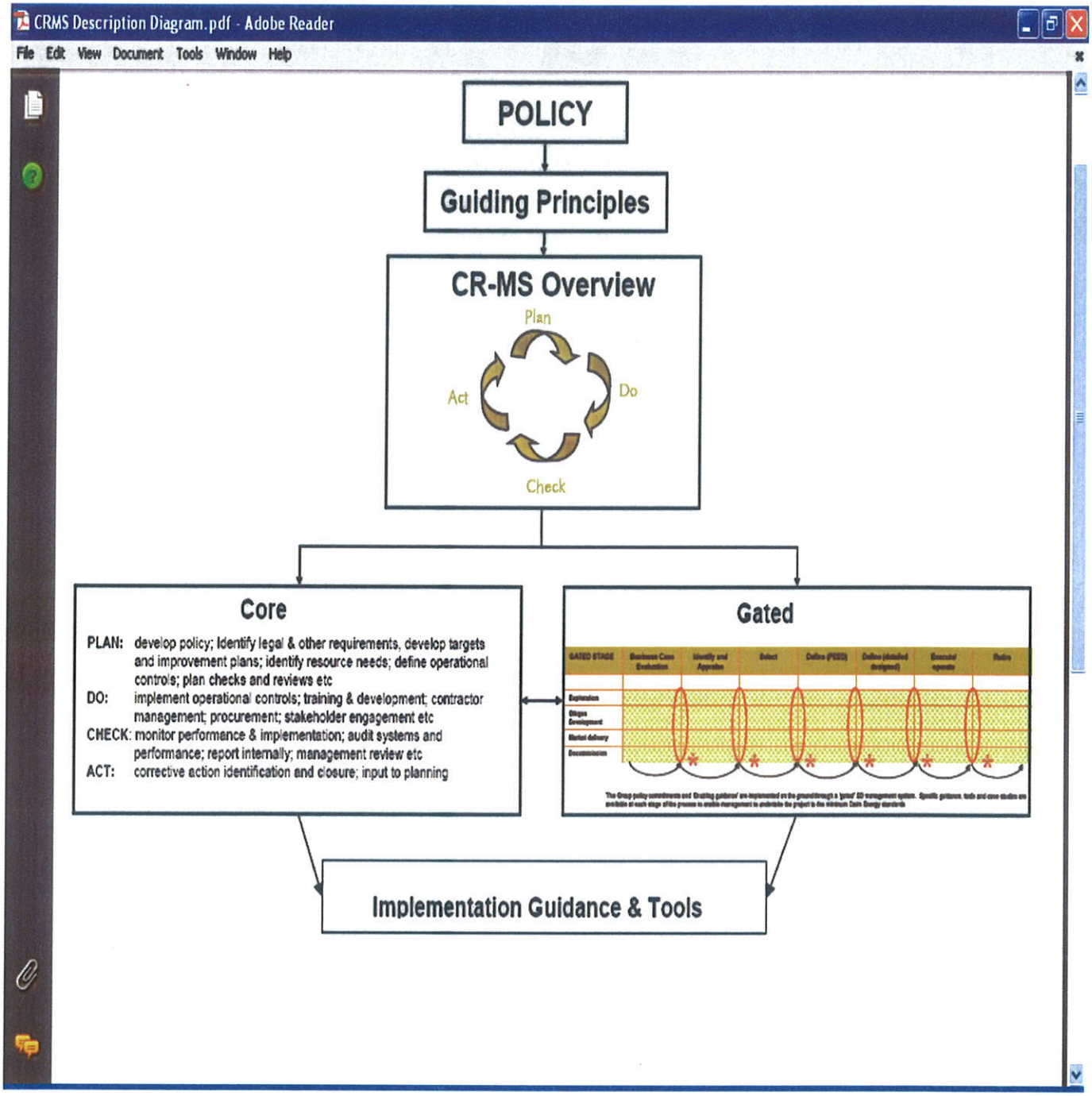
The Project will ensure that the requirements of CEIL HSES & CSR are adhered to, in addition to the applicable national regulatory and legislative requirements.

The company CR Management System hierarchy shown in following figure:

CEIL HSE standards and procedures with applicable national and international regulations will be applied as appropriate.

The intent within the design phase of the Project facilities is to develop an integrated approach to the assessment of major hazards and environmental aspects. Application of company standards will ensure adequacy in facilities design and will help manage the safety of the work place and environmental aspects throughout the operations lifecycle.

Figure - CEIL CR Management System Hierarchy (As a Guide)-


CRMS Description Diagram.pdf - Adobe Reader
File Edit View Document Tools Window Help
POLICY
Guiding Principles
CR-MS Overview
Plan
Act
Do
Check
Core
PLAN: develop policy; Identify legal & other requirements, develop targets and improvement plans; identify resource needs; define operational controls; plan checks and reviews etc
DO: implement operational controls; training & development; contractor management; procurement; stakeholder engagement etc
CHECK: monitor performance & implementation; audit systems and performance; report internally; management review etc
ACT: corrective action identification and closure; input to planning
Gated
Implementation Guidance & Tools

2.0 PROJECT HSE, CSR AND SECURITY ORGANISATION & RESPONSIBILITIES

The responsibility for the implementation of all health, safety and environmental objectives lie with the Head of BSPL Project, the person assigned to manage the execution of the Project. The Head of BSPL project is responsible for ensuring that HSE is given importance above that of cost, time, and quality in the management of the project.

It is the Project Head's responsibility to ensure that sufficient time and resources are provided to complete essential safety studies.

It is the responsibility of the project HSE Manager to advice on HSE objectives and HSE plans, project risk management process, and monitoring the implementation of Project HSE Assurance system.

All members of the Project team have a responsibility for the safe daily work and completion of the Project as elaborated in the Project Execution Plan Document No. BSPL-0005-PM-PRO-0002 and it is important that their role is clearly defined and is fully understood. To ensure a clear understanding at all levels the Head of Project (aided by the Project QHSS Manager) shall monitor and audit individual objectives, tasks and targets.

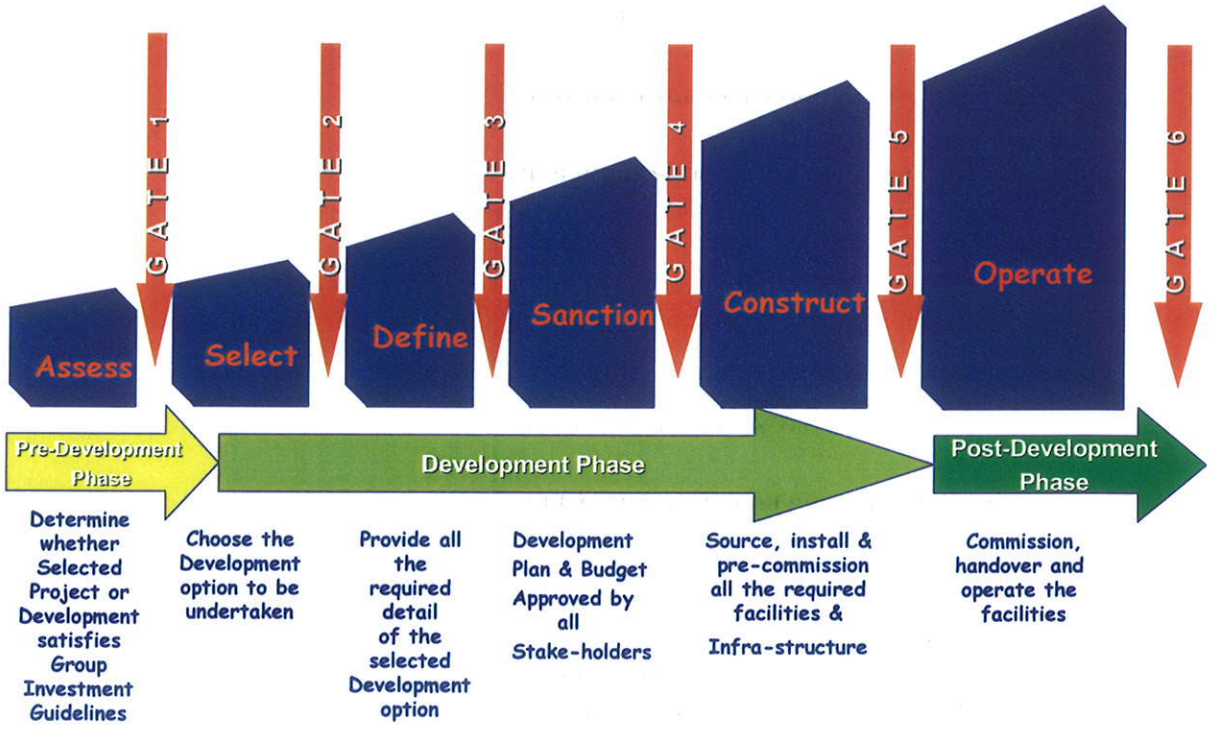
All Contractors shall submit the HSE Plan for their scope of work for review and approval by CEIL.

2.1 THE CAIRN GATED PROCESS

The Cairn Gated Process (CGP) provides an overall framework for project management which allows systematic appraisal and decision-making with respect to the readiness of the project to proceed from one project phase into the next phase. The CGP is a key part of Cairn's business investment process providing a structured and integrated approach to analysis of investment options, project selection, capital efficiency, value optimization and asset monetization.

The CGP has defined Decision Gates (DG) at the end of each project phase. At these gates the Gatekeeper, in conjunction with the Project Board, shall assure that the defined deliverables have been produced and thereby ready to move into the next stage. The purpose of the Decision Gates is to provide a clear framework and timelines for Management interventions, support to effective early decision making and better capital planning.

The CGP is a six stage process as illustrated by the figure below.



Specific deliverables will be developed for each stage of the BSPL project and target gate passage dates established. Refer Project Procedure BSPL-0005-PM-PRO-0001.

PROJECT HSE REVIEWS (PHSER)

Project HSE Reviews are a requirement of Cairn India Procedure - HSE, Security & CSR Audits and reviews Doc. No. CIL/HSE/PRO/02 1247.

Project Manager is required to verify the HSE performance of the project through its life cycle of design, construction, pre-start up, commissioning and operation. This will be achieved (primarily) through the implementation of an integrated approach of Project HSE Reviews (PHSER).

PHSER will be conducted at the following stages in the project life cycles:

- PHSER I- Conceptual design / selection phase
- PHSER II – FEED stage.
- PHSER III- Conducted in the final stage of Detailed Engineering and Design
- PHSER IV – Conducted in stages during the Construction phase

- PHSER V – Pre-Commissioning ,conducted at the end of construction phase
- PHSER VI – Conducted early in the Start Up Phase

PHSER I – Conceptual design/selection phase

Stage I PHSER to be carried out at a stage when the conceptual design /selection of design are ready with sufficient details for the project.

This has been addressed for the Midstream BSPL project through studies, discussions, exchange between CEIL and their consultants at various stages of project development.

PHSER II – DEVELOPMENT PROJECT DEFINITION PHASE- FEED Plus Stage

The Stage II PHSER to be carried out, depending on the project timing towards the completion of the FEED Stages. Considering the BSPL project nature this is planned to be taken up as the first formal PHSER.

This review will be carried out when it is considered that adequate definition has been reached in the FEED phase determined by the Project Manager in consultation with the Project HSE Manager.

The PHSER will be completed expeditiously to avoid any delays.

Objectives:

- To confirm that Cairn HSE, CSR and Security aspects have been incorporated into the project.
- To confirm all applicable internal and regulatory requirements are imbedded throughout the lifecycle of the project
- To confirm the environmental mitigation and monitoring measures outlined in the project EIA are considered throughout the project design, implementation and operation in order to avoid or control adverse environmental impacts.
- To confirm that the outcomes and recommendations of any HSE reviews have been incorporated into the project as appropriate.
- To follow-up the initial HAZOP study findings/ recommendations to ensure these are being addressed by the Project and where necessary included in completion of FEED Plus.

PHSER III - DETAILED ENGINEERING & DESIGN PHASE

PHSER III shall be carried out towards the end of the detailed design stage when engineering and equipment specifications are substantially firm but not yet frozen and a satisfactory HAZOP/ Risk Studies, where appropriate, have been completed. The PHSER will be completed expeditiously to avoid delaying the project and incurring modifications during construction, which may well have already commenced.

Objectives:

- To confirm that the design requirements specified at the Stage II PHSER have been implemented correctly.
- To follow-up study (Risk Reviews / HAZID/HAZOP/SIL) findings/ recommendations to ensure these are being addressed by the Project and where necessary included in the detailed design drawings (P&ID's).
- To confirm that fabrication, construction, pre-commissioning, commissioning, normal and emergency operation have been fully considered in the detailed design.

PHSER IV - CONSTRUCTION

PHSER IV to commence as soon as Stage III is complete and to cover the construction period until the facility is ready for commissioning. The PHSER is aimed at providing assurance that adequate procedures exist for the inspection, testing and pre-commissioning check.

Objectives

- To confirm that safe working practices and the HSE, Security , CSR Polices and procedures and 'controls' are being implemented during the construction phase.
- To confirm that no dilution of the design intent introducing any additional hazards has occurred during fabrication and construction.
- To review the procedures for field change control and materials handling and to check that overall systems for inspection, testing and documental control are in place and being implemented.

PHSER V - PRE-COMMISSIONING / COMMISSIONING

The pre-commissioning Stage PHSER to be carried out during the final stages of construction immediately prior to the commissioning phase. The Stage V PHSER will most probably overlap with the Stage IV PHSER and close liaison between the respective teams is essential. The PHSER should be completed and a report issued prior to commissioning.

Objective

- To confirm that the facility may be commissioned and operated safely and that the operating unit is ready to commission and operate the facility.

PHSER VI – START UP & OPERATION

This should be carried out during the early stages in the commissioning allowing time to complete any outstanding critical operational HSE aspects identified or reported.

Objectives

- To confirm that the operability aspects of the facility and its safety and environmental performance is acceptable and consistent with the performance targets defined in the Safety Case. To identify and report any possible improvements that may be considered.

2.2 HSE PERFORMANCE MONITORING

Project HSE performance will be monitored through regular reporting by HSE engineering evaluations, site inspections, internal/external audits, manager' safety tour etc.

Environmental monitoring will include compliance monitoring at the site and also the ambient environment around the sites as needed. Conditions stipulated by the regulatory agencies will be adhered to and status of compliance shall be reported as per required schedules. The Project HSE team will oversee the monitoring and compliance requirements pertaining to all HSE matters.

Project HSE Manager is responsible to establish the Internal and External HSE& S reporting requirements for the project.

HSE Performance of the project shall be presented monthly at the HSE Leadership Management presentations.

2.3 ANNUAL HSE ASSURANCE LETTER

The Head of the Project is responsible to submit an annual feedback from key Line Managers of this project on the status and progress made on HSE, Security and CSR within the Project over the previous calendar year. This is being submitted in the form of an Annual HSE Assurance Letter (s) which are compiled and submitted to the Cairn India Projects Board.

The aim is to get a "snapshot-in-time" perception of HSE performance of the project from key Line Managers. These responses will be consolidated to identify both those areas where progress has been made and those areas of weaknesses that still need to be addressed. The findings will then be included for subsequent HSE work plans and programmes.

The HSE Assurance Letter and the Monthly HSE Leadership Management presentations by the project provide assurance to the Cairn India Board that Project Management is making progress with the implementation of the Group and CEIL HSE Management Systems within their particular area of activity.

3.0 DEVELOPMENT OF SAFE FACILITIES

BSPL Project will be managed through a series of project life cycles or phases i.e. Definition /FEED, Detailed Engineering and Design, Construction, Pre-commissioning / Commissioning and Start Up. All hazards will be identified and safe guards deployed to address them.

3.1 DEFINITION/FEED PHASE

All non-technical issues are identified, economics and technical feasibilities are studied, and various alternatives considered. The 'front-end engineering and design' (FEED) requirements are finalized, the final alternatives selected and the hardware specified for incorporation into the BSPL Project execution plan. It advances to a final "the project specification" or FEED PLUS stage where everything has been defined in sufficient detail to enable detailed design work and actual procurement to commence.

3.2 DETAILED ENGINEERING AND DESIGN PHASE

FEED requirements are translated into detailed engineering for prevention and mitigation of pollution, and safety in the design will be incorporated through concurrent risk engineering, and to minimize potential of failure, accident and pollution incidents through adoption of best available technology and through the adoption of international and industry recognized standards.

3.3 CONSTRUCTION PHASE

Apart from safeguards required to ensure Health & Safety on site and to the surrounding local communities during the construction phase, this period is also critical to ensure the operational safety of the facilities. For the facilities to operate safely, it is essential that it is constructed in accordance with the design intent, and to the appropriate level of quality.

Failure of incorrect fabrication or of equipment or through use of materials which are inappropriate or other than those specified for use may only manifest in the future in the operating life of the facilities until wear and tear, corrosion, or deterioration have had their effect; or when the component is stressed beyond its operating condition or has to operate in an emergency.

To ensure against this, safety critical level analysis procedures and controls have been built into the scope of the project during engineering Procedures are introduced.

3.4 PRE-COMMISSIONING / COMMISSIONING PHASE

To review the procedures for system prioritization, site change control and materials handling and to check that overall systems for inspection, testing and to verify that documental control are in place for completion dossiers and same implemented.

3.5 START-UP

Verifies that all operational preparedness matters are closed out, construction and commissioning safety and project quality assurance measures (final check on the appropriateness of design and specifications) are addressed and ensure they have been complied with.

4.0 DEFINITION PHASE - HSE INPUT FOR FEED DELIVERABLES

As mentioned above, all non-technical issues are identified, economics and technical feasibility are studied, and various alternatives considered. The 'front-end engineering and design (FEED) requirements are finalized, the final alternatives selected and the hardware specified and cost estimated for incorporation into the BSPL Project Design. It advances to a FEEDPLUS stage where everything has been defined in sufficient detail to enable detailed design work and actual procurement to commence.

The following documents would be needed during FEED / subsequent stages to ensure that HSE, CSR and Security aspects pertaining the Project are accounted for:

- Environmental Impact Assessment
- Risk & Security Assessment
- Land Use Study Pattern - plus satellite imagery (ensuring facilities are not sited within areas of natural / social or environmental importance, and designated protected areas)
- Social Base Line Study
- Project Inputs:-
  - Regulatory / requirements register.
  - Project HAZID recommendations.
  - FEED HAZOP findings
- Project Quality Plan
- Fire Fighting Philosophy
- Contracting Strategy
- Operations philosophy

5.0 DETAIL ENGINEERING & DESIGN PHASE

5.1 HSE INPUTS FOR DETAILED DESIGN ENGINEERING

As part of the scope of work of the Detailed Engineering and Design, a 'Fit for Purpose ' study in accordance with HSE Hazardous Assessment Guidelines needs is desirable.

A Safety Case as per COMAH summarised below is envisaged for this project.

Hazard and Operability (HAZOP) during detailing and risk assessment will be an integrated approach of Safety, Health, Environment, Security, and Social Responsibility. The same will be undertaken concurrent with detailed engineering and design work thereby Safety (HSE) is continually addressed through all stages of the design and detail engineering in order to engineer out risk and reduce risk to ALARP.

It is recommended to carryout a Safety Integrity Level (SIL) Classification Study for trips and alarm systems in the project.

5.2 SAFETY (HSE) CASE COMAH STUDY DEVELOPMENT PROJECT OBJECTIVES

The Safety (HSE) Case COMAH study will demonstrate that:

- A 'Fit for Purpose' integrated approach to managing important Health, Safety, Environment, Security and Social / Community issues is made
- All potential major hazards and environmental aspects associated with the Project, and the risks to individuals and society, have been identified, understood and assessed; and that the significant impact is managed to ALARP;
- Operations including transportation and any SIMOPS activities are carried out safely;
- Adequacy of design is considered for the complete project facilities throughout the operation life cycles;
- An effective operational HSE MS is developed that continually identifies, assesses, eliminates and/or minimizes hazards/ impacts / threats / vulnerabilities thereby managing risk during operations to ALARP;
- Facilities are being operated within their design limits by detailing permitted operating parameter;
- Provisions for escape, protection, evacuation and rescue are adequate during any incident;
- All emergency systems required for the protection of personnel, the environment, and local community will perform their function adequately in any accident.

The Hazard / Aspect Register seeks to demonstrate that each hazard or potentially hazardous event has been identified and analyzed and that there are effective measures in place to ensure control and mitigate potential impacts to the environment.

5.3 COMAH SAFETY CASE / STUDY GOALS

The Project Safety "COMAH " study goals are fundamental to the study and managing risk to personnel. The focus of safety goals is to design and operate inherently safe facilities so that risk to personnel, the environment and local community is reduced to As Low As Reasonably Practicable (ALARP).

The Safety (HSE) Goals are as follows:-

Goal 1:	Eliminate or Minimise the HSE Hazards and Effects
Goal 2:	Prevent Realisation of the HSE Hazard and Effects
Goal 3:	Prevent Escalation of an Accident Event and Effects
Goal 4:	Minimise Exposure of Personnel to Hazards and Effects
Goal 5:	Ensure Personnel can reach a place of Safety in any Credible Accident Event.
Goal 6:	Reduce Resource Consumption and Minimise Energy Conversation and Environmental Loading

Goal 7: Create a positive contribution to Local Communities

5.4 COMAH SAFETY CASE / STUDY SCOPE

The COMAH Study shall cover the operation of following facilities and associated support activities:-

- Pipe lines
- Oil Receiving , Intermediate and Export Terminals
- Gas Generating Stations
- Heating stations
- Associated storage/ tank farm and pumping facilities
- Logistics & Transport (Road / Air)
- Ware-houses.

CONTRACTOR MANAGEMENT

This section describes the HSE policies and procedures for the systematic management approach to health and safety as it relates to the project construction activities. The purpose is to establish a standard approach for contractor health and safety that will assist in identification of hazardous situations and ensure procedures of safe working methods that reduce or eliminate exposure to unwanted injury or events.

An important HSE & S aspect at this phase is the Contracting Strategy adopted by the Contractors and therefore contractor management process requires ensuring that the Contractors HSE responsibilities and CEIL HSE & S expectation are clearly laid out at within the bidding stage.

The following steps are to be followed in order to achieve a good level of contractor HSE performance:

- Risk Assessment to identify Contractor HSE Risk
- Assignment of Contractor Management Responsibilities
- Pre-Qualification of Contractors
- Selection of Contractors on HSE ability
- Agreement of HSE Plan with Contractors
- Assurance of Contractor Competency
- Agreement of Communications and Reporting Requirements
- Monitoring HSE Performance
- Audit (By CEIL with participation by contractors and Contractor's own Audit system)
- Purchasing

5.5 HSE REQUIREMENTS IN CONSTRUCTION PHASE

The Contractors (and subcontractors) Safety Management Plan should be developed for each Project as per requirements under CEIL HSE Management System, whereby detailed Contractor HSE requirements are defined during the tendering and contract issuing phase. Contractor HSE acceptance will be given top status along with technical capability, quality and cost.

A key HSE deliverable from the successful contractor(s) will be the delivery of a Construction Safety Study (Safety Case) and Project HSE & S Management Plan which identifies all hazards, controls / mitigation measures relevant to the contractors' activities including but not limited to mobilization / demobilization, construction, pre-commissioning and commissioning of the Development Project Facilities.

Following list outlines the applicable acts and rules in India that needs to be complied with as appropriate.

(Also refer to project regulatory compliance requirements register document)

5.6 MONITORING AND COMPLIANCE

Following list outlines the minimum applicable Indian regulations related to Safety and Environment that will apply throughout the Project and an update and status monitoring register shall be maintained.

Environment

- The Water (Prevention & Control of Pollution) Act 1974 and Rules
- The Air (Prevention & Control of Pollution) Act, 1981 and Rules
- Environment (Protection) Act, 1986 amended 1991 and Environment Protection Rules
- The Hazardous Wastes (Mgt. & Handling) Rules, 1989 and amendments
- Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 and amendments
- Noise (Pollution & Control) rules 2000 and amendments

Safety

- OISD Guidelines
- The Petroleum Act 1934 and Rules 1976
- Gas Cylinders Rules, 1981
- Static & Mobile Pressure Vessels (Unfired) Rules, 1981
- Motor Vehicles Act 1988 and Rules
- Explosives Act and Rules
- Indian Electricity Act and Rules
- Indian Boiler Act and Regulations
- The Public Liability Insurance Act, 1991 and Rules

- Building & Construction Workers Rules 1996 and Act 1998

6.0 PRE-COMMISSIONING & COMMISSIONING PHASE

6.1 HSE OBJECTIVES

Systems and procedures are established, incorporating applicable regulatory requirements, industry standards and good oilfield practices to ensure that risks and hazards are eliminated or reduced to as low as reasonably practicable during the commissioning and start up of the facilities.

6.2 HSE BRIDGING DOCUMENT

The purpose of Health, Safety, Environment and Security Management bridging document is to provide a specific framework for managing the risks and achieving the project HSES objectives during the pre-commissioning, Commissioning and Start Up activities.

HSE& S bridging document will apply to:

- The completion of construction, pre-commissioning and commissioning of the facilities and acceptance by the Project Team of those facilities from the Contractor, the introduction of Hydrocarbons and
- Interrelated project activities such as pumping, heating and other arrangements.

All project and operational personnel engaged in commissioning and start up activities shall adhere to the requirements of the plan.

Any deviation from the plan must be with prior approval of the Operations Field Manger, in consultation with the Project Manager.

DEVELOPMENT HSE CLOSE OUT REPORT

A single report will be issued at the pre-commissioning and commissioning phase. This report collates into a single document the recommendations from HSE studies and PHSER reviews relating to the Project i.e. HAZOP, HAZID, SIL etc.

In addition, the report shall review all unresolved outstanding construction / engineering issues including Non Conformance Register's, Technical Query Registers, and Inspection, Test Records, Certification, and Regulatory Approval, and Punch list items dealt with by Project Management.

6.3 START UP DOCUMENTATION REQUIREMENTS

- HSE Plan descriptions (Commissioning to Operations)
- Project HSE Close-Out Report
- Pre Start-Up Audit
- Handover Procedure

- Commissioning Plan ,Procedures and Work packs
- Inspection and test records (ITR) and Procedures.
- Pipeline Emergency Procedures and Fire plans
- QA/QC Records & Mechanical Completion Dossiers
- Verify as-built documentation
- As-built drawings and specifications
- As-built HAZOP's
- COMAH Safety Case Report

6.4 REGULATORY CONSENTS AND APPROVALS

A Consents and Approvals Register with Management tracking table shall be prepared and used to track approvals from various regulatory agencies eg MoEF, RSPCB,GSPCB, CCOE, Electrical Inspectorate, Telecom, Coastal and Defence Authorities .

The responsibility to ensure timely consents and approvals throughout the Project phases will be suitably delegated.

7.0 START-UP PHASE

7.1 SAFETY CASE REPORT CONCLUSION AND STATEMENT OF FITNESS

Prior to the introduction of hydrocarbons into pipelines and facilities, the COMAH Safety Case Report shall be signed off, attesting that it adequately demonstrates that risk to personnel and nearby residents have been identified and are reduced to a level that is as low as reasonably practicable for the environment in which they are required to operate and live. In addition, it describes the H, S&E Management System, which demonstrates how the Health and Safety Policy is implemented.

7.2 PROJECT HSE REVIEW CLOSE OUT

A requirement of the Terms of Reference of PHSER VI will requires that any actions arising from the previous PHSER's have been closed-out. In particular, it assures Project Management team that all safety systems are in place before start-up can commence.

This series of reviews and audits will continue into the operating phase when the operations of facilities will be subject to regular technical safety audits. Amongst other aspects, these audits will confirm whether the operation is being conducted within the design intent, as defined in the COMAH Safety Case.

7.3 OPERATIONAL TEAM PREPAREDNESS

Upon introduction of hydrocarbons into the facilities, the COMAH Safety Case Report shall apply as the lead instrument of management control for safe operations for start

up of production. Formal handover of the facilities by the Project Team to the Production Team will occur whereupon the Asset Manager becomes responsible for safe operation of Production Facilities.

The Project Team shall develop and maintain an effective participation and consultative mechanism and processes with the Asset and Production Teams during the life cycle of the Project. This is to promote active communication and involvement of all personnel in the management of safety, control of work site hazards and awareness of the Project Completion/ COMAH Safety Case Report.

"Consultation and Participation" process by the Production Team includes but not limited to the following activities:

- Operations Philosophy for the Project
- Input to all Design Reviews including HAZOP / Safety Studies and COMAH Safety Case study Development
- Logistics Study /Analysis
- Pre Commissioning and Commissioning phase
- Joint Commissioning Team Development Project
- Operations testing of all safety systems before introducing oil into the system.
- Quality assurance of Vendor Operations & Maintenance documentation during drafting and acceptance
- Occupational Health Risk Assessment.
- 'SIMOPS' guide lines.
- Assist close out of design and commissioning safety action items
- Participate in "ALARP" workshops.

Production Team Key Deliverable Prior to Start Up includes but not limited to the following:

- Preparation of operations HSES Plan.
- Establishing Operational Readiness Plan including
  - Recruitment of Production Team
  - Emergency Preparedness Plan and appropriate training to be in place. e.g. Emergency Response Teams, Incident Control Centre and Medivac procedures in place.
  - Development of plans for Control of Incidents and Major Accident Hazards. Action Plan to include facilities and pipelines.
  - Development of Operating Procedures and Instructions. (SOPs')
  - Development of Training Manuals
  - Development of Safety Manuals (PTW/Risk Management/PPE/ Control of

Hazardous Chemical etc)

- Development of Security Manual and Procedures.
- Training of Operations personnel by Vendors and Suppliers.
- Development and Implementation of Safety Critical and Skill based Competency Based Training Modules.

7.4 DEVELOPMENT PROJECT CARRY OVER ACTIVITIES

Any carry over work in the project which remains to be completed after start up (by the Contractor), but not essential for start up will be under the responsibility of the concerned asset / operations personnel.

7.5 OPERATIONS REFERENCE DOCUMENTS

- Contractors HSE Plan
- Project HSE Plan
- Facilities Operating Manual– Installation Start Up and Shut Down
- Commissioning & Start Up Procedure
- Operations Safety (HSE) Case COMAH study Documentation
- Operations O&M Documentation
- Environment and Safety regulatory requirements e.g. Environmental Clearance Conditions, PCB requirements, CCOE conditions etc.