



NATIONAL MISSION FOR CLEAN GANGA

Ministry of Jal Shakti,
Department of Water Resources, River Development & Ganga
Rejuvenation, Government of India

Inception Report Occupational Health & Safety Audit (OHSA)



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Table of Contents

1	INTRODUCTION	1-1
1.1	Namami Gange.....	1-1
1.2	Scope of Work.....	1-3
2	PROJECT DESCRIPTION.....	2-1
2.1	Project Location	2-1
2.2	Ganga Basin.....	2-4
3	APPROACH AND METHODOLOGY	3-1
3.1	Introduction	3-1
3.2	Focus on Fact Findings	3-2
3.3	Review the Implementation of ESMF of the NGRBA Program	3-4
3.4	Review of Project and Safeguard Documents	3-5
3.5	OHS Audit to Identify Areas as per the Categories	3-1
3.6	Review of Specific Items that shall be covered Under OHS Audit	3-1
3.7	OHS Audit and Fact Finding	3-2
3.8	Review of Implementation Arrangement	3-4
3.9	Review of Budgetary Provision in Contract Document	3-4
3.10	Site visit, meeting and interaction at sub project level	3-4
3.11	State and National Level Trainings.....	3-4
3.12	Deliverable & Report Submissions.....	3-5
3.12.1	Submission of Inception Report.....	3-5
3.12.2	Submission of Initial Findings Report.....	3-5
3.12.3	Preparation and Submission of Draft OHS Audit Report	3-6
3.12.4	Follow-up Visit.....	3-6
3.12.5	Preparation and Submission of Draft / Final Reports	3-6
4	SITE VISIT PLAN, WORK SCHEDULE & DELIVERABLES.....	4-1
4.1	Site Visit Plan for Phase -II OHS Audit.....	4-1
4.2	Work Schedule and Planning for Deliverables.....	4-3
4.3	Team Composition	4-5
5	WAY FORWARD	5-1
	APPENDICES	5-1
	Appendix-1: List of Projects under Audits	1
	Appendix-2: OHS Audit Check List as per IS 14489 -for all Sites	4

List of Tables

Table 1-1: Deliverables Details.....	1-7
Table 1-2: Structure of the Report.....	1-8
Table 2-1: State Wise Project List under Different Phases	2-1
Table 3-1: MAJOR OHS AUDIT ELEMENTS	3-3
Table 4-1: Site Visit Schedule – OHS Audit.....	4-1
Table 4-2: Schedule of Deliverables for OHS Audit.....	4-3
Table 4-3: Work Schedule and Planning for Deliverables.....	4-4
Table 4-4: Team Composition for E&S Audit	4-5

List of Figures

Figure 2-1: Map of Project Location	2-2
Figure 2-2: Main Stem and important tributaries of River Ganga	2-4
Figure 2-3: The River Ganga Reach and the location of Participating Project States.....	2-4
Figure 3-1: Projects for Occupational Health and Safety Audit (Projects under Construction/ Operation and Tendering/LoI).....	3-2

LIST OF ABBREVIATIONS

CPCB	---	Central Pollution Control board
CPR	---	Common Property Resources
EAP	---	Externally Added Projects
EMP	---	Environmental Management Plan
EPA	---	Environment (Protection) Act
ESA	---	Environment and Social Assessment
ESF	---	Environmental and Social Framework
ESS	---	Environmental and Social Standards
ESMF	---	Environmental and Social Management Framework
GoI	---	Government of India
I&D	---	Interception and Diversion
LASA	---	Lea Associates South Asia Private Limited
MLD	---	Million Liter per day
NGRBA	---	National Ganga River Basin Authority
NMCG	---	National Mission for Clean Ganga
OP	---	Operational Policy
OHSA	---	Occupational Health and Safety Audit
RAP	---	Resettlement Action Plan
RPLAF	---	Resettlement Policy and Land Acquisition Framework
SGRBA	---	State Ganga River Basin Authority
SPCB	---	State Pollution Control Board
SMCG	---	State Mission for Clean Ganga
STP	---	Sewage Treatment Plant
TOR	---	Terms Of Reference
WB	---	World Bank

1 INTRODUCTION

1. GANGA BASIN is the largest river basin in India in terms of catchment area and constitutes, almost one-fourth of the country's land mass, near about one-third of country's water resources and supports more than 40 percent of country's population. The delta of the Ganga basin is one of the largest in the world, which is known by Sundarbans. It is the 20th longest river in Asia. Drainages of the River traverses through 11 states of the country (Uttar Pradesh, Madhya Pradesh, Rajasthan, Bihar, West Bengal, Uttarakhand, Jharkhand, Haryana, Chhattisgarh, Himachal Pradesh and Delhi), where largely covered states are Uttar Pradesh (28.02 %), Bihar (10.86%), West Bengal (8.3 %), Uttarakhand (6.15 %) and Jharkhand (5.85 %). The current focus of World Bank funded National Ganga River Basin Projects (NGRBP) Under National Mission for Clean Ganga (NMCG) is on five participating states namely Uttarakhand, Uttar Pradesh, Jharkhand, Bihar and West Bengal. Delhi state has been considered, which is on Yamuna River, a major tributary of Ganga River. LEA Associates South Asia Private Limited, New Delhi has been appointed as the Consultant for carrying Occupational Health & Safety Audit for identified sub-projects. The identified project is under various stages (operation, trial run, construction and tendering) in all the five basin states and including Delhi which is located on Yamuna River, a major tributary of Ganga River.

2. As per the contract, the Consultant would carry out the OHSa Audit for 81 projects (as per Responses to pre-proposal and Bid Queries) which comprises 69 STPs, I&D and Networks and 11 Ghats and Crematorium. The Consultant would carry out OHSa audit in two stages i.e initial visits to all projects and second visit would be follow-up to identified sites.

3. The consultants would need to give training after site visit (site specific), then two training at each state level (one after initial audit and second after follow-up) and one national level training. In total 11 training need to be given.

1.1 Namami Gange

4. Government of India has launched "Namami Gange" an Integrated Conservative Mission programme in the year 2014. The Namami Gange programme is an umbrella programme which covers the previously sanctioned ongoing projects as well as the projects in new components with multi sector mandate to address both water quality and water quantity issues. The programme aims at integrating previous & currently ongoing initiatives by enhancing efficiency, extracting synergies and supplementing them with more comprehensive and better coordinated interventions. Namami Gange Programme has been segregated into two different components:

- **Component A:** Pertains to ongoing projects of cleaning of river Ganga & its tributaries, including World Bank Assisted NGRBA programme having remaining central liabilities.
- **Component B:** Pertains to new initiatives to be undertaken in 5 major sectors i.e. Infrastructure Development (Sewage Treatment, River Front Development, and Industrial Waste Water Treatment

& Solid Waste Management), Institutional Development, Ecological Sustainability, Research & Development and Communication & Public Outreach.

5. In addition to the physical resource value, the socio-cultural significance of Ganga River is also enormous. At the same time, the River is extremely polluted and many studies point to its high level of environmental depletion. The World Bank recognises that the pollution in River Ganga is primarily a result of inadequate infrastructure, the weak capacity of local water and wastewater utilities in the basin, and the poor state of environmental monitoring and regulation. It is further attributed to factors such as (i) inadequacy of municipal wastewater infrastructure and services, (ii) industrial pollution, (iii) solid waste and non-point sources, and (iv) inadequate in-stream flows. Recently, the Biological Water Quality assessment of the River Ganga (2017-18) carried out by the Central Pollution Control Board (CPCB) observed that on mainstream of River Ganga although none of the locations were found to be severely polluted but most are in moderate pollution range.

6. In this context, The National Mission for Clean Ganga was established in the form of a national level Program Management Group (PMG) in 2011, for seeking \$1bn assistance from World Bank. Cabinet Committee on Economic Affairs (CCEA) accorded approval on 28.04.2011 for the World bank assisted National Ganga River Basin Project (NGRBP) at an estimated cost of Rs. 7000 crore to be implemented by NMCG as a registered Society under the Societies Registration Act 1860, to act as an implementation arm of NGRBA (External Funding). With change in Allocation of Business Rules, 1961 vide Gazette Notification dated 31.07.2014, the work related to Ganga and its tributaries was transferred to Ministry of Jal Shakti, Department of Water Resources, River Development and Ganga Rejuvenation from the Ministry of Environment & Forests. The next major development in the evolution of NMCG was launch of Namami Gange Programme on 13th May 2015 with the approval of Cabinet as a Central Sector Scheme (100% central assistance), with components including all objectives of NGRBA. The non-lapsable fund of Rs 20,000 crore was earmarked for five-year period, 2015-2020.

7. NMCG acted as implementation arm of National Ganga River Basin Authority (NGRBA) which was constituted under the provisions of the Environment (Protection) Act (EPA), 1986. Where NGRBA dissolved and consequent to the constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred as National Ganga Council) vide notification no. S.O. 3187(E) Dt. 7th October 2016 under EPA 1986.

8. At the Central level, NMCG was constituted as an authority to ensure implementation of programmes. At the State level, State Mission for Clean Ganga (SMCGs) of Uttar Pradesh, Uttarakhand, Bihar and West Bengal were set-up as registered societies. In Jharkhand, a dedicated Nodal Cell within the Department of Urban Development was set up. At the local level, specific Executing Agencies (EAs) are selected for implementation of various activities, including infrastructure investments under the Namami Gange program.

9. During the implementation of sub-projects, 4 (four) recent fatal incidents have occurred in 4 sub projects, 3 (three) incidents in the state of Bihar and 1 (one) in Chamoli District, Uttarakhand. This

surges NMCG for carrying out a detailed and thorough Occupational Health and Safety (OHS) Audit of all the investments projects under the Bank-funded National Ganga River Basin Project, in phases.

10. In the first phase, NMCG has engaged consultants to carry out OHS audit for the 9 sub-projects (2 in Uttar Pradesh, 6 in Bihar and 1 in West Bengal). In the second phase NMCG intend to carry out audit for 81 sub-project which includes STPs, I&Ds, Networks and the Ghat and Crematorium.

1.2 Scope of Work

11. Occupational Health & Safety Audit Consultant is mandated to (i) assess how the national/local regulatory frameworks, the World Bank Safeguards Policies and Environmental Health and Safety (EHS) Guidelines, ISO Standards, Good International Industry Practices (GIIP), etc. are implemented and how training, monitoring and enforcement aspects could be strengthened to limit deviations and the risk of injuries or casualties in the work place (ii) The audit would also assist in identification of critical factors which needs urgent attention. The audit scheme would provide concrete and actionable recommendations to rectify identified issues.

12. The Scope of Work under OHS Audit for the sub-projects which are under implementation (operation, construction, trial run or under tendering) are mandate as follows:

- **Task 1: Review the provisions of ESMF and its Environmental Management Plan to determine if and whether the ESMF or its EMP needs to be completed or clarified to ensure that World Bank Safeguards Policies are better understood:** The OHS audit process will check compliance to the ESMF and EMP aspects which are already in place and project specific. The auditor would check implementation of these during construction, operation and maintenance of investments approved by NMCG under NGRBA program, across all categories and different sub-project locations. The audit will review the adequacy of the ESMP (including RAP, where relevant), its implementation by the contractor, ESMP supervision by the executing agency, overall monitoring by NMCG / SMCG, reporting practices and recommend suitable measures to include/improve overall implementation of ESMP in the respective projects. The ESMF and EMP would be reviewed sub-project specific, to see whether it's meets World Bank Safeguard Policies.
- **Task 2: Review the implementation of the ESMF of the NGRBA Program, Environmental, Health and Safety General Guideline of the World Bank; Environmental, Health, and Safety Guidelines for Water and Sanitation of the World Bank Group, in particular in terms of training, monitoring and enforcement aspects, and:** The audit will review the implementation of environmental and social management framework of NGRBA (both for EAP and Non-EAP sub-projects) in terms of (i) screening of sub-projects (ii) environmental and social categorization of investments (ii) preparation of environmental management plans for the respective sub-projects as per the agreed ESMF for the NGRBA program. The OHS Audit would also per see the implementation of General EHS guidelines and The Environmental Health and Safety Guidelines for Water and

Sanitation of the World Bank. The auditor would see that these guidelines are in place and are being implemented at sub project level.

- **Task 3: Review to what extent contractors in audited investments work in compliance with Indian Standard (IS: 14489:1998; Reaffirmed 2002) Code of Practice on Occupational Safety and Health Audit:** The Auditor during sub-project visit would review the implementation of Indian Standard (IS: 14489:1998; reaffirmed 2002) Code of Practice on OHS by the contractors, sub-contractors and project operators. The site appraisal would be carried out with reviews of SOPs which are already in place. Review of tool box talks register, induction training, site safety instruments and tools, training methods adopted, reporting procedure adopted, incident handling, emergency situation, etc.
- **Task 4: Auditing the compliance of the Approved Investments for different project life cycle after project contract:** The audit would be undertaken for all project under differ stage after contracts as given in the OHS list. It includes project:
 - a. Concept development/basic design/ detail design stage
 - b. Construction, Pre-commissioning and Commissioning stage
 - c. Operation and Maintenance stage
 - d. Decommissioning/Demolition/Dismantling stage (only where relevant)).
- **Task 5 Reporting:**
 - Are the World Bank Safeguards and OHS requirements clearly stated in the Project documents/Contracts/ SOPs?
 - **Are all people.** who are engaged in project by contractors and sub-contractors know requirements and standards of OHS and IS 14489:9198, 2002 and OHS and working condition code 2020. Are all engaged personal, fully trained and aware before getting deployed on work sites. Are the proper training given on how to implement them, how to monitor that they are duly implemented and how to react in case of incident or emergency? The audit should assess by interviewing relevant construction workers, site managers, enforcement officers and other relevant stakeholders.
 - Procedure adopted for implementation monitored, checking for availability of appropriate PPE, monitoring instruments, machineries like exhaust, ventilation system, SCABA, etc. in the stores and their use by the construction workers, how to use, calibration certificate, etc. reviewing the relevant supervisors/ safety officer are in place to ensure training and mentoring of new staff on the job.
 - What are the enforcement measures and what happen when deviations or shortcomings are identified? Are appropriate action carried out, how fast, and if not, why?
- **Task 6 OHS Audit Report:** The OHS Audit report would be prepared based on site visits for all the sub-project as listed in the RFP. The audit would be undertaken by the experts which would be done

without prior information to the contractors. The date, time would be kept confidential and would be surprise one. This would provide appropriate picture of site working condition and OHS implementation by the contractors. All the audit would be taken in the local language. The interaction with the workers be kept secret and would not be disclosed to others.

- The audit report would include the world Bank General EHS Guideline implementation, IS 14489:1998, 2002 and OHS and working condition code 2020. but not limited to:
- **Review of Sub Project Design, Standard Operating procedures (SOP) and practices are in place** for handling of storage of hazards material in construction as well as in maintenance work including confined spaces such as underground or below grade vaults with limited access, manholes, sedimentation tanks, Mixing equipment, sludge rakes, pumps and mechanical devices used for a variety of operations (are the protocols for checking of atmosphere, ventilation provisions, escape and egress routes, gassing (H₂S, methane, CO and other toxic well understood and implemented as they should be), Permit to Work (PTW) etc., Lock Out Tag Out (LOTO) for electrical risks etc.
- **Review of Sub Project Design, SOP and practices for mechanical/electrical hazards** such as hand over of machines for maintenance (free from toxic sludge/materials etc., isolation procedures, re-energisation etc.) and inadvertent energizing of machines or machine parts,
- **Review of Sub Project Design, procedures and practices for** controlling trips, falls, cuts, mutilation of body parts, drowning and head/body injury, in particular in proximity of large Vessels, slippery/wet equipment, large equipment, rotating equipment etc.
- **Review of Sub Project Design, procedures and practices** for handling toxic chemical and asphyxiation hazards at the facilities, such as decreased oxygen levels (replacement of oxygen with methane/hydrogen sulphide, consumption by the decay of organic material, scavenging during rusting etc.)
- **Review of Sub Project Design Occupational Health hazards /exposure** to Facility workers such as Microbial, fungal/bacterial/viral hazards due to physical handling/inhalation hazards

associated with handling of human and animal wastes, airborne aerosols (aeration), contact with mucous membranes, waste material, chlorine/hypochlorite, ozone, Ultra Violet light etc.

- **Review of existing occupational Hygiene practices** relating to ingestion hazards (hand wash procedures/ infrastructure in place, Personnel Protection Equipment (PPE) practices/provisions, disinfection procedures, canteen etc.
- Review of Emergency facilities at the STP (emergency hooks/lines at large equipment, life lines, flotation devices, breathing air, first aid, ambulance, quick rescue equipment etc.)
- Review of Fire risks and firefighting measures at the facility
- Review of Status of safety and rescue equipment at STP or Sewer network site (control room for maintenance) including Hazardous gas detector meter, emergency oxygen cylinder and operating procedures, PPE kit (water proof suit, confined space ventilation equipment, helmets, hand gloves, mask, and eye protector etc.).
- Review of existing procedure in daily routine in handling incidences. Does the contractor have a logbook? What measures are taken to address incidents?
- To Find out whether orientation and training are given to the construction workers to protect themselves from accidents. Check the module and the resource person they use and how regular it is.
- To review the existing emergency plan in place to deal with incidences including fatality. Does the contractor have a procedure to follow and responsible persons to implement the procedure? Do they have a first aid facility at the site? Is it functional?
- To review the measures taken immediately after the recent 3 fatalities occurred to protect similar incidences.

13. The findings of OHS Audit would be summarized for each site in a Tabular form. It would also be including colour coding of risk/ Hazards involved. The report would comprise of compliance, non-compliance, best practices to implement Safety protocols.

14. There would be Corrective measures provided for each subproject against short falls reported. The report would be sub-project specific along with the name of the agency responsible for each of the above. SAFETY Audit would also include the Safety guideline laid out in the Safety management framework of the NGRBA Program, Environmental, Health and Safety General Guideline of the World

Bank; and to the Safety Audit should comply with the Indian Standard (IS: 14489:1998; Reaffirmed 2002) Code of Practice on Occupational Safety and Health Audit.

- **Duration:** Total duration for this assignment (OHS Audit) is – 270 days/ 9 months. In the given time frame, the consultant would carry out OHS audit twice. Once during initial audit findings and second time during follow up visit to all sub project’s locations.
- **Trainings:** As per our understanding, the consultants need to carry out 11 (eleven) number of trainings. 10 in basin state (5 state) and 1 at the central level. The state level training would be carried out twice i.e. 1st before submission of Draft OHSA Report, after completion of site visit and submission of initial findings and 2nd state level training after follow -up visit before submission of final OHSA Report.

▪ **Deliverable and Payment Schedule**

As per the RFP, the consultant needs to submit the Final Safety Audit report within 180 day of commencement of work. the report would comprise of executive summary, recommendation based on audit findings, trainings, implementation at sub project level, monitoring and enforcement. The report would address finding on fatal incidence and root cause analysis to avoid similar incidence in future. The details of deliverables are as follows:

Table 1-1: Deliverables Details

Deliverable	Timeline	Payments
Submission of inception report (including work plan and site visit plan for approval by NMCG and its acceptance by NMCG	30 days	10%
Submission of Initial findings and its acceptance by NMCG	90 days	20%
Site visits and summary presentation (PPT) on preliminary findings and its acceptance by NMCG	120 Days	10%
Submission of Draft report incorporating comments on PPT and training** on OHSA at 5 basin states and its acceptance by NMCG	180 days	20%
Completion of follow up visits such as compliances of Auditor’s comments, training and sharing of good examples with site teams etc.	240 days	20%
Submission and acceptance (by NMCG) of Final report and training** on OHSA at 5 basin states and one final concluding OHSA workshop at New Delhi	270 days	20%
Total		100%

This OHSA report consists of 15 (fifteen) chapters. The brief description or an overview of the chapters is given in Table 1-2:

Table 1-2: Structure of the Report

Chapter	Description
Chapter 1: Introduction	This chapter describe the purpose of OHS (e.g., Occupational Health and Safety) and Community Health and Safety (CHS) Plans, and/or local legal requirements), intended audience (stakeholders), issuance, etc. Management of change and who can authorize it on OHSA.
Chapter 2: Project Description	This chapter would discuss project background and scope including the project stage and the activities to be undertaken. It also provides brief description of people involved in project (employees, contractors, sub-contractors, suppliers, etc).
Chapter 3: Project Objective	This chapter would highlight on the objectives of the study and Key Performance Indicators (KPIs) to achieve these objectives. Include any assumptions/ constraints made in the objectives or project scope.
Chapter 4: Health and safety Policy Statement	This chapter discuss issues related to Health and Safety Policy Statement, Health and Safety Policy and/or Contractor Policy (if available) statement. Overall vision, values and conduct and behavior expectations from the Project Director or Site Engineers.
Chapter 5: Health and safety Organization	This chapter would discuss issues on organization structure and people who will be responsible for the management of the project’s OHS/CHS risks, compliance, and other legal requirements. Team Structure Short description/ chart of personnel responsible, include the project management team.
Chapter 6: Legal and Other Requirements	This chapter discuss legal obligations with a short description of the main requirement(s) under each obligation (e.g. Labour Act, Work Bank Policies, etc.)
Chapter 7: Hazard Identification and Risk Management	This chapter would address issues like Project Risk Register including the name of the facilitator and participants, the impact arising from a defined hazard due to a specific activity, Community health and safety (CHS) risks, a traffic management plan, Health and Safety Operational Control, Impact / Hazard / Activity and how risks are managed on sites
Chapter 8: Communications System	This chapter would discuss issues on onsite communication system which include Health and Safety Training including Induction, Health and Safety Activities, Meetings and Committees, Health and Safety Message Board on sites, communication to Contractors and Sub-Contractors, suppliers, Community / External Communication-community liaison, local government, consultation, complaint , Non-Compliance/ Conformance and Disciplinary Process on safety policies.

Chapter	Description
Chapter 9: Training and Competency	This chapter would discuss on training and competency at sub project level, which include training and induction, Competency assessment.
Chapter 10: Emergency Management	This chapter would provide a brief summary of site’s emergency response preparedness (ERP) plan including reporting procedures, emergency contacts, emergency response team (ERT), evacuation plan/ assembly points and emergency test/ evacuation drills. Site’s fire protection and prevention procedures including fire response (internal/ external), fire notification and alarms, etc., Hazardous Substance Spill Response and Prevention, information on the first aid kits, first aiders, eye wash stations and emergency showers including their locations within the project site.
Chapter 11: Site Security Plan	This chapter would highlight issues on site’s security plan, exterior boundaries, access/ egress of project personnel and visitors, movement of equipment and materials, site traffic and vehicle parking, patrol and security inspections, responsibility during emergency situations, etc
Chapter 12: Incident Reporting and Investigation	This chapter would discuss issues like project incident reporting and investigation process, local legal requirements, and any other requirements specified in the contract. Roles and Responsibilities for corrective action, Management of Incidents like reporting of near miss, corrective and preventing measures and their recording.
Chapter 13: Project Health and Safety Performance	This chapter would discuss key performance indicators (KPIs) such as risk assessment, training and inspection/audit conducted that are proactively. Health and safety monitoring at workplace, and the community level, Audits and Inspections.
Chapter 14: Management of Change (MOC)	This chapter would discuss process and requirements for changes to the operational processes and controls that may impact on OHS / CHS performance. New Significant Risk/ Hazard Identified
Chapter 15: Management Review	This chapter would describe the management review of the OHS process including participants and how often it is done. The documentation and communication to workers, contractors and relevant stakeholder.

2 PROJECT DESCRIPTION

15. As previously mentioned in Chapter 1, the Occupational Health and Safety Audit Consultant is mandated to (i) review the implementation of Environmental and Social Management Framework (ESMF) and Environmental Management Plan (EMP) of the NGRBA Program, and to (ii) Review the provision of ESMF and EMP and to establish that they ensure that World Bank Safeguard Policies are better understood and implemented in all sub-projects and (iii) to review the contractors safety policy and audit complies with the Indian Standard (IS: 14489:1998; Reaffirmed 2002) code of Practices on OHS.

16. The OHS Audit requires to be carried out for 81 projects, 69 Sub projects (STPs, I&D and Networks) and 12 Ghats and Crematoria (Please refer Appendix 1)

17. State wise Projects details under different phases are given in **Table 2-1**. The List of total projects including E&S Audit is presented in **Appendix 1**.

Table 2-1: State Wise Project List under Different Phases

S.No	Project State	Total Number of Project	Project Status		
			Under Operation	Under Construction	LoA/ Under Tendering
STPs, I&D and Sewerage Networks					
1.	Uttarakhand	6	5	1	-
2.	Uttar Pradesh	23	10	11	2
3.	Bihar	24	8	16	-
4.	Jharkand	3	2	1	-
5.	West Bengal	10	3	6	1
6.	Delhi	3	-	3	-
Ghats & Crematoria					
7.	Uttarakhand	3	2	1	-
8.	Uttar Pradesh	1	-	1	-
9.	Bihar	4	3	1	-
10.	Jharkhand	1	1	-	-
11.	West Bengal	3	1	2	-

2.1 Project Location

18. The identified projects for OHS Audit are located in six participating states. 5 (five) projects locations in Ganga Basin State i.e Uttarakhand, Uttar Pradesh, Bihar Jharkhand and West Bengal. And

one in non-Ganga Basin i.e Delhi. The Project Locations are presented in Figure 2-1. Line diagram of river Ganga is also presented in Figure 2-1.

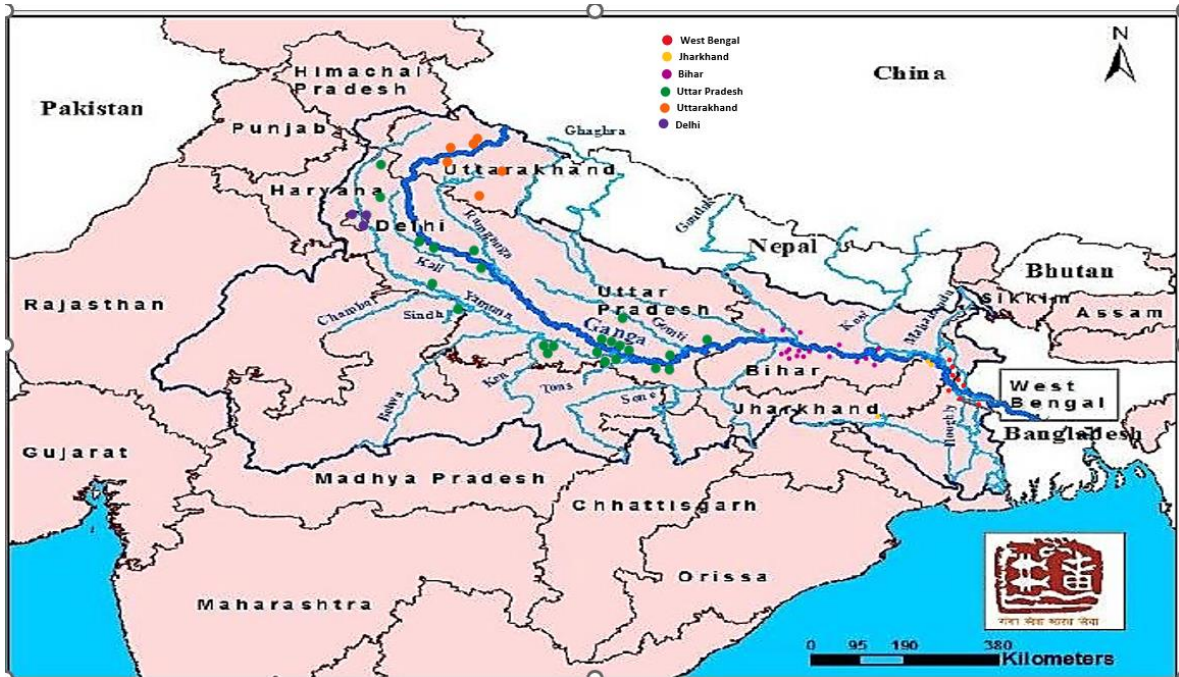


Figure 2-1: Map of Project Location

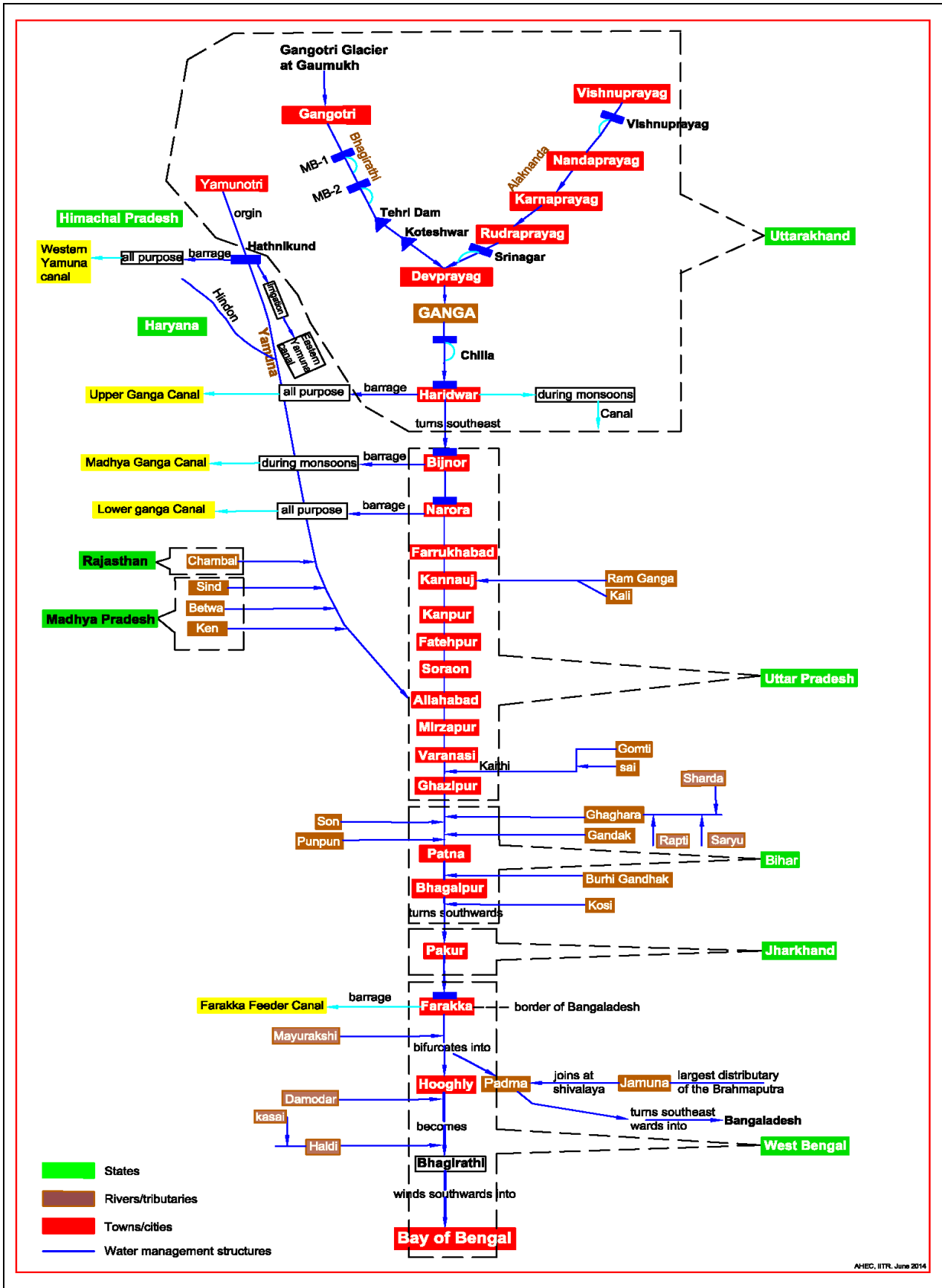


Figure 2-2: Main Stem and important tributaries of River Ganga

2.2 Ganga Basin

19. All the projects are located along the Ganga Basin, which is the largest river basin of Asia, The Ganga basin outspreads in India, Tibet (China), Nepal and Bangladesh over an area of 10,86,000 Sq.km. The major part of the geographical area of Ganga basin lies in India, which is slightly more than one-fourth area of the country. The basin lies between east longitudes 73°2' to 89°5' and north latitudes 21°6' to 31°21' having maximum length and width of approximately 1,543 km and 1024 km respectively.

20. From a hydrological point of view, the entire length of Ganga River in India can be divided into three stretches. The Upper Ganga reach, the Middle Ganga reach and the lower Ganga reach from Ballia to its delta.

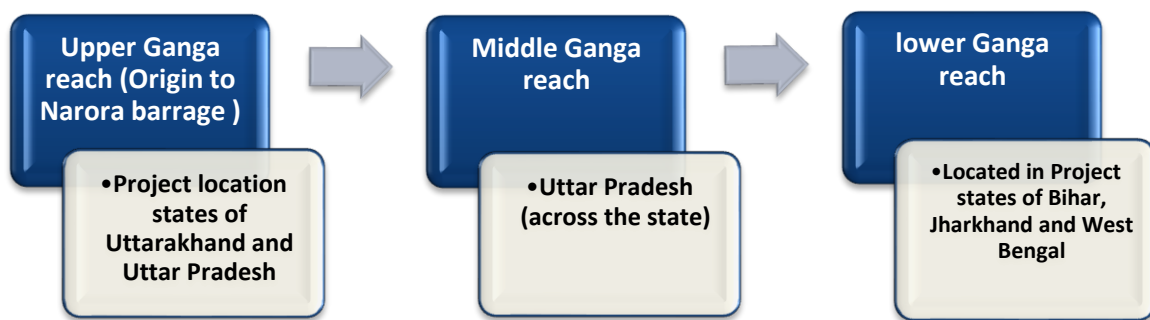


Figure 2-3: The River Ganga Reach and the location of Participating Project States

21. Ganga and its tributaries have formed flat and fertile plain in North India. This has resulted in the origin of many civilizations due to water available for cultivation and mode of transportation. The Rich alluvial soil supports the growth of varieties of vegetable, grains and fruits. The Ganga River basin constitutes 26% of Indian landmass and support about 43% of the country's population. The river basin proliferates in 11 states comprising 252 districts of India.

22. Ganga is a snow-fed river with perennial nature having abundant water resources, fertile soil with suitable climate. This has given rise to a highly developed agriculture-based civilization and one of the most densely populated river basins in the world. The river flows through 11 States of India before it drains into the Bay of Bengal. It brings sediment and nutrients which helps in providing long-term fertility to the basin areas. The biodiversity of the river Ganga synthesizes three different eco-regions of India namely the Himalayas, the Gangetic plains and the Delta region. A large number of lakes and wetlands spread across the Ganga basin support specialized flora and fauna as well as migratory species, which embraces crucial ecological and social functions. It is an adobe of various relics, rare and threatened species.

23. However, the major threat towards degradation of water quality of river is population pressures, extensive and unplanned urbanization, industrialization, expansion of agriculture, destruction of forests, abstraction of water for irrigation and industry, lack of proper investment in water quality management & infrastructure and governance problems.

3 APPROACH AND METHODOLOGY

3.1 Introduction

OUR APPROACH

24. The methodology conceived for this assignment elaborates the best way forward to carry out the study based on our experience in similar projects and also conceiving from our proficiency in national and international environmental and social assessments. In view of the multiple tasks associated with the assignment, we have framed a systematic scheme to undertake this assignment.

25. **Commitment to the Task by Deployment of Professionals for Site visit:** The benefit of such an assignment depends on the on-site discussion and fact finding by the proposed professionals, to ensure diligence to the proposed scope of work and co-ordination with the project proponents. This will be ensured with organisation's commitment to dutifulness and delivery of the job. We propose that the proposed Key Experts of this assignment will be visiting respective project locations during the project duration for consistent delivery of services. We will be utilising our own project-offices located in Kolkata, Dehradun, Lucknow, Patna and West Bengal.

26. **A Strong Consultation Strategy:** We recognize that the success of the project primarily depends on intense interaction, with stakeholders, including executing agencies and other associated entities, if any. The consultation strategy thus formulated for the proposed assignment has two major components, (i) Integration wherein the institutional-level personnel attached SMCG/SPMG at state level, implementing agency like Jal Nigam, BUIDCO, JUIDCO, and KMDA, etc at state level (ii) Interaction with project contractors/ subcontractor implementing the project. Our successfully evolved consultative approach will be used here in close co-ordination with NMCG, SMCG and state level implementing agency.

27. **Internal Monitoring and Reporting Mechanism:** Complying fully with the Terms of Reference (ToR), we would deploy the Experts responsible for the proposed activities to deliver the output based on the detailed Work Plan. The specific project experiences of respective Key Experts shall be shared through internal meetings, and if found necessary, appropriate corrective measures will be taken. Also, we will take advices from our own other Sector Experts (other than those proposed in the RFP) for troubleshooting, if any.

28. METHODOLOGY

29. Thus, creating a firm ground based on the above-mentioned approach as well as based on our understanding of the ToR, the METHODOLOGY for the given assignment has been formulated. Based on the overall genesis of NMCG and NGRBA and its various components, and also based on the scope of service, the CLUSTERS for OHSA Consultancy has been identified and presented in Figure-2-1. The geographic distribution of the sub-projects under preparation, construction and Operation & Maintenance phase has been seen and a suitable FIELD PLAN for AUDIT has been proposed which is tentative and may be revised accordingly on the request of SPMGs/ SMCGs. Any revision in the field visit schedule would be intimated to NMCG at central level and with SMCG/ SPMG at state level.

30. Under the guidance of NMCG and following the safeguard policy guidelines of the Bank, meeting compliance to the ToR, OHS Audit would be carried, in close coordination with State Program Management Groups (SPMGs/ SMCGs). The respective safeguards documents shall be reviewed for each sub-project. While all three major TASKS of Environmental Health and Safety Audit Consultancy services shall be carried out for sub-projects under tendering, implementation and O&M phase.

3.2 Focus on Fact Findings

31. Are the World Bank Safeguards Policies and OHS requirements clearly stated in the Project documents/Contract/ SOPs are benign implemented on ground by all sub-contractors. Are all people (safety experts/ site staff) who should know these requirements and standards, fully trained and aware before getting deployed on work sites. Who the OHS at sites are being implement. Are any monitoring mechanism existing Does these are duly implemented and how at site in case of incident or emergency, these situation are handled and reporting done? All these needs to be assessed by interviewing relevant construction workers, site managers, enforcement officers and other relevant stakeholders.
32. Is the agency involving in sub project has implementation monitored by internal audit or by third party. The OHS Audit would also include checking availability of appropriate PPE in the stores and their use by the construction workers, also their regular use and by measuring the extent to which the relevant supervisors are in place to ensure training and mentoring of new staff on the job. What are the enforcement measures and what happen when deviations or shortcomings are identified? Are appropriate action carried out, how fast, and if not, why?
33. The OHS audit will include site visits where works are ongoing/ the project are under O&M phase. All site visits by the auditor should be surprise visits, unannounced and date and time will be kept confidential to provide an accurate picture of the day-to-day reality of OHS implementation. The auditor will interview workers in such a way that they can speak freely and without risk or fear of retaliation for disclosing any shortcomings.
34. All elements under OHS will be covered during the OHS Audit- however, specific aspects relevant for STPs I&D, Sewerage Networks and Ghats & crematoria will be visited. The vital point which shall be focused upon during the OHS Audit, including:
35. Design, Standard Operating procedures (SOP) and practices for handling of storage of hazards material in construction as well as in maintenance work including confined spaces such as underground or below grade vaults with limited access, manholes, sedimentation tanks, Mixing equipment, sludge rakes, pumps and mechanical devices used for a variety of operations (are the protocols for checking of atmosphere, ventilation provisions, escape and egress routes, gassing (H₂S, methane, CO and other toxic well understood and implemented as they should be), Permit to Work (PTW) etc., Lock Out Tag Out (LOTO) for electrical risks etc.

36. Design, SOP and practices for mechanical/electrical hazards such as hand over of machines for maintenance (free from toxic sludge/materials etc., isolation procedures, re-energisation etc.) and inadvertent energizing of machines or machine parts,).
37. Design, procedures and practices for controlling trips, falls, cuts, mutilation of body parts, drowning and head/body injury, in particular in proximity of large Vessels, slippery/wet equipment, large equipment, rotating equipment etc. Design, procedures and practices for handling toxic chemical and asphyxiation hazards at the facilities, such as decreased oxygen levels (replacement of oxygen with methane/hydrogen sulphide, consumption by the decay of organic material, scavenging during rusting etc.)
38. Occupational Health hazards /exposure to Facility workers such as Microbial, fungal/bacterial/viral hazards due to physical handling/inhalation hazards associated with handling of human and animal wastes, airborne aerosols (aeration), contact with mucous membranes, waste material, chlorine/hypochlorite, ozone, Ultra Violet light etc.
39. Occupational Hygiene practices relating to ingestion hazards (hand wash procedures/ infrastructure in place, Personnel Protection Equipment (PPE) practices/provisions, disinfection procedures, canteen etc.
40. Emergency facilities at the STP (emergency hooks/lines at large equipment, life lines, flotation devices, breathing air, first aid, ambulance, quick rescue equipment etc.) Fire risks and firefighting measures at the facility.
41. Status of safety and rescue equipment at STP or Sewer network site (control room for maintenance) including Hazardous gas detector meter, emergency oxygen cylinder and operating procedures, PPE kit (water proof suit, confined space ventilation equipment, helmets, hand gloves, mask, and eye protector etc.) needs to be checked by the auditor.
42. Assessment of daily routine in handling incidences: Does the contractor have a logbook? What measures are taken to address incidents. Need to find out whether orientation and training are given to the construction workers to protect themselves from accidents. Check the module and the resource person they use and how regular it is.
43. Assessment of the emergency plan in place: To deal with incidences including fatality. Does the contractor have a procedure to follow and responsible persons to implement the procedure? Do they have a first aid facility at the site? Is it functional? Evaluate the measures taken immediately after the recent 3 fatalities occurred to protect similar incidences.
44. Apart from the above key OHS Audit elements, the Audit shall also review the other OHS components, which include Occupational Safety and Health Policy, SOPs, Management of Change (MOC), Permit to work (PTW), Safety Culture/Management, Hazard Identification, Safety Training, Incident Reporting, Investigation and Feedback, Transportation, emergency Management and others.

45. The findings of Audit would be summarized for each site in a Tabular form, including colour coding of risk/ Hazards involved. It should include compliance, non-compliance, best practices to implement Safety protocols. Corrective measures should be suggested along with the name of the agency responsible for each of the above.
46. SAFETY Audit should include the Safety guideline laid out in the Safety management framework of the NGRBA Program, Environmental, Health and Safety General Guideline of the World Bank; and to the Safety Audit should comply with the Indian Standard (IS: 14489:1998; Reaffirmed 2002) Code of Practice on Occupational Safety.

3.3 Review the Implementation of ESMF of the NGRBA Program

47. NMCG has developed an Environment and Social Management Framework (ESMF) for the Namami Gange Programme, in May 2011, followed by revision in August 2017 & March 2020. The Ganga 1 projects were mostly on the main-stem of river Ganga which covered the 5 basin States i.e. Bihar, Jharkhand, Uttar Pradesh, West Bengal and Uttarakhand. The Ganga 2 projects are in continuation to the Ganga 1 projects and sub-project which are similar in nature. To showcase the inclusion of the tributaries, projects and sub-projects with respect to Ganga 1 and Ganga 2, the ESMF document was updated.

48. The World Bank ESMF and Environmental Management Plan (EMP) are understood down the line and their implementation status of the ESMF of the NGRBA Program, Environmental, Health and Safety General Guideline of the World Bank and enforcement aspects need to be established. Whether Contractors which need to be audited and involve in investments work is in compliance with Indian Standard (IS: 14489:1998; Reaffirmed 2002) Code of Practice on Occupational Safety and Health Audit. Non compliances will be identified and reported.

49. Compliance on the Environmental, Health and Safety guidelines covering the Investments approved by NMCG under NGRBA program will be reviewed, across all categories and different sub-project locations for the various important project lifecycle stages after contract agreement, namely:

- Concept development/ Basic design/ Detailed Design stage
- Construction, Pre-commissioning and Commissioning stage
- Operation and Maintenance stage
- Decommissioning/Demolition/Dismantling stage (where relevant)

The audit methodology adopted will be multi-dimensional and would also include:

- International (ISO) OHS audit guidelines
- World bank Group General EHS guidelines
- Indian Standard IS: 14489:1998; Reaffirmed 2002, Code of Practice on Occupational Safety
- Others (extracted and compiled from other technical guidelines, best practices etc.)
- The Occupational Safety Health and Working Condition Code (OHSA), 2020.

3.4 Review of Project and Safeguard Documents

50. In order to review the implementation of Environmental and Social Management Framework and Audit of Compliance of Approved investments, E&S Consultant is in the process of collecting and compiling various project documents like Project DPR, E&S Safeguard documents & other project related progress reports etc. All relevant project documents including Environmental and Social safeguards document, environmental Management Plans, Resettlement Action Plans (if any), prepared for relevant sub-projects has been accessed through NMCG website. The other project related documents such contract documents, bid documents etc. shall be collated from NMCG and from respective SMCG offices.

51. All relevant project documents including Detailed Project Reports, Environmental and Social Management Plans, Standard Operation procedure, Emergency Plan, etc prepared for relevant sub-projects along with Detailed Project Reports and Bid Documents shall be reviewed. This is mainly to appreciate the nature and pattern of safety thereby to formulate appropriate CHECKLISTS for detailed audit. Please refer BOX-1 which briefly gives an account of one of major OHS Audit Consultancy assignment funded by the World Bank for 8 projects. It comprising 3 projects under operation, 5 under different stage of construction across three basin states i.e., Uttar Pradesh, Bihar and West Bengal. where we have developed suitable Checklists for the audit. Similar Checklists will be developed during the Inception stage of the proposed OHS Audit Consultancy assimilating relevant aspects from the ESMF, ESDDR, SoPs and specific contract documents of NMCG and also taking inputs through consultations with various stakeholders. Approval of consolidated questionnaire/ checklist with the NMCG Team.

BOX 1: Occupational Health & Safety Audit – NMCG Project

Government of India has received g \$1bn loan from World Bank for Construction and Operation & Maintenance for the implementation of Sewerage Treatment Plant under The National Mission for Clean Ganga in from of National Level Program. The project, at present supports the construction/ Rehabilitation of STPs, Sewerage Network, Pollution Abatement Work, Crematorium, River Front Development, Ghat developments, etc. in 5 Ganga Basin States (Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal) in India.

The project also includes a technical assistance program to build capacity in the implementing agencies, improve their business procedures and improve overall maintenance management. The PAC assisted NMCG in undertaking (i) audit of planning and project preparation, (ii) audit of Construction sites, (iii) audit of O&M, (iv) audit of procurement process, and (v) audit of safety Contract Implementation & Approved SoPs of Contracts. .

Audit of safeguards during planning and design stage included aspects such as, (i) Selection of sites, Design safety features adopted planning stage,(ii) implementation of Contracts terms and Condition, (iii) selection of key experts, (iv) site preparation and mobilization, (v) Review of work permits, (vi) Reviews of SOPS already approved, safety equipment, site safety training, project induction meeting, (vii) site specific training, tool box talks, records for incidence & near miss, incident reporting, (viii) Root cause of incidence, etc.

OHSA Safety Audit address issues such as health & safety policy, Provision safety committee, safe systems of work, housekeeping & storage of materials, machine guarding, maintenance of equipment, material handling & storage, work permits, unsafe acts, fire evacuation, fire prevention, emergency & disaster control, control of flammable / explosive materials, control of exposure, noise assessment & control, personal protective equipment (PPE), occupation hygiene monitoring & record keeping, occupational health centre (OHC), first aid, ergonomics, environmental protection policies & standards, effluent discharges, waste management, capital projects & new

processes, safety training, internal self-inspection, safety promotion & publicity, employee / supervisor safety control, accident investigation & reporting, security, etc. adopted during project construction and O&M phase



As part of the OHSA assignment, in first phase – eight sites were audited which comprise construction and operation Phase for STPs and sewerage network. Root Cause for death of labours were also done, and reason behind the death were clearly spelled out.

The contractors at site were trained on audit finding and overall safety which needs to be implemented. Training at State level involving government implementing agency, contractor’s policy makers to create awareness and need of safety implementation. A conclave on OHS at National Level were held at New Delhi. It was a great success and appraised by expert all over the Ganga Basin State.

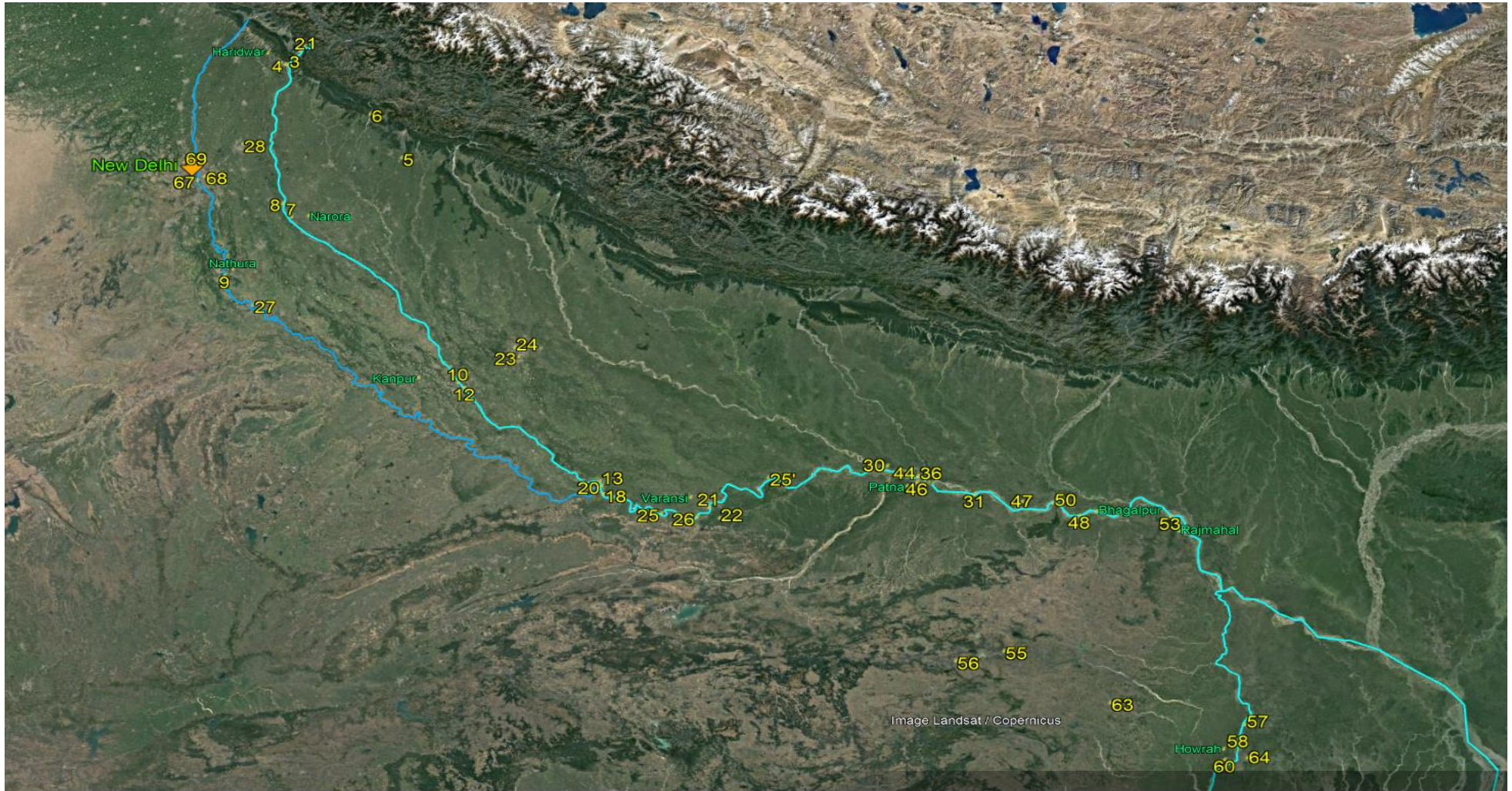


Figure 3-1: Projects for Occupational Health and Safety Audit (Projects under Construction/ Operation and Tendering/Lol)

3.5 OHS Audit to Identify Areas as per the Categories

52. During OHS Audit, system shortfalls requiring capacity building over a short-, medium- and longer-term strategy will be identified. These would include key system components such as reporting of Near miss Incident by the contractor. If accident happens, and investigations are done, the findings will be publicized among the contractors. The root cause will be identified and robust feedback on the incident will be provided. If there are any procedures which are existing among the contractors and supervising agencies, the contractor will adopt proper Work permit system, and care will be taken such that it is well design and properly implemented on ground.

53. The Audit would establish the existing systems for hazard identification and basic risk assessment for routine and non-routine potentially hazardous activities at contractor level and at implementing agency level. Does the system have others (leadership/ stewardship/ occupational health monitoring/ internal auditing and several others) beforehand?

54. The OHS Audit would also see if there exist any training regulations as the part of contract, which the contractor needs to comply. If not, then this component has to be addressed in a very systematic manner. Implementing agency need to carry out midterm or end term third part audit. Audit needs to look into existing safety training modules on a 3 Tier basis, namely the:

- Managerial cadre (sensitization of higher management on key high level safety aspects, legislative issues, leadership etc).
- Middle level/ Supervisory cadres (key hazard technical aspects, safety systems, safe work practices etc)
- Worker/ Casual Labour (to address specific work hazards, safe work practices etc.)

3.6 Review of Specific Items that shall be covered Under OHS Audit

55. During audit the auditor would establish whether World Bank Safeguards policies and OHS requirements that are clearly stated in the project documents/contract Documents/ SOPs are in place. The audit would pre see whether relevant personnel are properly trained before deployment and are proficient in implementation aspect, monitoring and aware of specific actions required during emergency scenarios. This aspect shall be addressed with focused interviews, discussions etc. The audit would also check at contractor part for proper Personnel Protective Equipment and their deployment and usages.

56. The auditor will also audit whether, there are any does specific measures related to sewerage lines, underground work spaces etc. including Standard Operating Procedures (SOP, practices for handling hazardous substances/gases during both constructions as well operational/maintenance

phases, underground work, dealing with sludges/sediments etc, gas testing procedures and data record keeping

57. There will be audit on the procedures which are in place for Control of Occupational Health exposure, including toxic material, Microbial, fungal/bacterial/viral hazards due to physical handling/inhalation hazards associated with handling of human and animal wastes, airborne aerosols (aeration), contact with mucous membranes, waste material, chlorine/hypochlorite, ozone, Ultra Violet light etc. review of Occupational Hygiene practices. Inspection of emergency facilities at the STP (emergency hooks/lines at large equipment, life lines, flotation devices, breathing air, first aid, ambulance, quick rescue equipment etc.). Provision of Fire risks and firefighting measures at the facility, especially at SPS, labour camps and storage area.

58. Inspection of safety and rescue equipment at STP or Sewer network site (control room for maintenance) including Hazardous gas detector meter, emergency oxygen cylinder and operating procedures, PPE kit (water proof suit, confined space ventilation equipment, helmets, hand gloves, mask, and eye protector etc.). Adaptation of Construction and Operational labour to orientation and training.

3.7 OHS Audit and Fact Finding

59. As envisaged in the ToR, the OHS Audit would review the status reports submitted by the Implementing consultant and would also look into process evaluation of DPRs prepared by Design Consultants. The Proposed team for OHSA and Key Professionals have good exposure to number of independent review consultancies funded by World Bank, KfW, and ADB, which will be of great advantage for the proposed TASK.

60. The OHS Audit is a very important activity carried out to assess the safety status and review ongoing safety measures at a facility. The OHS Audit greatly helps understand and the flag areas of concern on OHS matters and ensures focused ongoing safety improvement aimed at the identified areas of concern. It is hoped that the recommendations made in the OHS Audit would be reviewed favourably and in the right spirit by the Stakeholders and the recommendations proposed implemented in a time bound phased manner. In case it is decided to drop any recommendations, then proper reasons for the same must be documented.

61. The Audit findings and recommendations are based on the background information, civil, process, mechanical, instrumentation, electrical data and others and discussions held with various personnel during the onsite audit activities. The audit Team has exercised all reasonable skills, care and diligence in carrying out the audit. This OHS Audit Report is not deemed to be any undertaking, warranty or certificate.

62. The OHS Audit is an important tool for assessing the strength and weaknesses of Safety Management Systems at a facility/site. The technique subjects each important area to a critical

systematic examination with the object of minimizing hazards. The audit would cover all major elements of the OHS System. The major elements are listed in Table -2

Table 3-1: MAJOR OHS AUDIT ELEMENTS

S. No	Description
1	Health & Safety Policy
2	Safety Committee
3	Safe Systems Of Work
4	House Keeping & Storage Of Materials
5	Machine Guarding
6	Maintenance Of Equipment
7	Material Handling & Storage
8	Permits
9	Unsafe Acts
10	Fire Evacuation
11	Fire Prevention
12	Emergency & Disaster Control
13	Control Of Flammable / Explosive Materials
14	Control Of Exposure
15	Noise Assessment & Control
16	Personal Protective Equipment (Ppe)
17	Occupation Hygiene Monitoring & Record Keeping
18	Occupational Health Centre (Ohc)
19	First Aid
20	Ergonomics
21	Environmental Protection Policies & Standards
22	Emissions To Atmosphere
23	Effluent Discharges
24	Waste Management
25	Capital Projects & New Processes
26	Control Of Contractors
27	Safety Training
28	Internal Self Inspection
29	Safety Promotion & Publicity
30	Employee / Supervisor Safety Control
31	Accident Investigation & Reporting
32	Security

63. In addition, Process, Electrical, Fire Safety, Health and Industrial hygiene aspects are covered extensively during the OHS Audit.

The OHS Audit goals include:

- To provide an opportunity to assess the OHS system and identify areas of concern/ improvement;

- To determine the conformity of the implemented systems with specific requirements and identify areas of improvement;
- To meet regulatory requirements.

3.8 Review of Implementation Arrangement

64. During audit the existing Institutional arrangements for implementation of the Environmental Management Plan, ESMF and OHS will be reviewed. Since this component is crucial in the successful implementation of any safeguard instrument. After studying the prevailing institutional structure and its compliance with ESMF provisions, recommendations for strengthening of the existing institutional setting (if required) shall be provided for effective implementation of EMP and OHS. Implementation responsibilities for key staff of client, contractor and supervision consultant shall be reviewed in detail.

3.9 Review of Budgetary Provision in Contract Document

65. The contractor's contract document would be reviewed for the provision of budgetary cost estimate for sub project for OHS implementations. Does the contract involve different budget provision for construction and operational phases of the projects including costs for third part audit/monitoring during construction phase?

3.10 Site visit, meeting and interaction at sub project level

66. Opening meeting with key installation personnel- this interaction will outline the audit plan and methodology adopted etc. Physical site visit / inspection to assess the on-site critical OHS issues, identify "low lying fruits" (which require immediate addressing), conducting focused interviews with field personnel, casual labour etc. and physical task observation, where they are in progress. Sample work permits, maintenance jobs too would be physically observed. NIGHT TIME OBSERVATIONS UNANNOUNCED ARE ALSO PLANNED. The night time audit would focus on plant area lighting, physical hazards during night time operations and specific trip/ fall hazards, slippery surfaces etc.

67. Closing meeting with all key staff- a detailed item-wise briefing followed by discussions would take place and all doubts cleared. A realistic implementation plan to address shortcomings would also take place. The shortfall reported at site would be discussed and a training session would be undertaken at each sub -project level.

3.11 State and National Level Trainings

68. A one-day training session would be carried out after the audit- this would address SPECIFIC SITE OBSERVATIONS and also cover key technical topics. The topics and session durations, training format etc. will be will be shared with the NMCG through prior intimation. Upon agreement of NMCG, the respective SPMG/ SMCG would be intimated accordingly. All the stake holders at state

level would be invited by the state implementing agency i.e., UKPJM, UPJM, BUIDCo, JUIDCo, KMC, KMDA etc.

69. As per our understanding and the RFP condition, 11 number of trainings need to be given, one training after initial OHS Audit in all 5 basin State. It would be done before submission of draft OHS Audit Report. The second round of training (5 in number) in all 5-basin state will be provided after completion of follow-up visit and before submission of the final report.

70. One National level OHS training engaging all the stake holder at state level and National Level. As per our understanding, it will be organized by NMCG. Selected number of people from all state projects and implementing agency, State Mission officials will be invited. The director/ Head from contractor side would also be invited, this would be done to make them aware of OHS requirement and its importance.



Glimpse - National Level OHS Training Organized by NMCG and Facilitated by the Consultant at New Delhi under NMCG Phase-I

3.12 Deliverable & Report Submissions

There deliverable are as follows:

3.12.1 Submission of Inception Report

71. As per the Contracts the Inception report needs to be submitted within 30 days from the day of commencement of work. The inception report would contain procedure and methodology adopted to carry out OHS Audit. The visit schedule and time line for OHS Audit.

3.12.2 Submission of Initial Findings Report

72. Based on the site visit and onsite audit, suggestive enhancement measures wherever non-compliance would be identified, the OHS Audit Consultant will prepare an Action Plan, mentioning about the specific aspects to be followed during implementation along with the various activities and responsible person / entity to be involved in carrying out the suggestive measure. Monitoring Plan shall be a distinct part of this Action Plan, as to who is responsible for monitoring the suggested corrective measures.

73. This would also include the review of monitoring mechanism involved in implementation of OHS in project identified location. All the initial Finding would be present in table supported by the photographs. It would contain details on contractor document review, implemented ESMF, EMP and OHS by contractors, institution arrangement, internal audit findings (third party), finding reported on site by the OHS auditor, interaction, facilities available, SoPs, etc.

3.12.3 Preparation and Submission of Draft OHS Audit Report

74. The draft report would be prepared complaining site finings and reporting. The Draft Audit Report would address site specific issues, supported by photographs. The ToR point of RFP would be given priority. It would be accompanied by checklist, site training, key issues for priority implementation, etc. The overall glimpse of all NMCG project under OHS Audit site would be provided. It would target all the five basin states including Delhi.

75. Report shall contain the major findings of the Audit in the prescribed format mentioning about compliances and non-compliances with supportive documentation of good practices and suggestive enhancement measures.

3.12.4 Follow-up Visit

76. Follow up visit to each sub projects would be subsequently carried out and the implementation of the action plan to rectify shortcomings assessed and addressed. During this visit, a “regional” or local level practical safety program would be planned, involving multiple contractors/ operational personnel. An NMCG Person would also be requested to join for the workshop. This workshop is planned to be “practical”, involve real firefighting, first aid/ rescue, use of breathing apparatus, toxic gas meters, extraction blowers, lighting of confined areas, escape from toxic clouds, PPE for work at heights, confined spaces etc.

77. The implementation of shortfall/ lacuna highlighted during initial audit would be priority. The implementation of shortfall noted during initial audited would be assessed and if compiled by the contractor or not . Lacuna in implementation would also be discussed. Training would also be given at project Audi site if required.

3.12.5 Preparation and Submission of Draft / Final Reports

78. The Final report would be prepared comprising of draft report already submitted, Implementation of initial OHS Audit shortfall point-wise which would be site specific. Improvement needed with Draft Action Plan. It would also include suggestion and issues raised during primary OHS training and second round of OHS Training held at state level after completion of follow-up site visit. The suggestions would be incorporated. In addition, there would be checklists for OHS Audit which need to be followed by the contractor for regular site appraisal.

4 SITE VISIT PLAN, WORK SCHEDULE & DELIVERABLES

4.1 Site Visit Plan for Phase -II OHS Audit

79. All the proposed Key Experts will visit sub project locations based on the Site Visit as per the following schedule plan. The tentative plan will be discussed in detail with respective SMCG/Nodal offices of all 5 basins State including Delhi and NMCG, HQ.

80. All the 81 projects under implementation and preparation will be visited, apart from the scheduled visit to the respective SMCG/Nodal Department Offices. Figure 4-1 depicts the Site Visit Schedule for OHS Audit

- **Schedule 1:** Visit to Uttarakhand and Uttar Pradesh
- **Schedule 2:** Visit to Bihar
- **Schedule 3:** Visit to West Bengal and Jharkhand
- **Schedule 4:** Visit to Delhi

81. Table 4-1 presents the Site Visit Schedule in detail.

Table 4-1: Site Visit Schedule – OHS Audit

Sl.No.	Locations of under implementation projects	Duration of Visit	Tentative Dates
Schedule-1 [Approx. 10 to 12 Days]			
1.	SMCG, Uttarakhand	<ul style="list-style-type: none"> ▪ 5 days in Haridwar/ Rishikesh/Dehradun/ Udham Singh Nagar/ Ram Nagar ▪ Renovation of Hari Ki Pauri and Chandi Ghat Haridwar 	20 th to 25 th November, 2024
2.	Delhi State	<ul style="list-style-type: none"> ▪ Visit to Delhi STPs Location 	28 th to 30 th November, 2024
3.	Uttar Pradesh	Visit to Bulandshahr – Anoopshahar/ Narora	4 th and 5 th December
4.	Uttar Pradesh	Visit to Mathura/ Agra	7 th December and 8 th December
5.	Uttar Pradesh	<ul style="list-style-type: none"> ▪ Visit to Meerut 	11 th December
6.		<ul style="list-style-type: none"> ▪ Visit to Saharanpur 	11 th December
7.		<ul style="list-style-type: none"> ▪ Visit to Agra 	13 th December
8.		<ul style="list-style-type: none"> ▪ Visit to Farrukhabad 	16 th December
9.		<ul style="list-style-type: none"> ▪ Visit to Lucknow 	16 th December 2023
	Schedule -2 (Approx 5 days)	▪	
10.	Kanpur , Uttar Pradesh	<ul style="list-style-type: none"> ▪ 2 days (Three projects' locations) ▪ Sewerage district -1 ▪ STP – Pankha (30 MLD), ▪ STP Jajmau (130 MLD) 	11 th to 16 th December, 2024

Sl.No.	Locations of under implementation projects	Duration of Visit	Tentative Dates
11.	Allahabad, Uttar Pradesh	<ul style="list-style-type: none"> 3 Days in Allahabad District A, B, C, E & Allahpur] and District G & F [Naini (District G) 3 STPs at 42 MLD at Nani, 14 MLD STP at Phaphamau, 16 MLD STPs at Jhusi 	
▪ Schedule-3 [Approx. 5 Days]			
1.	Uttar Pradesh – Varanasi, Mirzapur, Chunar and Ghazipur	5 days in Varanasi <ul style="list-style-type: none"> 50 MLD STP Ramana I&D Work 10 MLD STP Chunar I&D work & STP Mirzapur 	18 th December to 24 th December 2023
2.	Bihar	Visit to Mahadev Ghat, Buxar	27 th December, 2023
3.	Patna, Bihar [Total 24 locations]	<ul style="list-style-type: none"> 10 days RFD Patna, STP and Network Beur STP and Network Saidpur STP and Network Pahari STP and Network Kankarbagh & Digha STP and Network Karmalichak STP and I&D Phuliwarishariff, Fatuha Town, Danapur I&D and Network Chhapra, Barh, Sonapur Town, Hajipur, Bhagalpur STP and Network Begusarai STP and Network Sultanpur and Naugachia STP and Network Munger Ghat and Crematoria – Simariya Barauni and Sultanganj 	8 th January, 2024 to 16 January 2024
Schedule-4 [Approx. 10 Days]			
1.	Jharkhand	<ul style="list-style-type: none"> 2 Days Rehabilitation/Development Works of Ghats and Crematoria at Sahibganj to Rajmahal Stretch Sewerage and STP work in Sahibganj and Rajmahal 	17 th to 20 th January 2023
2.	Jharkhand	<ul style="list-style-type: none"> 1 day visit to I&D and STP works in Phusro (15 MLD) 	
3.	West Bengal	<ul style="list-style-type: none"> 8 Days in Kolkata (13 projects) Sewerage and STP work in Halisahar (16 MLD), Barrakpore (24 MLD), Budge Budge (9.3 MLD), Howrah (60 MLD), Bally (40 MLD), Baranagar (50 MLD), Hoogly – Chinchura (26.6 MLD), Nabadwip (20 MLD), Tolly Nala, Maheshtala (35 MLD) Chat and Crematorium at Mayapur, Kalyani, Garuli 	22 to 31 January 2023.

4.2 Work Schedule and Planning for Deliverables

82. The Work Schedule and Planning for Deliverables has been shown in Table 4-3. The total duration of the project is 9 months and further includes a follow-up visit on agreed dates.

83. This project involves the submission of 4 reports, (i) this Inception Report, (ii) initial finding Report (iii) Draft Audit Report, and (iv) Final Audit Report. The Schedule of Deliverable is given in Table 4-2.

Table 4-2: Schedule of Deliverables for OHS Audit

Sl. No.	Deliverable	Submission Schedule
1	Inception Report [in two weeks]	Will be submitted prior to start of work – within 30 days of contract (10 th November, 2023)
2	Initial Finding Reports	90 days from contract. By 10 th of January 2024.
	Site Visits and summary presentation (PPT) on preliminary findings	120 days from contract. By 10 th February, 2024
3	Draft Audit Report [in two months after Inception]	180 days from date of contract; 10 th April 2024
4	Completion of Follow-up Visits	240 days from date of contract; 10 th June 2024
4	Final Audit Report [in three months from Inception Report]	270 days from date of contract; 10 th July 2024

Table 4-3: Work Schedule and Planning for Deliverables

S. No.		KEY ACTIVITY/DELIVERABLE	WEEK/MONTHS																																				
			Month 1				Month 2				Month 3				Month 4				Month 5				Month 6				Month 7				Month 8				Month 9				
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Task 1	Project Initiation and Submission of Inception Report	[Red bar]																																					
Sub Activity 1.1	Project Initiation	[Blue bar]																																					
Sub Activity 1.2	Interactive Meetings with Key Stakeholders	[Blue bar]																																					
Sub Activity 1.3	Review of Project and Safeguard Documents	[Blue bar]																																					
Sub Activity 1.4	Preparation of site visit Plan	[Blue bar]																																					
Sub Activity 1.5	Initial Site Visits and Consultations	[Blue bar]																																					
Sub Activity 1.6	Preparation of and Submission of Inception Report	[Red bar]																																					
Task 2	Review Implementation of ESMF of NGRBA Program					[Blue bar]																																	
Sub Activity 2.1	Review Screening of Sub-Projects					[Blue bar]																																	
Sub Activity 2.2	OHS Audit to Identify Areas as per the Categories					[Blue bar]																																	
Sub Activity 2.3	Review of Specific Items that shall be covered OHS Audit					[Blue bar]																																	
Sub Activity 2.4	Compliance Audit of Implementation of the ESMF, World Bank EHS, Contract OHS conditions					[Blue bar]																																	
Task 3	Audit of Reporting / Fact Finding					[Red bar]																																	
Sub Activity 3.1	Review of Implementation Status Reports and Periodic Progress Reports					[Blue bar]																																	
Sub Activity 3.2	Review of Institutional Arrangement to Manage E&S Impacts					[Blue bar]																																	
Sub Activity 3.3	Review of Budgetary Provisions					[Blue bar]																																	
Sub Activity 3.4	Site Meetings and Interactions					[Blue bar]																																	
Task 4	Preparation of Draft OHS Audit Report																																						
Sub Activity 4.1	Audit Findings																																						
Sub Activity 4.2	Preparation of Action Plan																																						
Sub Activity 4.3	Preparation and submission of Draft Report																																						
Sub Activity 4.4	Follow-up Visit																																						
Sub Activity 4.5	Preparation and Submission of Final Reports																																						
COMPLETION AND SUBMISSION OF REPORTS																																							
D-1	Submission of inception report (including work plan and site visit plan for approval by NMCG and its acceptance by NMCG)																																						
D-2	Submission of Initial findings and its acceptance by NMCG																																						
D-3	Site visits and summary presentation (PPT) on preliminary findings and its acceptance by NMCG																																						
D-4	Submission of Draft report incorporating comments on PPT and training on OHS at 5 basin states and its acceptance by NMCG																																						
D-5	Completion of follow up visits such as compliances of Auditor's comments, training and sharing of good examples with site teams etc																																						
D-6	Submission and acceptance (by NMCG) of Final report and training on OHS at 5 basin states and one final concluding OHS workshop at New Delhi																																						

4.3 Team Composition

The team composition, required man month on the field/office in order to accomplish the tasks of Environment and Social Audit is presented in Table 4-4.

Table 4-4: Team Composition for E&S Audit

Sl. No	Name	Position
1.	Ganesh Venkatraman	Team Leader cum Lead Auditor
2.	Md Sadre Alam Khan	Environmental Expert
3.	Ravutala Sai Chand	Architect cum Urban Planner
4.	Sujeet	Support Specialist - Audit
5.	Ms. Mitali Mukhopadhyay	Support – Environmental cum OHSA Training Coordinator

5 WAY FORWARD

84. Occupational Health and Safety Audit Consultant understands that the present assignment involves extensive travel to various project locations spread across five participating states and in Delhi, and targets delivery of output within the stipulated time period.

85. Meeting with senior officials at SMCGs/Nodal Department is an indispensable component of this assignment, wherein facilitation from NMCG would be of great help. This could be through formal communication to state functionaries especially intimating the Site Visit Schedule of OHSa Consultant. This will enable the Consultant to manage consultations with respective engineering officials, contractors, supervision consultants, local community, and / or non-government organisations participated during project implementation.

86. The Audit also requires access to all relevant Reports, E&S Safeguard documents, ESMF, EMP and contract documents of all those projects which are implemented, under construction and also the bid documents of all those projects which are under preparation. We request NMCG for all necessary support and guidance.

APPENDICES

Appendix-1: List of Projects under Audits

Table 1: Tentative List of Projects under OHS Audit

List of Projects under Implementation (E&S Audit)			
Sl.no	Location	Project State	Remarks
1.	Interception and Diversion (I&D) Works and Sewage Treatment Plant (STP) (12.5MLD) Works at Muni Ki Reti Dhalwala	Uttarakhand	under operation
2.	I&D Works and 26 MLD STP at Lakkarghat Rishikesh	Uttarakhand	under operation
3.	STP of 68 MLD at Jagjeetpur Haridwar under Hybrid Annuity Mode (HAM)	Uttarakhand	under operation
4.	STP of 14MLD at Sarai Haridwar under Hybrid Annuity Mode (HAM)	Uttarakhand	Under operation
5.	STP and I&D scheme at Udham Singh Nagar (30.3 MLD)	Uttarakhand	Under Construction
6.	I&D and STP scheme at Ramnagar (8.5 MLD)	Uttarakhand	Operational
7.	Sewerage Works in Narora, Bulandsahar, 4 MLD	Uttar Pradesh	under operation
8.	Sewerage Works in Anupsahar, Bulandsahar, 2.5MLD	Uttar Pradesh	under operation
9.	Mathura Sewerage Scheme, Mathura (HAM), 67 MLD (New+ Rehabilitation)	Uttar Pradesh	Under Construction
10.	Sewerage works in sewerage district-1, Kanpur	Uttar Pradesh	Under construction
11.	Rehabilitation of existing Sewage Treatment Infrastructure, Development of sewage Treatment Plant at Pankha (30 MLD) along with appurtenant works, and 15 years O & M at Kanpur under Hybrid Annuity based PPP mode under Namami Gange Program	Uttar Pradesh	Under Construction
12.	Rehabilitation, Operation & Maintenance of 130 MLD STP in Jajmau Zone under Hybrid Annuity based PPP mode under Namami Gange Program	Uttar Pradesh	Under Construction
13.	14 MLD Capacity STP at Salori, Allahabad	Uttar Pradesh	under operation
14.	Sewerage System in Sewerage District C & Allahpur, Allahabad	Uttar Pradesh	under operation
15.	Sewerage System in Sewerage District A, Allahabad	Uttar Pradesh	under operation
16.	Sewerage System in Sewerage District E, Allahabad	Uttar Pradesh	under operation
17.	Sewerage works in sewerage district B, Allahabad	Uttar Pradesh	under operation
18.	Interception, Diversion and Treatment Works for Naini (District G) District : Allahabad (under Hybrid annuity based PPP model-Namami Gange Programme) STP-42 MLD Naini,	Uttar Pradesh	Under Construction
19.	Interception, Diversion and Treatment Works for Phaphamau (District F): Allahabad (under Hybrid annuity based PPP model-Namami Gange Programme) 14 MLD Phaphamau	Uttar Pradesh	Under Construction
20.	Interception, Diversion and Treatment Works for Jhansi Area District : Allahabad (under Hybrid annuity based PPP model-Namami Gange Programme), 16 MLD Jhansi	Uttar Pradesh	Under Construction
21.	50 MLD STP at Ramanna Varanasi (HAM)	Uttar Pradesh	Operation
22.	Muzaffarpur-Budhana (64.5 MLD)	Uttar Pradesh	Under Construction
23.	I&D and STP scheme Frukabad (45 MLD)	Uttar Pradesh	Under Construction
24.	I&D and STP Lucknow (40 MLD)	Uttar Pradesh	Under Construction
25.	I&D and STP scheme of Mirzapur-Ghazipur	Uttar Pradesh	Under Construction
26.	FSTP scheme of Chunar (10 KLD)	Uttar Pradesh	Under Construction
27.	Interception & Diversion with Rehabilitation of sewerage scheme at Agra-177 MLD	Uttar Pradesh	Under Construction

List of Projects under Implementation (E&S Audit)			
Sl.no	Location	Project State	Remarks
28.	Pollution Abatement Works for River Kali Meerut under Meerut Municipality (Interception & Diversion with STP)-220 MLD	Uttar Pradesh	LoA Issued
29.	I&D and STP work for the Saharanpur (135 MLD)	Uttar Pradesh	Under Tendering
30.	I&D and STP works (32 MLD) in Chhapra	Bihar	under Construction
31.	I&D and STP scheme in Barh (11 MLD)	Bihar	under Construction
32.	37 MLD STP in Karmalichak	Bihar	under operation
33.	Sewerage Network in Karmalichak Zone (96 km)	Bihar	under construction
34.	43 MLD STP in Beur	Bihar	under operation
35.	Sewerage Network in Beur Zone(180 km)	Bihar	under Construction
36.	Sewerage Scheme and STP works in Digha (1 00 M LD a n d 3 2 0 km ne t w o r k) –H A M P P P	Bihar	Under construction
37.	Sewerage Network and STP scheme at Kankarbagh with a total 50 MLD STP and 150 km sewer network (HAM PPP)	Bihar	Under construction
38.	60 MLD STP in Pahari	Bihar	Under construction
39.	Sewerage Network in Pahari Zone V (116 km)	Bihar	Under construction
40.	Sewerage Network in Pahari Zone IVA (S) (88 km)	Bihar	Under construction
41.	60 MLD STP and adjoining network (55km) in Saidpur	Bihar	under trial run / operation
42.	Sewerage Network in Saidpur (162km)	Bihar	under construction
43.	I&D and STP scheme in Sonapur Town (3.5 MLD)	Bihar	Under construction
44.	I&D and STP works in Danapur (25 MLD) ,	Bihar	under construction
45.	I&D and STP Phulwarishariff (13 MLD)	Bihar	under construction
46.	I&D and STP in Fatuha town (7MLD)	Bihar	under construction
47.	Sewerage and STP works in Begusarai (17 MLD and 114 km network)	Bihar	Under construction
48.	I&D and STP scheme in Sultanganj (10 MLD)	Bihar	Under construction
49.	I&D and STP scheme in Naugachia (9 MLD)	Bihar	Under construction
50.	Sewerage Network and STP scheme at Munger (30 MLD and 176km network)	Bihar	Under Construction
51.	I & D and STP works in Hajipur (22 MLD and 189 km network)	Bihar	Under Construction
52.	I&D and STP scheme at Bhagalpur (45 MLD)	Bihar	Under Construction
53.	Sewerage & Sewage Treatment plant (12 MLD) in Sahibganj	Jharkhand	under operation
54.	Sewerage & Sewage Treatment plant (3.5 MLD) in Rajmahal	Jharkhand	Under construction
55.	I&D and STP works in Phusro (15 MLD)	Jharkhand	Under construction
56.	I&D and STP works in Ramgarh (40 MLD)	Jharkhand	Under tendering
57.	Sewerage & Sewage Treatment Plant (16 MLD)and 226.9 km sewer network in Halisahar	West Bengal	under construction/trial run
58.	Sewerage and STP scheme at Barrackpore (24MLD) and 247.14 km of sewer network	West Bengal	Under construction / trial run
59.	Sewerage and Sewage Treatment Plant in BudgeBudge (9.3 MLD) and 131.59 km	West Bengal	Under construction
60.	Sewerage and STP scheme in Howrah (HAM) with STP of 60 MLD at Howrah	West Bengal	Under construction
61.	Sewerage and STP scheme in Bally (HAM) with STP of 40 MLD-Bally	West Bengal	Under construction

List of Projects under Implementation (E&S Audit)			
Sl.no	Location	Project State	Remarks
62.	Sewerage and STP scheme in KamarhatiBaranagar (HAM) with STP of 50 MLD	West Bengal	Under construction
63.	Sewerage and STP scheme at Hoogly-Chinchura (26.5 MLD)	West Bengal	Under construction
64.	Sewerage and STP scheme at Nabadwip (20 MLD)	West Bengal	Under construction
65.	Tolly Nala rejuvenation scheme, Kolkata	West Bengal	Under Tendering
66.	Sewerage and STP scheme at Maheshtala (35 MLD)	West Bengal	Under Construction
67.	STP scheme at Okhla (564 MLD)	Delhi	Under Construction
68.	STP scheme at Kondli (204 MLD)	Delhi	Under Construction
69.	STP scheme at Rithala (182 MLD)	Delhi	Under Construction
Ghat & Crematorium			
70.	Riverfront Development Part A, Badrinath	Uttarakhand	Ongoing
71.	Renovation of Har Ki Pauri Haridwar	Uttarakhand	Completed
72.	Development of Chandi Ghat at Haridwar	Uttarakhand	Completed
73.	Development works at Bhagaon Crematoria and Development work at Fatah Ghat, Mirzapur	Uttar Pradesh	Ongoing
74.	Ganga River Front Development at Patna (Bihar)	Bihar	Operational
75.	Development of Ghat and Crematoria at Simariya, Barauni	Bihar	Ongoing
76.	Development Works of Mahadev Ghat at Buxar	Bihar	Completed
77.	Development works of Ghats and Crematoria at Sultanganj	Bihar	Completed
78.	Development of Prabhupada Ghat at Mayapur	West Bengal	Ongoing
79.	Construction of Electric Crematorium at Kalyani	West Bengal	Ongoing
80.	Construction of Electric Crematorium at Garulia	West Bengal	Completed
81.	Rehabilitation/Development Works of Ghats and Crematoria at Sahibganj to Rajmahal Stretch	Jharkhand	Complete

Note: The list is tentative and based upon the future development in NMCG the list may get revised.

Appendix-2: OHS Audit Check List as per IS 14489 -for all Sites

Checklist-1: Audit Checklist: ESMP/RAP

1. Date of OHS Audit:
2. Name of Category of Project/Subproject:
3. Location:
4. Date of Start of the Work:
5. Actual Date of Completion (if work completed):
6. Project Brief:

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
1	HEALTH & SAFETY POLICY				
1.1	Is there a written statement of policy on safety at the site?				
1.2	Is it being communicated by Management to all the employees?				
1.3	Is it issued individually to all members of the staff, Contractor's workers etc.?				
1.4	Is it displayed where employees can read it?				
1.5	Is it written in a language understood by the majority of the site employees?				
1.6	Is responsibility for safety spelt out to all levels?				
1.7	When last was the policy reviewed & updated?				
2	SAFETY COMMITTEE				
2.1	Is there an employee / management Safety Committee?				
2.2	Is the composition of the committee in compliance with state regulations?				
2.3	Are there written terms of reference for the Committee?				
2.4	Does the Committee meet regularly as scheduled?				
2.5	Is the effectiveness of these meetings measured?				
2.6	Are minutes kept & reviewed?				
3	SAFE SYSTEMS OF WORK				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
3.1	Are written operating procedures established for all key hazardous activities on site?				
3.2	Are these communicated to all the relevant staff?				
3.3	Are those procedures reviewed as & when required?				
3.4	Are these procedures posted near or at locations of hazardous activities?				
3.5	Do the area supervisor ensure that the operating procedures are rigidly implemented?				
4	HOUSE KEEPING & STORAGE OF MATERIALS				
4.1	Are effective steps taken to maintain plant areas clean?				
4.2	Are aisles marked off with painted lines & material kept out of aisle width?				
4.3	The floors are not slippery / damaged / worn?				
4.4	Are the floors devoid of water puddles?				
4.5	Are treads & risers of stairway in good condition & of uniform width and height				
4.6	Are standard handrails provided to the stairway? Are they in good condition & secure?				
4.7	Are heavy & bulky objects stored safely & out of aisles etc.?				
4.8	Are only the minimum required number of containers of material stored?				
4.9	Are they segregated if incompatible?				
4.10	Is the painting of the premises carried out at specified intervals? Is a suitable record maintained in the prescribed register?				
4.11	Are all floors, stairs, passages & gangways: Properly maintained? Free from obstructions & substances likely to cause persons to slip?				
4.12	Are there safe means of access to every working place & for maintenance purpose?				
4.13	Are the pits, sumps & floor openings securely covered or fenced?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
4.14	Are the work areas, stairways properly illuminated?				
4.15	Are the emergency exits kept clear? Are the areas outside emergency doors clearly demarcated?				
4.16	Are all drain covers in good condition & fitting flush?				
5	MACHINE GUARDING				
5.1	Are the moving parts of machinery securely fenced by standard safeguards?				
5.2	Is guard interlocked with machine motor?				
5.3	Are these guards always kept in position when the machinery is in motion?				
5.4	Is the interlocking system regularly checked?				
5.5	Is the examination, lubrication or adjustment of a machinery carried out while the machine is in motion?				
5.6	Are the workers suitably trained to carry out such repairs?				
5.7	Is the name of the worker recorded in the prescribed register?				
5.8	Are the guard regularly guards regularly examined by a maintenance man?				
5.9	Are belt change mechanisms in good condition?				
5.10	Can all machinery be positively isolated for maintenance?				
5.11	Are all emergency stop buttons effectively & clearly labeled?				
6	MAINTENANCE OF EQUIPMENT				
6.1	HOIST & LIFT				
a)	Are they examined by a competent person once in 12 months?				
b)	Are the records maintained?				
c)	Is every hoist way / lift way sufficiently protected by an enclosure fitted with gates?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
d)	Is "Maximum safe working load" stamped or displayed on them?				
e)	Is every hoist / lift provided with an interlocking device?				
f)	Is every hoist / lift provided with efficient automatic device to prevent it from over-running?				
g)	Are the lift & its door made of fire resistant materials?				
6.2 LIFTING DEVICES					
a)	Are they examined by a competent person once in 12 months				
b)	Is every lifting device stamped with the "safe working load" & the date of testing?				
c)	Are the records maintained?				
d)	Do all the operators know how to operate the equipment safely?				
6.3 REVOLVING MACHINERY					
Has the following been displayed near every grinding machine?					
a)	Maximum safe working peripheral speed.				
b)	Speed of the shaft.				
c)	Diameter of the pulley.				
d)	Protective face shield				
6.4 PRESSURE VESSEL					
a)	Is every pressure vessel & its assembly checked by a competent person?				
b)	Externally - Once in 6 months				
c)	Internally - Once in 12 months				
d)	Hydraulic test - Once in 4 years				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
e)	Ultrasonic test - Once in 4 years				
f)	Is the maximum safe working pressure & date of examination marked on every pressure vessel?				
g)	Are all alarm & safety trip systems designed to fail safe? Are they working as designed?				
h)	Are all pressure reducing valves & associated relief valves set in accordance specification? Are they tested regularly?				
i)	Are lathes & drills fitted with safety cut-outs?				
j)	Are all tools properly maintained?				
k)	Are all ladders properly identified & maintained?				
l)	Are all safety harnesses properly identified & maintained?				
m)	Is routine planned maintenance of plant & property carried out promptly & properly?				
6.5 ELECTRICAL					
a.	Is hazardous area plant adequately bounded?				
b.	Are buildings fitted with lighting conductors? Is the continuity of earthing / bonding checked regularly?				
c.	Is the resistance to earth < 10 Ohms? Is it periodically checked & recorded?				
d.	Are all electric cables/motors protected against accidental mechanical damage?				
e.	Are all cables, switches, fuse distribution boards properly identified?				
f.	Is emergency lighting properly installed? Is it tested at the approved frequency?				
g.	Do adequate safety procedures exist for working on electrical equipment?				
h.	Are all the electrically operated tools provided with (ELCB) Earth Leakage Circuit Breakers?				
i.	Is emergency power provided?				
j.	Has each piece of equipment been considered for adequate earthing?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
k.	Is the equipment fail safe on the event of power failure?				
l.	Are transformers located remote from hazardous areas & protected from fire exposure?				
m.	Are there earth pits for every transformer / electrical sub-station?				
n.	Are the sumps provided near all transformers?				
o.	Are insulated rubber matting provided on the floor for operating HT/LT electrical switch gears?				
7	MATERIAL HANDLING & STORAGE				
7.1	Are the operators trained in handling / dispensing materials?				
7.2	Are Personal Protective Equipment (PPE) provided during such handling / dispensing?				
7.3	Are PALLET trucks used for transporting heavy or bulky loads?				
7.4	Are the fork lift drivers trained regularly?				
7.5	Where manual handling is necessary have the operators been trained in kinetic handling?				
7.6	Are the material stacked systematically and as per their compatibility?				
7.7	Are all containers properly labeled and protected?				
7.8	Are the aisles free and clear for the movement of men and fork lifts?				
	7.9 SOLVENT STORAGE				
a.	Are the solvent tanks properly bonded and provided with emergency venting devices.				
b.	Are the solvent tanks bonded so as to contain 110% contents of the largest tank?				
c.	Are the bunds provided with drain valves?				
d.	Is insert gas blanketing system provided for the solvent tanks?				
e.	Are fire proof cabinets provided for storage of small quantities of flammable liquids?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
f.	Have drainage & spill prevention requirements been met				
g.	Are precautions (Prevention of stable charge) taken during loading / Unloading of a tanker?				
h.	Is a procedure made for such operations?				
	7.10 CORROSIVE SUBSTANCES				
	In areas where storage & handling of corrosive Substances like acids, alkalis & other corrosive Substances is carried out, are you complying with the Following provisions				
a)	Flooring of impervious material				
b)	Full protective equipment				
c)	Water facilities				
d)	Cautionary notices				
e)	Eye wash fountains & emergency showers				
f)	Splash guards on flanges of transfer lines				
g)	Devices for handling corrosive substances				
	7.11 GAS CYLINDERS				
a.	Do all the gas cylinders have proper colour code & manufacturer's labels?				
b.	Are they stored in a shady place away ')m heat & sunlight?				
c.	Is the storage area properly ventilated?				
d.	Are all the cylinders provided with protective guards (for the valves)?				
e.	Are all the cylinders used with appropriate regulators?				
f.	Are all the cylinders stored vertically with proper clamping arrangement?				
g.	Are all chlorine cylinders stored in a well ventilated place - preferably in a lockable wire cage?				
h.	Are the chlorine cylinders stored near other cylinders & flammable material?				
8	PERMITS				
8.1	Does a permit control system exist for				
a)	Welding / hot work				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
b)	Confined space entry				
c)	General permit to work				
d)	Working at Height				
e)	Electrical				
f)	Excavations				
8.2	Are they strictly being adhered to?				
8.3	Is there a clear definition of levels of authority?				
8.4	Are the contractors briefed on work permit procedure?				
8.5	How is it ensured that contractors do not violate laid down safety procedures				
8.6	Are the work permits sent to Safety Department after completion of job?				
9	UNSAFE ACTS				
9.1	Are regular safety inspection carried out to identify unsafe acts?				
9.2	Are the workers involved in such inspections?				
9.3	Is there a scheme for awarding operators identifying such hazards?				
9.4	Are such hazards discussed / reviewed regularly by Managers for corrective action?				
10	FIRE EVACUATION				
10.1	Is there a comprehensive written fire evacuation Procedure?				
10.2	Are regular drills held by each department?				
10.3	Are there sufficient emergency exits?				
10.4	Are they well marked?				
10.5	Is the facility equipped with public Address system?				
10.6	Is it tested regularly?				
10.7	Are all personnel conversant with the action to be taken in the event of a fire?				
11	FIRE PREVENTION				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
11.1	Does the plant have a written procedure relative to the control, handling, storage & use of flammable? If yes, is it followed?				
11.2	Are all storage facilities in compliance with fire regulations?				
11.3	Are there adequate number of fire fighters on site at all times?				
11.4	How many hours of training does each member receive per year?				
11.5	Are there adequate number of fire extinguishers of the right type at the right locations?				
11.6	Are these regularly tested & refilled? Are the records maintained?				
11.7	Are employees familiar with the proper procedure for the use of fire extinguishers?				
11.8	Are water supplies adequate considering pressure, volumes & quantity in regard to fire protection needs of the factory?				
11.9	Should any services fail during an emergency (e.g. power, water) , do suitable alternatives exist?				
11.10	If fire detection systems are installed, are they correctly maintained & recorded?				
11.11	Are plant fire prevention/protection inspection reports reviewed by Management on regular basis?				
11.12	Is the fire protection system approved by Insurance or TAC ?				
11.13	Is the factory equipped with a fire alarm system?				
11.14	Is it tested regularly?				
11.15	Is it audible in all parts of the factory?				
11.16	Are "No Smoking" areas clearly defined?				
11.17	Are solvent pipe lines clearly marked?				
11.18	Are there any dripping taps on solvent lines?				
11.19	Are anti-static devices fitted where necessary?				
12	EMERGENCY & DISASTER CONTROL				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
12.1	Is there a written "On Site Emergency Plan & Disaster Control measures" procedures for Emergencies such as leakage of gas, spillage of Chemical & big fire?				
12.2	Is it communicated to the workers, general public & all regulatory authorities?				
12.3	How often is it rehearsed?				
12.4	Are responsibilities defined for all emergencies?				
12.5	Are practices held with local authorities?				
12.6	Are plant personnel instructed in Bomb Threat Procedures?				
13	CONTROL OF FLAMMABLE / EXPLOSIVE MATERIALS				
13.1	Are all work areas & storage areas controlled so as to prevent accumulation of excess flammable & explosive Materials?				
13.2	Is the inventory of such material kept to the minimum requirement? (As specified in the notification)				
13.3	Are the hazardous areas classified?				
3.4	1Are there sufficient extraction points?				
13.5	Is the extraction efficient?				
13.6	Are they vapour concentrations monitored regularly & controlled?				
13.7	Are all dust explosion hazards identified & controlled?				
14	CONTROL OF EXPOSURE				
14.1	Are the gas, vapour, dust exposures controlled by proper exhausts, dust extraction systems, scrubbers etc.?				
14.2	Are these systems regularly checked for the efficiency?				
14.3	Are the fumes, dust exhausted to a safe point?				
14.4	Is any routine maintenance work carried out on these systems?				
14.5	Are the records maintained?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
14.6	Is there a written emergency procedure for controlling sudden release of gases, vapours, dust etc.?				
15	NOISE ASSESSMENT & CONTROL				
15.1	Are the noise levels monitored regularly at the work place & along the boundary lines?				
15.2	Are the noise levels controlled to less than 90 dB (A) by engineering design wherever practicable?				
15.3	Are appropriate "High Noise" boards displaced in high noise areas?				
15.4	Is use of ear plugs/ear muffs enforced in high noise areas?				
15.5	Are audio metery tests carried out on persons working in high noise areas?				
16	PERSONAL PROTECTIVE EQUIPMENT (PPE)				
16.1	Are locations of safety equipment clearly marked?				
16.2	Have personnel been provided with :				
	Hard hats				
	Eye protection				
	Safety shoes				
	Safety gloves / aprons / gumboots / face shields,				
16.3	Is equipment used properly & as intended?				
16.4	Is there a written maintenance programme for PPE?				
16.5	Is training given relating to the use of PPE?				
16.6	Is the use of PPE strictly enforced?				
17	OCCUPATION HYGIENE MONITORING & RECORD KEEPING				
17.1	Are the monitoring of dust, vapor, noise in work place areas carried out regularly?				
17.2	Are the records maintained?				
17.3	Are the results communicated to staff?				
17.4	Are the reports reviewed for corrective action?				
17.5	Are the policies & procedures on Occupational Health drawn?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
17.6	Are the staff trained/instructed in the use of these procedure				
17.7	Are proper working practices enforced?				
17.8	Are appropriate hazard information provided at all work places				
17.9	Are these information explained to the operators?				
17.10	Are the operators working in hazardous areas subjected to any health checks?				
18	OCCUPATIONAL HEALTH CENTRE (OHC)				
18.1	Is the OHC manned by adequate number of physicians, nurses & compounders as specified by the regulatory authorities?				
18.2	Are all the facilities as prescribed available at the OHC?				
18.3	Do occupational health staff visit work areas routinely & discuss work related health problems?				
18.4	Are any work related health problems referred to Occupational health staff?				
18.5	Are they involved in any decision making?				
18.6	Are satisfactory health records maintained :				
	Pre-employment medicals				
	Work related diseases				
	Sickness & absence				
	Accidents / Injuries				
19	FIRST AID				
19.1	Are there adequate number of First Aiders available at the site?				
19.2	Are they trained regularly? Do they play any active role during all emergencies?				
19.3	Are there adequate First Aid appliances provided as specified by the regulatory authorities?				
19.4	Are they fully equipped?				
19.5	Are there suitable notices displayed on or near the First Aid boxes, detailing the names of the First Aiders?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
19.6	Are the First Aid boxes regularly checked & properly maintained				
20	ERGONOMICS				
20.1	Are users requirements incorporated into workplace / process design or working methods?				
20.2	Are simplified methods of operation considered during modification / new projects?				
20.3	Are the site safety personnel consulted during any plant modification / new Projects / ordering new machinery etc.?				
21	ENVIRONMENTAL PROTECTION POLICIES & STANDARDS				
21.1	Is there a written environmental protection policy?				
21.2	Does it provide methods of control & designation of responsibilities? Are the results of such monitoring reviewed by respective managers for effective control?				
21.5	Do the monitoring results comply with consent limits?				
22	EMISSIONS TO ATMOSPHERE				
22.1	Are all potential discharges to atmosphere properly controlled?				
22.2	How frequent such emissions are monitored?				
22.3	Do the results meet the limits specified by the regulatory authorities?				
22.4	Are scrubber emissions checked & monitored regularly?				
22.5	Is the ambient air inside the factory monitored?				
23	EFFLUENT DISCHARGES				
23.1	Has the factory installed an effluent treatment plant?				
23.2	How frequent are such discharges monitored?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
23.3	Do the results meet the limits specified by the regulatory authorities?				
23.4	Are the process discharges drained directly to storm water drains?				
3.5	2Has a procedure been made detailing suitable measures to control Foreseeable spillages?				
24	WASTE MANAGEMENT				
24.1	Do procedure exist for the safe disposal of solid waste?				
24.2	Has a consent been obtained from the regulatory authorities for the safe disposal of waste?				
24.3	Has the factory installed an incinerator for the disposal of waste?				
24.4	Is there a strategy / plan either to reduce / recycle / recover the solid waste?				
25	CAPITAL PROJECTS & NEW PROCESSES				
25.1	Are Health, Safety & Environmental (EHS) issues considered at the design stage?				
25.2	Are either the corporate or site Health & Safety Managers consulted for EHS issue before the implementation of the project?				
25.3	Is HAZOP study carried out at the design stage for new products/ processes?				
25.4	Do Health & Safety Managers from a part of the HAZOP team?				
25.5	Are the occupational exposure limits & Substance Information sheets of all substances available before the implementation of the project?				
25.6	Are the hazards/risks associated with the new products / processes informed to the staff well in advance?				
26	CONTROL OF CONTRACTORS				
26.1	Is there a written site procedure for the control of contractors?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
26.2	Are contractors suitably trained regarding site operations & the use of work permits?				
26.3	Do site Engineering & Safety departments hold regular meetings with the contractors before & after their engagement?				
26.4	Do site Engineering & Safety departments ensure that the contractors do not violate the safety norms spelled in the work-permit?				
26.5	What punishment is meted out to contractors violating safety? Penalty & termination Service				
27	SAFETY TRAINING				
27.1	Is there a plan for training Managers / Supervisors?				
27.2	What is the type & frequency of training?				
27.3	Is there a program for training new employees?				
27.4	Are the records maintained?				
27.5	Are course materials prepared for certain key topics?				
27.6	Are safe systems of work incorporated in operating procedures?				
27.7	Are these highlighted in the course of training?				
27.8	Are refresher sessions held for employees?				
27.9	Are employees trained when new equipment or processes are introduced or when procedures have been revised or updated?				
27.10	Is specific training given to employees handling hazardous substances?				
27.11	Is safety training given for all specified operations such as :				
	Grinding wheels				
	Scaffolding				
	Welding				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
27.12	Is retraining given to these specialist craftsmen to review correct procedures?				
27.13	Have any of the training programs been evaluated?				
28	INTERNAL SELF INSPECTION				
28.1	Are effective & regular safety inspections carried out by all departments?				
28.2	Do workers form a part of the inspection team?				
28.3	Have the departments developed their own check lists for maintaining safe conditions & checking unsafe practices?				
28.4	Are the unsafe conditions or unsafe practices observed during the inspection corrected promptly?				
28.5	In case of delay, are they followed up effectively by supervisors /managers until the recommended work is satisfactorily completed?				
28.6	Are written program drawn outlining frequency of inspections, assigning responsibilities etc.?				
28.7	Are the inspection reports effectively followed up by senior managers?				
28.8	Are employees encouraged for making suggestions for prevention of accidents?				
28.9	Is a suggestion scheme in operation?				
29	SAFETY PROMOTION & PUBLICITY				
29.1	Are safety posters displaced all over the factory?				
29.2	Are new posters displaced every year?				
29.3	Are all safety messages displaced on departmental notice boards?				
29.4	Does the factory publish regularly' In-house' safety bulletin				
29.5	Is it distributed to all the employees?				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES					
SL.	ITEM	NA	YES	NO	COMMENTS
29.6	Are safety films screened for the benefit of the employees?				
29.7	Does the facility conduct safety competitions among the employees?				
29.8	Does the factory arrange lectures by eminent specialists on health & safety so as to enlighten the employees on matters of safety?				
30	EMPLOYEE / SUPERVISOR SAFETY CONTROL				
30.1	Do supervisors discuss safety problems / accident prevention with employees				
30.2	Does each employee report to his supervisor unsafe conditions which he encounters in his work?				
30.3	If they do, how often? Weekly / Monthly?				
30.4	Are the discussions held individually or in groups?				
31	ACCIDENT INVESTIGATION & REPORTING				
31.1	Are proper investigations held for accidents / dangerous occurrences?				
31.2	Are they properly reported?				
31.3	Are reportable accidents/incidents notified to the appropriate authorities?				
31.4	Is the cause of accident determined & corrective measures initiated Immediately? Is there a follow-up?				
1.5	Are the accident reports reviewed regularly by the Dept. manager?				
31.6	Is effective analysis by both cause & location maintained on medical & first-aid cases?				
31.7	Are these accident analysis, results used to pin point accident causes for Prevention of similar accidents?				
31.8	Are such incidents highlighted to the employees?				
31.9	Do you encourage your operators to report all dangerous incidents?				
32	SECURITY				

HEALTH, SAFETY & LOSS PREVENTION AUDIT CHECK LIST AS PER IS 14489- ALL SITES

SL.	ITEM	NA	YES	NO	COMMENTS
32.1	Is the number of guards provided adequate for conditions & need				
32.2	Are they contract or permanent personnel?				
32.3	Does the selection of guards assure proper personnel based upon qualifications for the job?				
32.4	Is there a mechanism for reviewing the efficiency of the security systems?				
32.5	Is there a program in effect to prevent pilferage, sabotage, theft or other significant losses to the site?				
32.6	Is there a procedure for reporting losses due to theft?				
32.7	Are investigations conducted to determine causes of losses				
32.8	Is there a material gate pass system in effect & adequately monitored?				
32.9	Are visitors closely supervised?				