

Environmental Monitoring Report

Project No. 37378-014, 37378-013
Quarterly Report
April 2021

Sri Lanka: Jaffna and Kilinochchi Water Supply Project – Additional Financing

Part 1 of 2 (pages 1-80)

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I. INTRODUCTION

A. The Jaffna Kilinochchi Water Supply Project (JKWSP) and JKWSP-Additional Financing

1. Jaffna Kilinochchi Water Supply Project (JKWSP) was launched in year 2009 with a total cost of US\$ 164.04 million (US\$ 90 million from ADB, US\$ 48 million from AFD France and the balance US\$ 26.04 million being the Government contribution). The objective of the project is to improve the health standard and enhancement of the standard of living of people in Jaffna peninsula and to support resettlement, economic development, and social welfare of the entire Northern Province. The project was designed to provide safe drinking water to 300,000 people in water scarcity areas of Jaffna and Kilinochchi districts and to provide pipe-borne sewerage facilities for around 80,000 people in the Jaffna Municipal Council area. The initial design of the drinking water scheme was entirely dependent on abstracting raw water from Iranamadu Irrigation Tank, but the progress of the project was hampered due to a dispute over water sharing between drinking water requirement and irrigation needs. As consensus could not be reached for sharing water for drinking purposes due to social and political reasons, the Iranamadu source has to be suspended after lengthy negotiations process which ran over a period of 2 years (2013/14) involving farmers, Provincial Irrigation Department, Northern Provincial Council, and the Central Government.

2. As such it was concluded that desalination option combined along with a limited ground water abstraction is the most technically suitable and economically viable option to serve the immediate water need. As a result of restructuring of project, the AFD (the co-financing partner) had withdrawn its funding amounting to 35 million euros, dedicated for Iranamadu-based Water Treatment Plant (WTP) and Raw Water conveyance from Iranamadu Tank to WTP and ADB decided not to fund for Sewerage Component of the project.

3. After in-depth technical studies and a lengthy evaluation process, the consensus has finally been reached to construct a Desalination Plant of 24,000 m³/day capacity at Thalaiyadi village (Vadamaradchi East DS division) in Jaffna district. All technical, financial, and social safeguard studies were carried out. The donor agency ADB and the Northern Provincial Council have extended their cooperation and now all stakeholders consider the Desalination as the most viable and practical option under the current circumstances. The ADB is funding this project, Jaffna Kilinochchi Water Supply Project- Additional Financing (JKWSP-AF) and the components include seawater reverse osmosis (SWRO), desalination plant, treated water transmission system, and the distribution network in Jaffna Municipal Council area and Jaffna Peninsula to cover around 300,000 people with pipe-borne drinking water supply. Apart from already committed US\$ 90 million, the ADB is extending additional financing of US\$ 120 million for this purpose.

4. ADB has classified the project as environmental Category A (the highest category), because it involves construction and operation of a large industrial complex at a coastal green field site and is therefore expected to have significant adverse impacts. An EIA study was conducted from December 2015 to July 2017 by Lanka Hydraulic Institute Ltd. The study and report are intended to comply with ADB's Safeguard Policy Statement (SPS) 2009, and the requirements of Sri Lankan EIA regulations. EIA approval had been obtained from Central Environmental Authority on 02.06.2017 and the ADB approval also was obtained for the same.

Fig 1.1: Project implementing area



B. About this Report

5. This Quarterly Environmental Monitoring Report (QEMR) focuses on the the following packages under JKWSP-AF:

- SWRO desalination plant (Package 2015/01)
- Distribution Network in Jaffna City (Package 2017/01)

C. Environmental category as per ADB Safeguard Policy Statement, 2009

6. Under the ADB SPS (2009), the JKWSP-AF is classified as Category A, mainly due to the SWRO plant component, which is predicted to have significant impacts.

D. Environmental category of each sub project as per national laws and regulations

7. Under the National Environmental Act (NEA) No 47 of 1980, SWRO plant is category and all other sub packages are under category III.

II. ENVIRONMENTAL SAFEGUARD TEAM

Name	Name of the Officer	Designation/ Office	Email Address	Contact Number	Roles
PMCIU ¹	T. Barathithasan	Project Director	pdjkwssp@gmail.com	2122 2025 6	Review sub-project and activity plan, design, cost, and bid documents to ensure environmental factors and mitigations are incorporated, and sub-project documents and environmental documents are in harmony. PD /DPD /CE /SE are monitoring and checking the reports regularly submitted by Environmental officer assigned for monitoring works.
	S. Malathy	Deputy Project Director	malathycejkwssp@gmail.com		
	R. Balendra	Chief Engineer	balendrajkwssp@gmail.com		
	V.Vijaykanth	Senior Engineer	vijayjkwssp@gmail.com		
	S. Sivathasan	Chemist	s.thas13@gmail.com		Monitor the environmental related issues at the sites during implementation of projects and activities and provide feedback to the PD /DPD /CE/SE of the PMCIU. The Environmental Officer, Sivathasan got the training as Advanced environmental safeguards training from planning action and Arani got knowledge about Environmental Engineering. Information on other trainings, including future training sessions to be attended, will be discussed in subsequent QEMRs. Proof of trainings such as copies of certificates will be included as attachments as well.
	S. Arani	Project Engineer	seearani@gmail.com		
Consultant	T. Thirunavukkarasu	Team Leader (Individual Consultant)	thirudtladb6@gmail.com	077352 1346	Monitoring short coming and taking corrective measure.
NC		Team leader	Negotiation completed and the agreement to be signed. This recruitment will be done after award of the RO plant contract and		
Fi		Environmental			

¹ Project Engineering and Institutional Consultancy (PEIC) for the Project, a consortium led by Grontmij A/S of Denmark in association with Hifab of Sweden, Green Tech Consultants (Pvt.) Ltd., TMS and the Lanka Hydraulics Institute (LHI) of Sri Lanka has been appointed. Contract of the consultants has been finished and there are not any external monitors engaged for this project except environmental officer of contractor site staff.

Name	Name of the Officer	Designation/ Office	Email Address	Contact Number	Roles
		Social Compliance Officer	prior to DBO Contractor mobilization.		
		Health and Safety Officer			
Consultancy Firm (EMT)		Environmental Compliance Officer	Proposal under review. This recruitment will be done after award of the RO plant contract and prior to DBO Contractor mobilization		
		Safety Compliance Officer			
		Safety Expert			
		Team Leader/Environmental			

III. Overall project and subproject progress and status

Package Number	Components/List of Works	Type of Contract (specify if DBO, DB or civil works)	Status of Implementation (specify if Preliminary Design, Detailed Design, On-going Construction, Completed Works, or O&M phase)	Contract Status (specify if under bidding or contract awarded)	If On-going Construction	
					Physical Progress %	Expected Completion Date
Water Treatment Plant						
PEIC/JKWSSP/SEA WATER REVERSE OSMOSIS PLANT / 2015/01	Design, Build and Operate a Sea Water Reverse Osmosis Desalination Plant of 24 MLD Capacity at Thalaiyadi, Jaffna District (SWRO Desalination Plant)	DBO	Design	Awarded to M/s Suez International on 08.01.2021	0 % ²	Design & Build 04.09.2023
Distribution Network Systems						
PEIC/JKWSSP/Distribution Networks /2017/01	Supplying and Laying of Water Distribution Networks in Jaffna City Area	Civil Works	Construction is Ongoing.	Awarded to M/s NCC (Ltd) of India on 25.01.2021	0.3%	23.01.2023

Package-wise Contractor/s' Nodal Persons for Environmental Safeguards

Package Number	IEE Cleared by ADB (provide date)	Contractor	HSE Nodal Person	Email Address	Contact Number
PEIC/JKWSSP/SEA WATER REVERSE OSMOSIS PLANT /2015/01	EIA (dated July 2017)	M/s Suez International	Project Director	nicolas.wigishoff@suez.com	0114501451
PEIC/JKWSSP/Distribution Networks /2017/01	IEE (dated August 2020)	M/s NCC (Ltd) of India	Country Coordinator	anura@nccjmc.lk	0112552315

² Originally indicated at 1.15% progress for the reporting period. Proposed weightage for design & build progress are as follows; Design – 10% Build – 90%. Hence, progress of 1.15% refers to design stage.

IV. STATUS OF IEE PER SUBPROJECT/PACKAGE

Package-wise Implementation Status

Package Number	Final IEE based on Detailed Design				Site-specific EMP (or Construction EMP) approved by Project Director? (Yes/No)	Remarks
	Not yet due <i>(detailed design not yet completed)</i>	Submitted to ADB <i>(provide date of submission)</i>	Disclosed on project website <i>(provide link)</i>	Final IEE provided to Contractor/s <i>(Yes/No)</i>		
PEIC/JKWSSP/SEA WATER REVERSE OSMOSIS PLANT /2015/01		Dated July 2017	EIA report has been disclosed on project website <i>(link is http://jkwssp.org/index.php/tenders-and-awards)</i> To be updated based on the DBO contractor's final design.			EIA is part of the bid documents and will be included in the contract. Site-specific/Construction EMP will be prepared by the Contractor and approved by the PMCIU.
PEIC/JKWSSP/Distribution Networks /2017/ 01		Dated August 2020	IEE documents disclosed on project website <i>(Link is http://jkwssp.org/index.php/tenders-and-awards)</i>			IEE (including EMP) is part of the bid documents and will be included in the contract. SEMP will be prepared by the Contractor and approved by the PMCIU.

V. COMPLIANCE STATUS WITH NATIONAL /STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

Package No.	Statutory Environmental Requirements	Status of Compliance (Specify if obtained, submitted, and awaiting approval, application not yet submitted)	Validity Date(s) (if already obtained)	Action Required	Specific Conditions that will require environmental monitoring
PEIC/JKWSSP/ Sea Water Reverse Osmosis Plant /2015/01	Environmental Clearance – CEA	obtained	02 June 2021	There is the extension letter of Environmental Clearance is received from CEA and that is extended up to 31st December 2023. A copy of the environmental clearance is attached in the Appendix 2	
	Permit from the Coast Conservation Department	not submitted yet	-	Will be obtained prior to construction of intake and outfall structure and surge chamber within the coastal zone.	Environmental clearance requires monitoring of noise level at the site boundary (Section 02), and implementation of environmental management plan in the approved EIA to be monitored by a committee (Section 9.0). It also requires dissipation of salinity to ambient seawater levels in less than 100 meters from the discharge point.
	Permit from the Marine Environment Protection Authority	not submitted yet	-	Will be obtained prior to operation of the SWRO.	

Package No.	Statutory Environmental Requirements	Status of Compliance (Specify if obtained, submitted, and awaiting approval, application not yet submitted)	Validity Date(s) (if already obtained)	Action Required	Specific Conditions that will require environmental monitoring
PEIC/JKWSSP/Distribution Networks /2017/ 01	Environmental Clearance - <i>Central Environmental Authority</i> Road Cutting Permit – RDA & Pradeshiya sabha Mine clearance – Ministry of Resettlement & Rehabilitation & Regional Mine action Office Construction Materials Transport - Pradeshiya sabha & Police Consent letter- <i>Individual person</i>	<i>Distribution networks are not covered by environmental clearance requirement</i> <i>Others- not yet submitted</i>	<i>Will be obtained, as applicable.</i>	-	

VI. COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

Schedule No. and Item (see Project Loan Agreement and list provisions relevant to environmental safeguards, core labor standards and occupational health and safety)	Covenant	Status of Compliance	Action Required
Schedule 4, Item 7: - Condition for Award of contract	The borrower shall not award any works contract which involves environmental consequences until: the borrower has obtained the final approval of the EIA, and the borrower has incorporated the relevant provisions from the EMP into the works contract.	Complied. An EIA for the SWRO and an IEE for the distribution network in Jaffna City were approved and disclosed in ADB website. The EIA will be updated based on the DBO contractor's final design. The IEE will be updated in case of changes in design.	We'll update timely
Schedule 5, Item 5: - Safeguard's environment	The borrower through the MUD, WS & HF shall ensure that the preparation, design, construction, implementation, and operation of the Project facilities comply with. all applicable laws and regulations of the Government relating to environment, health, and safety. The Environmental Safeguards as set out in the SPS, all measures and requirements set forth in the EIA, the EMP and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Being complied With. An Environmental Clearance has been obtained for the SWRO. The distribution network in Jaffna City is not covered by the environmental clearance requirement.	We'll update timely
Schedule 5, Item 6: - Human and financial resources to implement safeguards requirements	The Borrower through the MUD, WS & HF and the NWSDB shall make available necessary budgetary and human resources to fully implement the EMP and the RP.	Being complied With. Budgetary and human resources required for the SWRO plant and the distribution network in Jaffna City will be made available. Consultants (PMSC and EMT) to be engaged upon the SWRO contract award.	We'll update timely
Schedule 5, Item 7: - Safeguards-related provisions in bidding documents and works contracts	The Borrower through the MUD, WS & HF and the NWSDB shall ensure that all bidding documents and contract for works contain provision that the contractors to: comply with the measures relevant to the contractor set forth in the EIA, the EMP and the RP (to extent they concern impacts on affected people during construction), and any corrective or preventive actions set forth in a SMR. provide the borrower with a written notice of any unanticipated environmental, resettlement or	complied	We'll update timely

	indigenous people risks or impacts that arise during construction, implementation or operation of the project that were not considered in the EIA, the EMP and the RP.		
Schedule 5, Item 8: - Safeguards monitoring and reporting	The Borrower through the MUD, WS & HF and the NWSDB shall do the following: submit safeguards monitoring Reports to ADB (quarterly during construction and semi-annually during implementation in relation to the environment safeguards requirements, and semi-annually in relation to the social safeguards requirements) and disclose relevant information from such reports to affected persons promptly upon submission. if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the EIA, the RAP, and the RP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan: no later than commencement of construction activities under the Works contract, engage qualified and experienced external experts under a selection process and terms of reference acceptable to ADS, to verify information produced through the Project monitoring process	Quarterly environmental monitoring reports are submitted to ADB. A health and safety plan for COVID-19 prepared for distribution network in Jaffna City. A copy of the health and safety plan for COVID-19 attached in the Appendix.	We'll update timely -
Schedule 5, Item 9: - Prohibited list of investments	The Borrower shall ensure that no proceeds of the Loans are used to finance any activity included in the list of prohibited investment activities	complied	We'll update timely
Schedule 5, Item 10: - Labor standards, health, and safety	The Borrower shall ensure that the core labor standards and the Borrower's applicable laws and regulations are complied with during Project implementation. The Borrower through the MUD, WS & HF and the NWSDB shall include specific provisions in the bidding documents and contracts financed by ADO under the Project requiring that the contractors, among other things: comply with the Borrower's applicable labor law and regulations and incorporate applicable workplace occupational safety norms, do not use Child labor do not discriminate workers in respect of employment and occupation do not use forced labor; and	Will also be complied for SWRO plant and distribution network in Jaffna City	We'll update timely

	disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the Project area_ particularly women.		
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VII. Compliance Status with the Environmental Management Plan (refer to EMP Tables in APPROVED IEE/S)

8. Design works is ongoing for SWRO plant package. The progress for “Design & Build” and “Operation” shall be considered separately. Proposed weightage for Design & Build progress as follows; Design – 10% Build – 90%. The Contractor proposed to submit 90 nos. of submission during design phase: The 90 nos. of submission is proportionated to 10% of design progress.

9. Works on Jaffna City distribution network contract is ongoing. The Jaffna City Distribution DN progress during QEMR-1 contains as follows; Preliminary Works- 10% out of 100%, Mobilization – 5% out of 100%, Pipe laying along Rasavinthoddam road (I-road) 553.79 m length completed – 0.15% out of 100 % I- road.

Environmental Issues to consider	Mitigation measures	Monitoring Parameter	Mitigation Implemented	Mitigation effectiveness (US- Unsatisfactory; PS- Partially Satisfactory; S- Satisfactory)	Further Corrective Actions/Nature of Further Corrective Actions
Activity: 1. 1. Rock excavation					
Dust generation during rock drilling shall endanger health of drillers and others working/moving around	(i)To provide dust control arrangements while rock drilling (wet gunny bags)	(i)Dust control arrangements are provided while rock drilling (wet gunny bags)	Yes	S	None
	(ii)To provide dusk masks for rock drillers while drilling	(i)Rock drillers are equipped with dust masks while drilling	Yes	S	
Activity: 1. 2. Hauling of material					
Dust blowing from uncovered material heaps during dry weather shall endanger public health	(i)To make sure that dusty material is transported only by covered trucks.	(i)Dusty material is transported only by covered trucks.	Yes	S	None
Trucks overloaded with hauling material shall endanger public safety.	(i)To make sure that trucks are not overloaded while material transport	(i)Trucks are not overloaded while material transport	Yes	S	
Activity: 1. 3. Pipe-laying, installation of valves and hydrants					

Insufficient protective measures around re-excavation shall endanger public safety	(i)To provide sufficient protective measures around trenches for the safety of workers/ pedestrians /road users	(i)Adequate warning boards, barricades, luminous stickers, night lamps are provided and maintained well	Partly	PS	To be improved. There are some sites have lack of safety precautions such as warning boards, barricades, luminous stickers to be installed around trenches /work areas.
Dust generated during cutting the asphalt layer of the trench shall endanger occupational health	(i)To provide on-site dust control arrangement while cutting the asphalt layer	(i)On-site dust control arrangement is provided while cutting asphalt layer	Yes	S	None
		(ii)well maintain the water spray at all time when using the asphalt cutter.	Yes	S	
Activity: 1.4. Use of machinery/equipment at construction work					
Construction vibration shall damage nearby public properties	(i)To take safety precautions to avoid damages nearby public properties due to vibration	(i)Crack survey has been carried out, prior to commence the construction.	Partly	PS	Crack survey to be carried out prior to construction in new areas
		(iii)Post crack survey has been carried out	Partly	PS	Post-crack survey to be carried out in areas where construction has been completed.
Noise generated during construction shall cause public nuisance	(i)To provide noise barriers when and where necessary	(i)Noise barriers are provided as necessary	No	PS	Noise to be carried out prior to construction in new areas
		(ii)Bi-annual baseline survey is carried out to test the noise level	Yes	PS	
Activity: 1. 5.Common items					
Employees attending work without wearing standard PPEs shall	(i)To provide standard PPEs (in correct size) to all employees	(i)To provide standard PPEs (in correct size) to all employees	Partly	US	To be improved. Most of the employees attend

endanger occupational safety		(ii)All employees are fully equipped with standard PPEs while attending work	Partly	US	work without wearing standard PPEs. Contractor is advised to strictly implement the occupational safety measures including COVID-19 prevention measures.
Vehicle exhaust during traffic congestion at roadside construction shall cause atmospheric pollution	(i)To implement engineer approved traffic management plan	(i)Traffic management plan (TMP) is approved by the engineer	Yes	S	To be improved. Warning boards, speed limits, barricades, luminous stickers, night signal lamps and other safety measures to be installed for the traffic management plan / work areas. Safe temporary access, pedestrian passes and clearly visible road humps to be provided, where necessary.
		(ii)Warning boards, speed limits, barricades, luminous stickers, night signal lamps, are adequately provided where necessary as per approved TMP	Partly	PS	
		(iii)Safe temporary access, pedestrian passes and road humps are adequately provided	Partly	S	
		(iv)Traffic controllers are deployed as and when required	Yes	PS	
		(ii)Local authority permission is obtained for disposal yards.	Yes	PS	
Vehicles/machinery/trucks movement during construction without standard signals, warning alarms, helping assistants shall endanger occupational/public safety	(i)To deploy vehicles/ machinery/ trucks having standard signals, warning alarms (in working order) by employing qualified drivers/ operators with helping assistants	(i)All vehicles /machinery trucks deployed are fitted with standard signals, warning alarms and which are working order	Partly	S	Most of the drivers of the heavy machinery and trucks came from out district in the country and Frequently check the approved staffs are working in sites. Contractor to fit vehicles/ machinery/ trucks with standard signals/ alarms and ensure good working condition.
		(ii)All drivers/operators are qualified and no unqualified driver/ operator is deployed whatsoever	Partly	being complied with	
		(iii)Helping assistants are employed for all heavy machinery and trucks while working at sites	Partly	being complied with	

Lacking public awareness about safety and construction activities shall endanger community health and safety	(i)To conduct public awareness program about safety and construction activities	(i)Public awareness programs about safety and construction activities were conducted	Yes	S	Awareness programs have been arranged each DS Divisions and schools to explain about the pipe laying works. Public was instructed to inform any disturbances or difficulties faced by them during the construction works. Prior notice also were given to public and school regarding the works.
		(ii)Safety awareness programs for school children are conducted	Yes	S	

Overall Compliance with CEMP/ EMP

Sub-Project Name	EMP/ CEMP Part of Contract Documents (Y/N)	CEMP/ EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required
Package 2015/01	Y	-		
Package 2017/01	Y	Y	Partially Satisfactory	To be improved.

Trainings, Workshops and Seminars Conducted

Date	Topic	Conducted by	No. of Participants (Total)	No. of Participants (Female)	Remarks
As per the additional loan, the trainings, workshops, and seminars will be conducted by separate TA after recruitment of the PMSC Consultant. PMSC Consultancy recruitment is in progress and the agreement to be signed.					

Summary of Environmental Monitoring Activities (for the Reporting Period)

Impacts (List from SEMP/CEMP)	Mitigation Measures (List from SEMP/CEMP)	Parameters Monitored (As identified in the SEMP/CEMP)	Method of Monitoring (Visual, Actual Sampling,etc)	Location of Monitoring (Provide GPS Coordinates)	Date of Monitoring Conducted	Person Who Conducted the Monitoring
Activity: 1. 1. Rock excavation						
Dust generation during rock drilling shall endanger health of drillers and others working/moving around	(i)To provide dust control arrangements while rock drilling (wet gunny bags)	(i)Dust control arrangements are provided while rock drilling (wet gunny bags)	Visual	9.685870, 80.2221150	12/2/2021	S. Sivathasan S. Arani
	(ii)To provide dusk masks for rock drillers while drilling	(i)Rock drillers are equipped with dust masks while drilling	Visual	9.685870, 80.2221150	12/2/2021	
Activity: 1. 2. Hauling of material						
Dust blowing from uncovered material heaps during dry weather shall endanger public health	(i)To make sure that dusty material is transported only by covered trucks.	(i)Dusty material is transported only by covered trucks.	Visual	9.685870, 80.2221150	12/2/2021	S. Sivathasan S. Arani
Trucks overloaded with hauling material shall endanger public safety.	(i)To make sure that trucks are not overloaded while material transport	(i)Trucks are not overloaded while material transport	Visual	9.685870, 80.2221150	12/2/2021	
Activity: 1.3. Pipe-laying, installation of valves and hydrants						
Insufficient protective measures around re-excavation shall endanger public safety	(i)To provide sufficient protective measures around trenches for the safety of workers/ pedestrians /road users	(i)Adequate warning boards, barricades, luminous stickers, night lamps are provided and maintained well	Visual	9.685870, 80.2221150	15/2/2021	S. Sivathasan S. Arani
Dust generated during cutting the asphalt layer of the	(i)To provide on-site dust control arrangement while cutting the asphalt layer	(i)On-site dust control arrangement is provided while cutting asphalt layer	Visual	9.685870, 80.2221150	15/2/2021	

trench shall endanger occupational health		(ii) well maintain the water spray at all time when using the asphalt cutter.	Visual	9.685870, 80.2221150	15/2/2021	
Activity: 1. 4. Use of machinery/equipment at construction work						
Construction vibration shall damage nearby public properties	(i)To take safety precautions to avoid damages nearby public properties due to vibration	(i)Crack survey has been carried out, prior to commence the construction.	Visual	9.663476, 80.082135	3/3/2021	S. Sivathasan S. Arani
		(iii)Post crack survey has been carried out	Visual	9.663476, 80.082135	3/3/2021	
Noise generated during construction shall cause public nuisance	(i)To provide noise barriers when and where necessary	(i)Noise barriers are provided as necessary	Visual	9.663440, 80.082109	3/3/2021	
		(ii)Bi-annual baseline survey is carried out to test the noise level	Visual	9.663440, 80.082109	3/3/2021	
Activity: 1. 5. Common items						
Employees attending work without wearing standard PPEs shall endanger occupational safety	(i)To provide standard PPEs (in correct size) to all employees	(i)To provide standard PPEs (in correct size) to all employees	Visual	9.663476, 80.082135	12/3/2021	S. Sivathasan S. Arani
		(ii)All employees are fully equipped with standard PPEs while attending work	Visual	9.663476, 80.082135	12/3/2021	
Vehicle exhaust during traffic congestion at roadside construction shall cause atmospheric pollution	(i)To implement engineer approved traffic management plan	(i) Traffic management plan (TMP) is approved by the engineer	Visual	9.663440, 80.082109	12/3/2021	
		(ii) Warning boards, speed limits, barricades, luminous stickers, night signal lamps, are adequately provided where necessary as per approved TMP	Visual	9.663440, 80.082109	12/3/2021	
		(iii) Safe temporary access, pedestrian passes and road humps are adequately provided	Visual	9.663440, 80.082109	12/3/2021	
Vehicles/machinery/t rucks movement during construction without standard	(i)To deploy vehicles /machinery/trucks having standard signals, warning alarms (in working order) by employing qualified drivers/	(i)All vehicles /machinery trucks deployed are fitted with standard signals, warning alarms and which are working order	Visual	9.663476, 80.082135	27/03/2021	

signals, warning alarms, helping assistants shall endanger occupational/public safety	operators with helping assistants	(ii)All drivers/operators are qualified and no unqualified driver/ operator is deployed whatsoever	<i>Visual</i>	9.663476, 80.082135	27/03/2021	
		(iii)Helping assistants are employed for all heavy machinery and trucks while working at sites	<i>Visual</i>	9.663476, 80.082135	27/03/2021	
Lacking public awareness about safety and construction activities shall endanger community health and safety	(i)To conduct public awareness program about safety and construction activities	(i)Public awareness programs about safety and construction activities were conducted	<i>Visual</i>	Awareness programs has been arranged each and every DS Divisions and schools to pipe lying works. Public was instructed to inform the disturbances or difficulties during the construction works. Prior information also were given to public and school student regarding the works.		Conducted by Sociologist and Chemist
		(ii)Safety awareness programs for school children are conducted	<i>Visual</i>			

VIII. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS

(Confirm records of pre-work condition of roads, agricultural land, or other infrastructure prior to starting to transport materials and construction.)

Package No.	Status of Pre-Work Conditions (Recorded / Not Recorded)	Baseline Environmental Conditions (air, water, noise) Documented (Yes / No)	Action Proposed and Additional Measures Required
PEIC/JKWSSP/Distribution Networks /2017/ 01	Recorded	No	Contractor to monitor construction site baseline environmental condition (air quality, noise level, vibration level) before construction based on approved IEE/EMP.
Package 2015/01 (SWRO Plant)	-	-	Baseline environmental surveys to be conducted/updated based on detailed design. Status of conduct of confirmatory surveys/baseline surveys required in the approved EIA to be reported in the next applicable QEMR.

IX. INFORMATION DISCLOSURE AND CONSULTATIONS

10. The EIA for the SWRO package and the IEE for the distribution network in Jaffna City are disclosed in the project website. The EIA will be updated based on the DBO contractor's final design. The IEE will be updated in case of changes in design. Relevant project-related information will be provided to stakeholders/affected people before and during construction phase.

11. No consultation for the SWRO package nor the distribution network in Jaffna City was conducted during the period. Meaningful consultations will be continued before and throughout the implementation of the packages.

X. GRIEVANCE REDRESS MECHANISM

12. Quarterly meetings are not conducted during the reporting period because of the COVID-19 issues. Jaffna City will have a functional GRM and that grievance records will be maintained and reported in the QEMRs. This Committee is supported to record and resolve grievances regarding the ongoing project under the guidance of the Divisional Secretary. Prior to the pipe laying works, the officers visited every household and explained the works and got their consent to lay the works.

13. No complaints received during the reporting period.

XI. SUMMARY OF KEY ISSUES/CONCERNS IDENTIFIED DURING THE REPORTING PERIOD AND REMEDIAL ACTIONS

14. Most of the employees attend work without wearing standard PPEs for Jaffna City distribution network. Contractor advised to strictly implement the occupational safety measures including COVID-19 prevention measures.

XII. STATUS OF CORRECTIVE ACTIONS FROM PREVIOUS QEMR(S)

SRI: JKWSP-AF 1st Quarter 2021 QEMR Comments Matrix

We would like to request the PMCIU's confirmation/clarification on the following, and provide required information in the QEMR, accordingly:

ADB Comments/Clarifications (17 Jun 2021)	PMCIU's Response	ADB's Comments (12 Jul 2021) <i>To be addressed in the next QEMR</i>
1. Under Section III. Overall project and sub-project progress and status, please specify what activities/describe the type of works considered as part of the reported physical progress of 1.15% for SWRO (Package 2015/01) during Q1 (Jan-Mar) 2021. As a DBO package, an updated/final EIA based on the DBO Contractor's detailed design is required to be approved by ADB prior to construction activities. Other pre-construction requirements indicated in the approved EIA and as discussed during the recent ADB Review Mission must be satisfied. Please provide clarification.	The progress for "Design & Build" and "Operation" shall be considered separately. Proposed weightage for Design & Build progressive as follows; Design – 10% Build – 90% The Contractor proposed to submit 90 nos. of submission during design phase: The 90 nos. of submission is proportionated to 10% of design progress.	Noted. Based on this, SWRO is at 0% for physical progress since package is still at design stage.
2. Under Section III. Overall project and sub-project progress and status, please specify what activities/describe the type of works considered as part of the reported physical progress of 0.3 % for the distribution network in Jaffna City (Package 2017/01) during Q1 (Jan-Mar) 2021. Provide attach photos of actual site activities and indicate locations in the Appendices.	The Jaffna City Distribution DN progress during Q1 contains the following works 1. Preliminary Works- 10% out of 100%, 2. Mobilization – 5% out of 100%, 3. Pipe laying (iroad- Rasavinthoddam road 553.79m length of pipe laid) – 0.15% out of 100%	Noted that construction works (pipelaying) has already started during the report period.
3. If construction works have started in the DN in Jaffna City, please confirm that the following pre-construction/construction requirements have been complied with:		

a. Project Engineering and Institutional Consultancy (PEIC) Environmental Specialist has been recruited. (Please indicate status of recruitment in the table in Section II. Environmental Safeguard Team)	PEIC is no more for Jaffna City Distribution network – No such recruitment (PMCIU officer is continuing as Environmental Specialist duties)	Noted (as verified from approved IEE for Jaffna City DN).
b. Contractor has appointed an EHS Officer (Please add in the table under II. Environmental Safeguard Team)	K. Pirasanthan is assigned as Environmental safeguards officer for Jaffna city package.	Noted. Please add K. Pirasanthan as Environmental Safeguards Officer in the Table on Contractors Nodal Person for Environmental Safeguards in Section III in the next QEMR.
c. SEMP has been prepared and approved by the PMCIU (Please add in the table under IV. Status of IEE Per Subproject/Package)	Accepted	Noted. SEMP from JMC is attached. Please indicate in the next QEMR, Section IV table that this has been approved by the PMCIU.
d. Updated IEE dated Aug 2020 (approved by ADB) is based on the latest design (Note: Any change in design will require an updated IEE) (Please indicate in the table in Section IV. Status of IEE per Subproject/Package)	If Any change in design we will updated IEE	Noted. Please indicate in the next QEMR, Section IV that the latest IEE is based on latest design and is included in the contract.
e. All applicable government clearances/permissions required prior construction have been obtained. (Please indicate by adding a paragraph and indicate clearances/permits in the table in Section V. Compliance Status with National/State/Local Statutory Environmental Requirements).	Accepted. We'll update timely.	Compliance status is not clear. This is a pre-construction requirement. In the next QEMR, discuss in Section V table if any permits/clearances are required and obtained for the construction activities during the period, or indicate if none is required.
f. Site-specific Health and Safety Plan, including COVID-19 H&S plan, has been prepared and approved by the PMCIU (Please indicate in Section VI. Compliance Status with Environmental Loan Covenants, Schedule 5)	Accepted and Attached	Done.
g. Pre-construction EMP and Construction EMP has been complied with. (Under Section VII. Compliance Status with the EMP, please use the EMP in the approved IEE and add 2 columns to indicate compliance status for each mitigation measure, and any remarks)	Accepted	Pre-Construction: Securing of permits/clearances- refer to item e above. Pre-construction EMP in approved IEE requires distribution of leaflets to the locality in the vicinity of the project regarding how to make complaints. Please discuss in Section X if this was complied or not, or if done through other means (e.g. included in household

		visits). If not done, please indicate that it will be done immediately. Provide an update in the next QEMR. Construction: The table in the QEMR is not the EMP in the approved IEE. Please revise this in the next QEMR.
h. Baseline monitoring of air quality, noise level, and vibration level has been conducted by the Contractor prior to transport of materials and construction (Please indicate in the table in Section VIII. Monitoring of Environmental Impacts on Project Surroundings. Please also present the results of baseline monitoring in a separate table, in comparison with applicable standards, national/WB/IFC General EHS Guidelines, whichever is more stringent.)	Accepted and informed to Contractor	Not done. In the next QEMR, please provide an explanation why this was not done during the reporting period. Please ensure that this will be done in the next reporting periods.
i. Project information dissemination and consultations with affected communities/stakeholders have been conducted. (Please indicate under Section IX Information disclosure and consultations)	Accepted. We'll update timely	Done. However, please correct the statement in the QEMR, Section IX Information Disclosure and Consultation. Report says none was conducted but other sections says that information dissemination and consultations were conducted: <i>"Awareness programs has been arranged each and every DS Divisions and schools to explaining the tower construction works and the pipe lying works. Public was instructed to inform the disturbances or difficulties during the construction works. Prior information also were given to public and school student regarding the works"</i> <i>"Prior to the pipe lying works, the officers visited every household and explained the works and got their consent to lay the works."</i> Please update in the next QEMR.
j. GRM has been established and notified prior to construction and is functional. (Please indicate by	Updated.	Not clear if the GRM was established for Jaffna City. QEMR, Section X on GRM

updating the paragraphs in Section X. Grievance Redress Mechanism)		state, "Jaffna City will have a functional GRM and that grievance records will be maintained and reported in the QEMRs." Please provide a clear discussion in the next QEMR.
k. Training program on environmental management among consultants/contractors (based on approved IEE) have been conducted. (Please indicate in the table in Section VII, Training, Workshops, and Seminars Conducted)	Accepted. We'll update timely	Noted that trainings will be conducted after the recruitment of the PMSC. PMSC Consultancy recruitment is in progress and the agreement to be signed. Pre-Construction awareness workshops for Contractors on ADB SPS requirements including EMP implementation is required per approved IEE. Please ensure that this is done immediately. Provide updates in the next QEMR.
4. In Section XII. Status of Corrective Actions from Previous QEMRs, please tabulate the Actions Required in the 4Q 2020 QEMR Review log sheet (see separate file) and indicate the status of implementation. Update the current discussions in the QEMR accordingly.	Accepted. We'll update timely.	<p>Actions required from previous QEMR review were addressed in the current reporting period/QEMR, except for the ff:</p> <p>i) Use of the EMP in approved IEE when assessing and reporting EMP compliance- refer to item g above.</p> <p>ii) Conduct of baseline monitoring of air quality, noise and vibration for Jaffna City DN per approved IEE- refer to item h above.</p> <p>iii) GRM establishment for Jaffna City DN is unclear- refer to item j above.</p> <p>iv) training/awareness workshop on safeguards for contractors were not conducted- refer to item k above.</p> <p>A discussion on a key issue concerning occupational safety measures and action taken for the current reporting period was provided. This is suggested to be transferred to Section XI. Please update in the next QEMR.</p>

XIII. APPENDICES

APPENDIX 1 PHOTOS

APPENDIX 2 ENVIRONMENTAL CLEARANCE FOR SEA WATER DESALINATION PLANT AT
THALAYADY, MARUTHANKERNY – CEA

APPENDIX 3: CONTRACTOR'S HEALTH AND SAFETY PLAN FOR COVID-19 (SUBMISSION
LETTER)

APPENDIX 4: CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN (EMP)
(SUBMISSION LETTER)

APPENDIX 1: PHOTOS**A. Implementation of COVID-19 measures at PMCIU office and work sites**





Pipe laying work is ongoing at Rasavintoddam



APPENDIX 2: ENVIRONMENTAL CLEARANCE FOR SEA WATER DESALINATION PLANT AT THALAYADY, MARUTHANKERNY – CEA

මධ්‍යම පරිසර අධිකාරිය
மத்திய சுற்றுடல் அதிகாரசபை
Central Environmental Authority

පරිසර පිටපත, 104, දෙව්පිටිය කොට්ඨාසයේ මාවත, බත්තරමුල්ල, ශ්‍රී ලංකාව.
"பரிசுர பிடிச", 104, தென்மேற்குப் பகுதியில் மாவத்தி மாவட்டம், பத்தரமுல்லை, இலங்கை.
"Parisara Piyasa", 104, Denzil Kobbekaduwa Mawatha, Battaramulla, Sri Lanka. Web: www.cea.lk

ඔබේ යොමුව: } NO/JA/07/ER/822/17 } ඔබේ යොමුව: } 07.05.2021
ඔබගේ යොමුව: } } Your Ref. } Date

District Office, Jaffna, TB-021-222-4050

Project Director,
Jaffna - Kilinochchi Water Supply & Sanitation Project,
National Water Supply and Drainage Board,
Project Director's Office,
MPCS Building (First Floor),
No.127, K.K.S Road,
Jaffna.

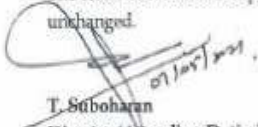
PD's OFFICE - NWS & DB
RECEIVED
Date: 07 MAY 2021
Signature:
S.No: 7666 Time:
Action: 2021/05/07 Acc

Extension of Environmental Recommendation for the Seawater Desalination Plant at Thalayady, Maruthankerny

This has reference to your letter No. JKWSSP/PMCIU/CEA/RO PLANT dated 25.03.2021, on the above subject.

The Environmental recommendation issued for the above proposed project activity by letter No: NO/JA/07/ER/822/17 dated 02.06.2017 is further extended up to 31st December 2023.

The terms & conditions stipulated in the above Environmental Recommendation is remain unchanged.


T. Suboharan
Director (Attending Duties)
Central Environmental Authority
Northern Provincial Office
Killinochchi

Copies:

1. Director - Environmental Pollution Control Division, Central Environmental Authority, Battaramulla.

APPENDIX 3: CONTRACTOR'S HEALTH AND SAFETY PLAN FOR COVID-19 (SUBMISSION LETTER)



Ref: NCC/JMCS/ NWS&DB/ 079

Eng. T. Barathithasan – Project Director,
Project Management, Coordination and Implementation Unit,
Jaffna – Kilinochchi Water Supply and Sanitation Project
Project Director's Office,
NWS & DB,
Kandy Road,
Jaffna.

Dear Sir,

SUPPLYING AND LAYING OF WATER DISTRIBUTION NETWORKS IN JAFFNA CITY AREA
CONTRACT NO: PEIC/JKWSSP/DISTRIBUTION NETWORK/2017/01

SUB: SUBMISSION OF HEALTH AND SAFETY PLAN IN VIEW OF COVID-19

Herewith we are submitting the Health and Safety Plan in view of covid-19 for the captioned contract for your perusal accordingly please.

Assuring our best services at all times

Thank You,
Best Regards,
NCC Limited

Eng. M. G. Jayaratna,
Project Manager – JKWSSP, NCC Limited.
T/P: 0714943975



NCC Limited
Prominent Repair and Contractor Company Limited
Water Division 5th Floor, NCC House, Madhapur, Hyderabad 5000 81
T + 91 00 2326 8888 F + 91 40 2321 5055 ncclimited.com
Project Office 22, Byrde Place, Colombo 06, Sri Lanka
T+94 11 255 2315 F+94 11 255 2356

APPENDIX 4: CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN (EMP) (SUBMISSION LETTER)



Ref: NCC/JMCS/ NWS&DB/082



Eng. T. Barathidasan - Project Director,
Project Management, Coordination and Implementation Unit,
Jaffna - Kilinochchi Water Supply and Sanitation Project,
Project Director's Office,
NWS & DB,
Kandy Road,
Jaffna.

Dear Sir,

SUPPLYING AND LAYING OF WATER DISTRIBUTION NETWORKS IN JAFFNA CITY AREA
CONTRACT NO: PEIC/JKWSSP/DISTRIBUTION NETWORK/2017/01
SUB. Environmental Management Plan

Hereby we are submitting you, Project Environmental Management Plan relevant to Jaffna - Kilinochchiya Water Supply and Sanitation Project for your perusal, comments and necessary action please.

We are assuring plan included all necessary requirement and approval shall be enable us perform our works.

Thank You,
Best Regards,
NCC Limited

Eng. M. G. Jayarathna,
Project Manager - JKWSSP, NCC Limited.
T/P : 0714943975, email : jayarathna@ncc.lk



NCC Limited
(formerly Nagarajana Construction Company Limited)
Water Division 5th Floor, NCC House, Madhapur, Hyderabad 500081
T + 91 40 2326 8888 F + 91 40 2325 9055 ncclimited.com
Project Office 22, Byrtle Place, Colombo 06, Sri Lanka
T +94 11 255 2435 F +94 11 255 2456

XIV. LOG SHEET

SOUTH ASIA REGIONAL DEPARTMENT
SAUW Environmental Monitoring Report Log Sheet

Project title:	Jaffna Kilinochchi Water Supply Project (JKSWP)- Additional Financing			
Grant Number:	L3603/3604	Project Number:	37378-013	
Overall Project Description and Objectives	<p>The project was designed to provide safe drinking water to 300,000 people in water scarcity areas of Jaffna and Kilinochchi districts and to provide pipe borne sewerage facilities for around 80,000 people in the Jaffna Municipal Council area.</p> <p>It includes the construction of a desalination plant, treated water transmission system and the distribution network in Jaffna Municipal Council area and Jaffna Peninsula.</p> <p><i>Note: The progress of implementation of cost overruns financed by this additional financing are monitored and reviewed under the original loan, L2710/11.</i></p>			
Approved Categorization	x	Category A		Category C
		Category B		FI
Loan Effectivity Date:			Frequency of Reporting	Quarterly
Project Officer	Pedro Almeida		Project Analyst	Ed Moises
Reporting Year	2020	Coverage Period	1Q 2021	
Date of PMU Submission to ADB	4 May 2021	Date of ADB’s feedback to PMU	12 July 2021 (Final Review)	

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
A. Project Safeguards Team (<i>check loan agreement and PAM requirements</i>)				
PMU ⁴	<ul style="list-style-type: none"> Project has a Project Management Coordination and Implementation Unit (PMCIU) under the National Water Supply and Drainage Board. PMCIU's Chemist and Project 	The SWRO plant is a Category A project and is required of a full time dedicated environmental safeguards officer. Per PMCIU's	Please specify in the next QEMR that a full-time, dedicated Environmental Safeguards Officer has been assigned for the SWRO. Provide details in Section II of the QEMR.	
PIU ⁵				

³ PMU to provide detailed response. This log sheet will be attached to the SEMR/QEMR and disclosed on ADB website.

⁴ PMU – project management unit

⁵ PIU – project implementation unit

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
	Engineer serves as the Environmental Officers.	response to 4 th QEMR review log sheet, Eng. P. Kajan is assigned as Environmental safeguards officer for SWRO Plant		
Consultants	Consultancy firms will be recruited after the award of the RO contract. <ul style="list-style-type: none"> PMSC-Environmental and Social Compliance Officer, Health and Safety Officer EMT- Environmental Compliance Officer, Safety Compliance Officer and Safety Expert, Team Leader/Environmental 	The PMSC and EMT needs to be put in place before mobilization by the DBO contractor. An Independent Environmental Monitoring Expert is also required for the project.	Provide updates concerning the recruitment of required safeguards consultants per agreement in PAM, in the next QEMRs. Ensure that required consultants are in place before DBO contractor mobilization.	
B. Overall Project and Subproject Description <i>(summarize number and type of packages)</i> ⁶				
Number of Packages with civil works <i>(check if consistent with latest procurement plan)</i>	2 packages: <ol style="list-style-type: none"> Package 2015/01 (SWRO plant) Package 2017/01 (Distribution Network) 	None	None	
Number of DB/DBO packages and status	1 Package: <ol style="list-style-type: none"> Package 2015/01 (SWRO Plant) <ul style="list-style-type: none"> Awarded to Suez International on 8 Jan 2021 	None	None	
Number of civil works packages and status	1 Packages: <ol style="list-style-type: none"> Package 2017/01 Distribution 	None	None	

⁶ DB/DBO – design-build or design, build, and operate or where contractor will finalize the detailed engineering design; civil works contract – sufficient details of the package is known and used as basis for bid/contract's Technical Specification

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
	network- Awarded on 25 Jan 2021			
IEEs cleared for awarded packages?	<ol style="list-style-type: none"> Package 2015/01 (SWRO Plant) <ul style="list-style-type: none"> EIA (dated July 2017) prepared and disclosed Package 2017/01 <ul style="list-style-type: none"> IEE (dated August 2020) prepared and disclosed 	None.	<p>Update the EIA for the SWRO plant Package 2015/01) based on final design of the DBO contractor.</p> <p>Please indicate in the next QEMR, Section IV that the latest IEE is based on latest design and is included in the contract. Update the IEE for the distribution network in Jaffna City (Package 2017/01) in case of changes in design/location.</p>	
Safeguard documents disclosed on project website?	<ul style="list-style-type: none"> Package 2017/01- Yes (IEE, 2020) Package 2015/01- Yes (EIA, 2017) 	None.	None.	
SEMR information on implementation phase (bidding, on-going, construction, completed, under operation, others)	<ul style="list-style-type: none"> Package 2015/01 (SWRO Plant)- Awarded. At design phase. Package 2017/01 (Distribution Network)- Awarded. At construction phase. 	None	None	
SEMR information on construction activities progress	Yes. Pipelaying for Package 2017/01.	Yes	None	
C. Status of compliance with statutory clearances (check IEE for the complete list, summarize the findings for each package – obtained/under application and if obtained, specify validity period)				
Environmental Clearance (EC)	<ul style="list-style-type: none"> Environmental clearance for the SWRO plant – attached. Valid until Dec 2023 	None	None	

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
Forest Clearance	SWRO- Permits from the Coast Conservation Department, Marine Environment Protection Authority to be applied for. Jaffna City DN- EC is not required. Others are not yet submitted.	For Jaffna City DN, the QEMR is not clear about which of permits are applicable for the reporting period.	In the next QEMR, for both packages, discuss in Section V table if any permits/clearances are required and obtained during the period, or indicate if not yet applicable for the reporting period.	
No Objection Certificate/Letter				
Site location clearance				
Permit/Consent to Construct (or equivalent)				
Permit/Consent to Operate (or equivalent)				
Road-cutting permit				
Utilities shifting permit				
Tree-cutting permit				
Others (specify)				
D. Status of Compliance with grant agreements/covenants (verify items in SEMR with project loan agreement)				
Schedule 4, Item 7: Condition for Award of Contract, The borrower shall not award any works contract which involves environmental consequences until: a. the borrower has obtained the final approval of the EIA, and b. the borrower has incorporated the relevant provisions from the EMP into the works contract.	"Complied" An EIA for the SWRO and an IEE for the distribution network in Jaffna City were approved and disclosed in ADB website. The EIA will be updated based on the DBO contractor's final design. The IEE will be updated in case of changes in design.	None.	Update the EIA for SWRO based on the final detailed design of the DBO Contractor and submit to ADB for approval prior to start of construction. Update the IEE for the Jaffna City DN in case of changes in design.	
Schedule 5, Item 7: Safeguards-related provisions in bidding documents and works contract.				
Schedule 5, Item 5: Safeguards environment	Being complied with.	See related comment in Section C of this log sheet.	See related action/s required in Section C of this log sheet.	
Schedule 5, Item 6: - Human and financial resources to implement safeguards requirements	Being complied. Borrower designated an environmental safeguards team in the PMCIU. Consultants will be engaged upon RO contract award.	See related comment in Section A of this log sheet.	See related action/s required in Section A of this log sheet.	
Schedule 5, Item 8:	QEMR is regularly submitted. HS Plan	None.	Ensure that relevant information	

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
Safeguards monitoring and reporting	for COVID-19 was attached in the QEMR.		from the QEMRs is disclosed to affected persons/ upload QEMR in project website.	
Schedule 5, Item 9: - Prohibited list of investments	Complied as per the QEMR	None.	None.	
Schedule 5, Item 10: Labor standards, health and safety	Will be complied with	None.	In the next QEMR, provide detailed discussion on compliance for each requirement for the SWRO plant (Package 2017/01) and distribution network in Jaffna (Package 2015/01).	
E. Contractors Compliance with Environmental Safeguards Requirements				
Appointment of Environment, Health and Safety (HSE) and/or nodal person	Nodal persons for HSE are indicated in the QEMR.	According to the PMCIU's response in the Comments-Response Matrix, K. Pirasanthan is designated as Environmental Safeguards Officer for the Contractor of Package 2017/01 (Jaffna City DN)	Please add K. Pirasanthan as Environmental Safeguards Officer in the Table on Contractors Nodal Person for Environmental Safeguards in Section III in the next QEMR.	
Submission of site-specific EMPs	Contractor's EMP for Package 2017/01 was attached in the QEMR.	See actions/required.	Please indicate in the next QEMR, Section IV table that the Contractor's EMP has been approved by the PMCIU.	
Submission of SEMP implementation report (<i>specify in comments frequency – daily, weekly, monthly or quarterly basis</i>)	Not discussed.	See actions/required.	Please discuss in the next QEMR the frequency of SEMP implementation report submission to PMCIU.	
Site verification by PMU, PIU, or consultants (<i>verification report should be attached to the SEMR</i>)	Dates of site-inspection were indicated in the Summary of Environmental Monitoring activities, but no site verification from the PMCIU was	See actions/required.	Attach site verification reports of the PMCIU (and PMSC, when engaged) in the next monitoring reports.	

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
	attached to the QEMR. Only Contractor's site inspection checklists were attached.			
SEMR compliance matrix on mitigation measures implementation (matrixes are based on approved EMPs)	Presented in Section VII.	<p>The table in the QEMR is not the EMP in the approved IEE.</p> <p>Pre-construction EMP in approved IEE requires distribution of leaflets to the locality in the vicinity of the project regarding how to make complaints.</p>	<p>Please revise the compliance matrix in the next QEMR. Use the approved EMPs in the IEE.</p> <p>Please discuss in Section X if this was complied with or not, or if done through other means (e.g. included in household visits). If not done, please indicate that it will be done immediately. Provide an update in the next QEMR.</p>	
F. Environmental Monitoring				
Rationale	Not presented.	<p>Baseline environmental monitoring is required per approved IEE. Other monitoring activities (records checking, visual) are also required in the approved IEE.</p> <p>Baseline environmental surveys and routine monitoring are also required for SWRO.</p>	<p>In the next QEMR, please provide an explanation why baseline monitoring was not done during the reporting period. Please ensure that monitoring activities per approved IEE will be done in the next reporting periods and provide the required details.</p> <p>Ensure that baseline environmental surveys and routine monitoring activities for the SWRO are conducted and provided in the next applicable QEMR.</p>	
Parameters to be monitored are commensurate to the impacts, mitigation measures, and project/subproject/package				
Sampling locations identified and appropriate				
Sampling frequency identified and appropriate				
Sampling collection and analysis are in accordance with internationally-accepted practices				
Standards and performance indicators are				

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
compliant with ADB SPS requirements ⁷ (provide justification if less stringent standards are used)				
G. Environmental monitoring results (narrative based on presented results)				
Air quality results	Not presented.	Same as comments in Section F above.	For SWRO Plant (Package 2015/01), conduct baseline and routine environmental monitoring (air, noise, water, biodiversity) during pre-construction, construction and operation according to the approved Environmental Monitoring Program in the EIA/updated/Final EIA.	
Water quality results				
Noise quality results				
Others	n/a	See action/s required.	Provide in the next QEMRs updates on the conduct of confirmatory surveys required per approved EIA. For distribution network in Jaffna City (Package 2017/01), conduct baseline environmental monitoring as required per environmental monitoring plan in approved IEE.	
H. Consultations and/or FGDs during the reporting period				
Number	Section IX says that no consultation was conducted during the reporting period, but other sections says that	See actions required.	Please correct the statement in the QEMR, Section IX Information Disclosure and	
Reason/s for consultations/FGDs				

⁷ ADB SPS (Appendix 1 para 33) requires projects to apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines (<https://www.ifc.org/ehsguidelines>). These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented ADB SPS.

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
Number of participants	information dissemination and consultations were conducted: <i>“Awareness programs has been arranged each and every DS Divisions and schools to explaining the tower construction works and the pipe lying works. Public was instructed to inform the disturbances or difficulties during the construction works. Prior information also were given to public and school student regarding the works”</i> <i>“Prior to the pipe lying works, the officers visited every household and explained the works and got their consent to lay the works.”</i>		Consultation. Continue meaningful consultations throughout the implementation of for the SWRO plant (Package 2015/01) and distribution network in Jaffna City (Package 2017/01); and during the preparation of the updated EIA for the SWRO based on the DBO contractor’s detailed design. Provide documentation in the next QEMRs.	
Number of female participants				
I. Trainings, Workshops, Seminars during the reporting period				
Number	Not conducted. Per the QEMR, trainings, workshops and seminars will be conducted after the recruitment of the PMSC Consultant. PMSC Consultancy recruitment is in progress.	See actions required.	Conduct trainings on environmental, health and safety; document and report in the QEMRs. Pre-Construction awareness workshops for Contractors on ADB SPS requirements including EMP implementation is required per approved IEE. Please ensure that this is done immediately. Provide updates in the next QEMR,	
Topics				
Number of participants				
Number of female participants				
J. Grievance Redress Mechanism				
GRM per PAM or IEE/EARF established	A general summary of the GRM is included in the QEMR.	Not clear if the GRM was established for Jaffna City. QEMR, Section X on GRM state, “Jaffna City will have a functional GRM and that	Please provide a clear discussion in the next QEMR..	
GRM notified via publication or notice boards	Details on the GRC members and capacity development activities on the GRM were not identified in the report.			
GRM members identified				
GRM members have				

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
capacity to address project-related complaints <i>(detailed information on capacity development of GRM members such as trainings, workshops, briefings, etc should be attached in the SEMR)</i>	No quarterly meetings are held during the period.	grievance records will be maintained and reported in the QEMRs.”		
Number of meetings conducted <i>(attach minutes of the meeting)</i>				
K. Complaints Received <i>(detailed information on nature of complaints, summary and status of resolution)</i>				
Number of complaints	No complaint was received.	None.	None.	
Nature <i>(provide summary of issues/concerns)</i>				
Status of resolution				
L. Summary of Issues and Corrective Actions				
Major issues/concerns (specify)	Gaps in occupational health and safety measures implementation were observed during the reporting period.	None.	Please implement corrective actions and provide updates in the next QEMR.	
Corrective Action to be implemented, timeline, responsible person/s, and budget are clearly specified				
M. Status of Corrective Action Plan from Previous Reporting Period (list all and provide status)				
The actions required from previous QEMR review were: a) revision of EMP compliance matrix based on approved IEE; b) baseline monitoring; c) clear discussion on GRM	Not done.	None.	Refer to related actions required on each of the item.	

Item	Findings in the SEMR/QEMR	Comments	Action/s Required	Response by PMU ³
establishment, d) training/awareness workshop on safeguards for contractors				
N. Appendixes				
Photos	Attached.	None.	Continue attaching photos, summary of consultations, attendance sheets, permits/clearances, site inspection/verification checklists, SEMP implementation reports in the next QEMRs.	
Summary of consultations	None.	None.		
Copies of environmental clearances and permits	Attached.	None.		
Site EMPs	Attached.	None.		
Checklists	Contractor's site inspection checklist is attached. None from PMCIU.	None.		
O. Other Issues	None	None	None	
Q. REFERENCES				
1ST QEMR JKWSP-AF Jaffna and Kilinochchi Water Supply Project - Additional Financing: Supply and Laying of Distribution Network in Jaffna City Initial Environmental Examination				

XV. OTHER PDF FILES ATTACHED

CONTRACTOR'S HEALTH AND SAFETY PLAN

CONTRACTOR'S HEALTH AND SAFETY PLAN FOR COVID-19

CONTRACTOR'S ENVIRONMENTAL MANAGEMENT PLAN (EMP)

MONITORING CHECK LIST AT THE CONSTRUCTION SITE

15th March 2021

Ref: NCC/JMCS/ NWS&DB/ 004

Eng. T. Barathithasan - Project Director,
Project Management, Coordination and Implementation Unit
Jaffna – Kilinochchi Water Supply and Sanitation Project
Project Director's Office,
NWS & DB,
Kandy Road,
Jaffna.

Dear Sir,

PD's OFFICE - NWS & DB	
RECEIVED	
Date: 16 MAR 2021	
Signature:	
S.No: 474	Time:
Action: CE. Balendra / SE. Thanyal	

JA ON STAFF / sociologist
pls check & Disburse

SUPPLYING AND LAYING OF WATER DISTRIBUTION NETWORKS IN JAFFNA CITY AREA
CONTRACT NO: PEIC/JKWSSP/DISTRIBUTION NETWORK/2017/01

SUB. Project Health and Safety Plan

Hereby, we are submitting the project health and safety plan with regard to the Supplying and laying of water distribution network in Jaffna city area, Contract No. PEIC/JKWSSP/Distribution network/2017/01 for your information. We would like your comments and actions required to be taken by us.

Approval for our plan will be highly appreciated, as it will enable us to perform smoothly.

Thank You,
Best Regards,

NCC Limited

Eng. M. G. Jayarathna.
Project Manager – JKWSSP, NCC Limited.
T/P: 0714943975,

TL
pls provide your
observation on
this to finalize
en.



NCC Limited

(Formerly Nagarjuna Construction Company Limited)

Water Division 5th Floor, NCC House, Marthapur, Hyderabad 5000 81
T +91 40 2326 8888 F + 91 40 2312 5055 ncclimited.com
Project Office 22, Byrde Place, Colombo 06, Sri Lanka
T + 94 11 2 55 23 15 F +94 11 2 55 23 56

Jaffna Kilinochchi Water Supply and Sanitation Project

SUPPLYING AND LAYING OF WATER DISTRIBUTION NETWORKS IN JAFFNA CITY AREA

Contract No. – PEIC/JKWSSP/Distribution Network/2017/01

HEALTH AND SAFETY PLAN

PD's OFFICE - NW & DB	
RECEIVED	
Date: 16 MAR 2021	
Signature:	
S.No: 474	Time:
Action:	

NCC Limited
22, Byrde Place,
Colombo 6.

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INTRODUCTION

The "Health and Safety Plan" has been developed to give practical directions on how to maintain health and safety standards at site. This plan is prepared as simple as possible to understand by all personnel and easily implemented.

It is the intention that all work performed by each individual will be carried out in accordance with the relevant statutory safety provisions and all reasonable practical measures taken to avoid risk to its employees or to others who may be affected. Each individual will continually endeavor to provide safe places of work, safe systems and procedures of working and through orderly good maintenance care and attention of plant and equipment avoid personal injuries or risks to the health of its employees.

This plan is prepared considering not only the work force in the project, but also the general public. By implementing this plan we are confident that our work force and the public will be healthy and accident free to a high degree during the construction work and the work force will work more efficiently and put in more effort.

We will also build up more goodwill with the general public when they become aware of the health and safety precautions adopted during a project of this magnitude. We trust this will results accident free amicable atmosphere and will continue to the successful completion of the project on schedule.

1.0 PROJECT PLANNING AND ORGANIZING

The project is planned by considering health and safety of the parties involved in it. We have identified all specific issues at the site to ensure adequate standards of "Healthy and Safety" which are maintained throughout the project.

Once the Health and Safety Plan is prepared it will set out how these issues will be managed at site daily. It will be the responsibility of the whole team to direct, organized and execute the plan at site.

The purpose of the Health and Safety Plan is to ensure that throughout the project lifecycle that exposure to following risks are eliminated, reduced or controlled to adequate standards. We will ensure the:

1. Safety of the completed work.
2. Safety of those who will execute the project, including the construction workers, machinery operators, supervisors, engineers and others.
3. Safety of those others who might be affected by the project activities during its execution such as the general public, residents and others.
4. Impact on the environment, including pollution risks, noise, vibration, dust fumes from the work.
5. Interruption to a commercial venture as a result of a potential safety failure.

Risk Assessment and Hierarchy of Controls

We have assessed risks by a simple process where hazards are identified, and thereafter control measures are implemented in line with the hierarchy of controls as illustrated below.

(See Hierarchy of Controls – Figure on next page.)

Order of Preference;

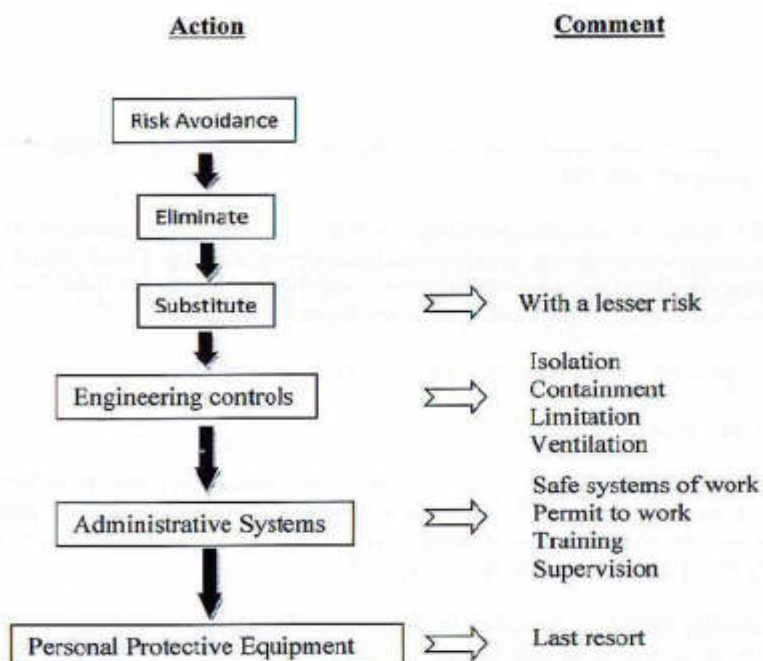


Fig 1 - Hierarchy of Controls

Risk Avoidance

We will avoid risks through proper project planning.

Risk Elimination

We will eliminate risks through regular reviews and search for better plant or processes that will deliver high standards of control with reduced risk.

Risk Reduction

We will achieve reduction of risks through:

- Engineering by separation, screening, and guarding of enclosures.
- Isolation/reduction by limiting access thereby reducing numbers of people exposed.
- Substitution of the dangerous by the less dangerous.

Risk Control

We will avoid, eliminate or reduce risks only where changes are introduced or where there is a significant review of a particular risk.

In the general daily operations the risk control option is the one that is the most applicable as in many cases it may not be possible to avoid or eliminate a particular risk. In this situation we will find it necessary to identify other methods of controlling a particular risk. Our other methods will be the application of physical, system and human controls.

Fig 1 illustrates the general interaction between various types of controls.

Physical, System and Human Controls

Physical controls are generally visible. As an example a physical control may be a barrier in order to prevent a person falling or a guard on a machine. They are generally preferred because they are visible and once installed they will afford a high standard of protection provided that they are inspected and maintained regularly.

System controls are the items that can often lie behind the physical control measures and can often underpin them. A guard over a dangerous part of a machine might well function satisfactorily when it is installed. However, if there is no inspection or a maintenance system in place to ensure that it is operational, it will deteriorate and will ultimately fail its purpose. As a further example our Engineer at site will grant permission to work after a supervisor carries out a series of actions to ensure that a particular machine or a location is safe.

Our application of a Contractor Vetting Procedure is also a system based measure. Human controls are also important as they can and do have a major impact on the safety of any system as systems are operated by humans.

We will give attention to the human elements or controls as it is likely that those who operate the system will cause it to fail through lack of knowledge or skill, general training as well as negligence.

Risk Assessment

We will make risk assessments prior to site mobilization in respect of each work place being executed on site. These should be identified in the pre-construction site investigations. They in turn will be incorporated into the method statements.

We have considered the following factors in assessing risks:

- Details of the activity or task
- Identify those who might be at risk, such as employees, contractors or the public. Enhanced controls may well be required where the public is at risk.
- Establish the hazards associated with each activity and score them according to the likely consequences assuming no controls in place.
- Then consider how probable or how likely that some harm or injury may arise based on no controls.
- The resultant factor will determine if the risk is high, medium or low.
- Define the control measures that are proposed, such as physical, system or human.
- If the application of control measures reduces the consequences then revise the hazard rating.
- Similarly, revise the likelihood and then determine the new risk rating with the controls in place.
- If effective, it should demonstrate that with the controls in place and applied, the risk is now low or reasonably practicable.

2.0 SAFETY RESPONSIBILITIES

Project Manager

1. Be fully conversant with the Policy for Health and Safety and ensure that it is readily available on each site. Plan all work in accordance with its requirements and ensure that the Safety Procedures are regularly examined to establish if improvements or additions need to be made.
2. Determine at the Project Planning Stage:
 - a) The standards that apply in the country where the Project is based.
 - b) The most appropriate order and method of working.
 - c) Provision of adequate lighting and safe method of electrical distribution
 - d) Allocation of responsibilities among the team and others on the site.
 - e) Hazards that exist from underground and overhead services.
 - f) Welfare facilities required.
 - g) Fire precautions to be established.
 - h) The need for any particular training or instruction required for Site Personnel.
 - i) Temporary works provision (scaffolding, excavation support, etc).
3. Ensure, so far as is reasonably practicable, that work once started.
 - a) Is carried out as planned and that account is taken of changing or unforeseen conditions as the work proceeds.
 - b) Is carried out in accordance with good construction practice and the relevant applicable codes and any other appropriate local statutory requirements.
4. Discipline any member of Site Supervisory Staff for failing to discharge safety responsibilities satisfactorily.
5. Check working methods and precautions with Site Management and the Project Safety Officer before work starts.
6. Take appropriate action when notified of disregard on site of the Safety Engineer's advice.
7. Set a personal example when visiting a site by wearing appropriate protective clothing.
8. Carry out any necessary notifications to Enforcement Authorities, Police, etc. as required by Company Policy, or local statutory requirements.

Site Engineers

1. Understand the Project Health and Safety Policy and ensure that it is brought to the notice of all employees, particularly new employees. Carry out all work in accordance with its requirements and bring to the notice of the Project Manager any improvements or additions which are felt necessary.
2. Organize sites so that work is carried out to the required standard with minimum risk to employees, other Contractors, the Public, equipment or materials.
3. Where necessary, issue written instructions setting out the method of work. Identify training needs and advise the Project Manager and Project Safety Officer of these as and when necessary.
4. Know the requirements of the relevant local safety regulations and ensure that they are observed on site.
5. Ensure that Supervisors and Operatives under control are aware of their responsibilities for safe working and are not required or permitted to take unnecessary risks.
6. Establish procedures to ensure that any electricity supply is installed and maintained in a safe and proper manner.
7. Establish procedures to ensure that all information available, relating to services on the site is obtained and that services are located, marked and plotted accurately before excavation

work starts. Need to care on mechanical excavation to take place within limits of the services.

8. Ensure that adequate supplies of approved protective clothing and equipment are maintained on site and that the protective clothing is issued as and when required.
9. Ensure that adequate First Aid facilities are on site and that all persons on site are aware of their location and procedure for receiving treatment for injuries.
10. Liase with the Project Safety Officer and when necessary seek his advice before commencing new methods of work or potentially hazardous operations. \
11. Examine drawings and soil investigation reports to determine excavation support requirements in advance, and provide details in accordance with Health and Safety plan.
12. Set a personal example by wearing appropriate personal protective clothing and equipment on site.

Supervisors/Foremen

1. To know and apply the Project Health and safety policy and ensure that it is brought to the notice of Operatives under control. Carry out all work in accordance with its requirements and ensure that the rules and practices are in compliance.
2. Ensure that all employees work in a safe manner and use all protective devices and procedures required.
3. Advise all employees of any potential or actual dangers and how to isolate, prevent, or remove them.
4. To arrange for medical treatment as required, in the case of injury or illness including transportation to a doctor or hospital as necessary.
5. To report all accidents immediately, to investigate all accidents fully, and to advise management on how to prevent similar accidents in the future.
6. To carry out regular inspections of the work place to ensure a safe and healthy environment.
7. Incorporate safety instructions in routine orders and see that they are obeyed.
8. Do not allow Operatives to take unnecessary risks.
9. Do not allow "horse-play" or dangerous practical jokes and discipline those who consistently fail to consider their own safety, or that of others around them.
10. Report immediately any defects of plant or equipment.
11. Report any accident, however minor, to the Project Safety Officer immediately.
12. Set a personal example by wearing protective clothing and by carrying out your own work in a safe manner.

Project Safety Officer

1. Advise Management on preparation, promulgation and review of the Project Safety Plan for Health, Safety, including the organization and arrangements for carrying out the Policy.
2. Give advice to Management on:
 - a) Legal requirements affecting Health, Safety and Welfare.
 - b) Prevention of injury and damage.
 - c) Provision, selection and use of protective clothing and equipment.
 - d) New working methods, equipment or materials which could reduce risks.
 - e) Proposed changes in legislation.
 - f) Potential hazards on new sites before work starts and Health and Safety factors affecting the selection of plant or equipment, etc.
3. Carry out regular inspections of sites and workplaces to determine whether work is being carried out in accordance with Safety Policy and the relevant statutory provisions. Liaise

with all Management levels giving advice on how to deal with problems that affect Health & Safety.

4. Assist Management in notifying the Enforcing Authority of dangerous occurrences, losses, accidents, and so on, in accordance with Project Health and Safety Policy.
5. Assist Management in any dealings with the Enforcing & Safety Authorities.
6. Carry out investigations of accidents in accordance with Company Policy and prepare and provide reports and statistics in accordance with requirements applicable for the Project or the Country.
7. Check and report on the effectiveness of equipment and procedures established to deal with fire or other disasters.
8. Provide advice on training requirements and arrange training courses where required.
9. Set a personal example by wearing all necessary protective clothing when on site.
10. All necessary Notices, Regulations, Registers and Accident Report Forms will be issued by the Project Safety Officer and he will check that personnel have been assigned to keep registers up to date.

Operators, Welders, Carpenters, Masons and other Skilled & Unskilled Persons

1. Read and understand the Project Health and Safety Policy and carry out work in accordance with its requirements.
2. Use the correct tools and equipment for the job.
3. Wear safety footwear at all times and use, where necessary, all protective clothing and safety equipment provided, (e.g. safety helmets, goggles, respirators etc).
4. Keep tools in good condition.
5. Report immediately to Supervision any defects in plant or equipment.
6. Work in a safe manner at all times. Do not take unnecessary risks that could endanger yourself or others. If possible, remove site hazards, (e.g. remove or flatten nails sticking out of timber, tie unsecured access ladders, etc.)
7. Do not use plant or equipment for work for which it was not intended, nor if you are not trained or experienced to use it.
8. Warn other employees, particularly new employees and young people, of particular known hazards.
9. Do not play dangerous or practical Jokes or "horseplay" on site.

3.0 GENERAL SAFETY GUIDELINES

Personal Protective Equipment

Personal Safety Devices must be used as directed to protect one's-self and/or alert others to one's location. (i.e. water flotation device when working on, over or near the banks of swift moving or deep water courses/bodies, luminescent safety vests when working around equipment and/or when controlling traffic, Knee pads, faller's pants etc.

1. Head protection- Approved Hard Hats must be worn at all times.
2. Eye Protection- Approved safety glasses must be worn by all personnel performing activities that may cause an injury to an eye. This also applies to others situated in the area in which work is being performed. Goggles must be worn when handling chemicals. Face shields and approved safety glasses must be worn by all personnel using grinders or buffers.
3. Hearing Protection- Hearing protection must be worn in areas of high noise levels (Over 85 db) where noise cannot be decreased or isolated. Examples of such areas are:
 - A. Jack hammer or tamper operation
 - B. Operating or adjacent to heavy equipment
 - C. Grinding
 - D. When you cannot hear someone talking to you because of surrounding noise
 - E. Sand blast operations
 - F. Rock drill operation

Rule of Thumb: If you cannot converse normally with another person within 3 feet of you, hearing protection is required.

4. Hand Protection- Suitable work gloves are to be worn when handling hot, sharp, rough or splintered materials. Chemical resistant gloves must be worn when working with chemicals, solvents, cements, etc.
5. Foot Protection- All persons must supply and wear boots that meet Approved Standards for construction
6. Clothing- Jewellery or loose clothing that creates a hazard to the worker is not to be worn. Shirts and long pants shall be worn at all times. Sleeveless shirts are not acceptable. The need for fire retardant work wear will be evaluated on a job-to-job basis by the Project Superintendent and/or the Project Safety Supervisor.
7. Respiratory Protection- Recommended respiratory protection, meeting approved requirements, such as dust masks or chemical cartridges shall be worn/used where required.

8. Fall Protection- Full Body Harness shall be worn and securely tied-off at all times when working at Height and as dictated by legislative requirements or Clients standards.

Emergency Preparedness

The purpose of Emergency Response is to ensure a rapid recovery from a serious accident or serious event.

Specifically, the objectives are to:

- a. Minimize injury to the public and company personnel,
- b. Minimize damage to the public and property,
- c. Assist in restoring normal conditions as directed,

Guidelines and procedures should be specific to each project, should an emergency develop while constructing the pipeline.

Emergency Response- The purpose of Emergency Response is to ensure a rapid recovery from a serious accident or serious event. Specifically, the objectives are to:

- a. Minimize injury to the public and company personnel,
- b. Minimize damage to the public and property,
- c. Assist in restoring normal conditions as directed,

Guidelines and procedures should be specific to each project, should an emergency develop while constructing the pipeline.

Emergency Communications- The first steps involve assessing the hazard, evacuating personnel from the area, identifying resources at hand and delegating priority activities (e.g. initiate communications, render first aid, crowd control, etc.)

- a. Contact key personnel (first aid, safety, superintendent).
- b. Give location.
- c. Give short precise account of what happened.
- d. Give types of injuries and number of casualties.

If there is a gas emergency first call the Owner Company to initiate internal emergency response. Owner personnel will usually then take charge of the situation and all Project and contractor personnel will take direction from them.

If the emergency is the result of a broken power line or electric cable, call the local Hydro/Power Company first. Hydro/Power personnel will initiate the emergency response and take charge.

Once the emergency response has been initiated, contact the Project Construction Superintendent. The Company is responsible for notifying and reporting to all owners, authorities and regulatory agencies as required.

Priority Actions

The priority of actions to be taken by the initial delegation and subsequent follow-up is as follows:

- a. Clear the area,
- b. Protect yourself and others,
- c. If possible minimize property damage,
- d. If possible protect the environment.

Remember: Do not place yourself in danger if you do not have the knowledge or the proper training.

Possible incidents, which could occur during a Pipeline Project, are as follows:

- a. Industrial accident/injury,
- b. Gas emergency,
- c. Communications/cable breakage,
- d. Electrical emergency,
- e. Environmental emergency.
- f. Fire emergency,
- g. Hazardous product spill

4. SITE MOBILIZATION

Before we mobilize and commence work at a site we will plan for safety having some vital factors in mind. In any project, irrespective of size, it is important that sufficient time is allocated to planning safety.

These key factors are vetting of contractors, checking methods of working, completing site surveys and checking of services and/or sources contamination.

It is proposed to allocate of sufficient resources to manage health and safety on site. Project Manager, Technical officers and the Health and Safety Engineer for the site to ensure that high standards are maintained throughout the project duration until final completion and handover. The company will maintain The International Labour Organization (ILO) standards of "Safety and Health in Construction" which represent the default minimum requirement.

Categories of activities covered by this document.

- Description of the work activities.
- Location.
- Hazards and risks expected duration of the work.
- Risks associated with the work.
- Safety control measures required including Personal Protective Equipment.
- Supervision required.

Security

On any site security is an important issue. Wherever possible, we will to erect some form of site fencing or a barrier leaving sufficient space for work to continue unobstructed. This is an attempt to ensure that unauthorized persons are kept out of the site.

It also discourages theft of tools and/equipment. We will display suitable signage on the barriers to prevent unwanted persons from entering the site.

Control of visitors

Another vital requirement is the need to control visitors. While discouraging personal visitors unless it is a matter of critical importance, official visitors will be required to:

- Register at the security post. This will not arise at pipe-laying sites.
- Receive a brief site induction in respect of site rules regarding fire and emergency arrangements.
- Wear a site visitors' permission card.
- On completion of the visit return the visitors pass to the security post on the way out.

Employees

Before initial commencement of work we will educate the entire staff in respect of the site rules that shall cover the following:

- Strict prohibition of alcohol and drugs on site.
- Requirements for personal protective equipment on site.
- Requirement for work permits for high risk activities.
- Fire and emergency procedures.
- First aid and medical facilities on site.
- General welfare arrangements on site.
- Site security requirements, including the right to stop and search.
- Requirement to report incidents that may be considered of significance.
- Near miss and reporting of hazards.
- Disciplinary matters on site.
- Stoppage of work.

Site layout

The layout of the site can make it a safer site in terms of routine operations. We will ensure that risks are minimized as far as possible, in respect of the following:

- Layout of general means of access to ensure wherever possible that pedestrians are separated from vehicle movements.
- One way traffic circulatory system where this is practicable.
- Location of offices and general welfare facilities including first aid station.
- Location of storage and material lay down areas.
- Storage and segregation of waste.
- Provision of relevant signage and lighting.

Personal protective equipment

We will provide personal protective equipment for the all categories of staff at site including visitors. It shall include basically:

- Safety shoes or boots.
- Safety helmets
- Overalls.
- High visibility clothing especially for working during the night.

We will also provide additional personal protective equipment in respect of specific hazards and adequate provision shall be made based upon the control measures identified by the risk assessments. The additional equipment will include:

- Gloves
- Eye protection
- Respiratory protective equipment. We will consult the Health and Safety adviser regarding correct type.
- Hearing protection.
- Arc flash protection for authorized persons in respect of electrical work.

Existing site hazards

Our "Health and Safety Plan" is so designed to identify the following site hazards at an early stage:

- Possible presence of asbestos or other hazardous material.
- Contaminated ground or equipment.
- Identification of underground services including gas, water, electricity, telecoms, and sewage.
- Presence of overhead lines and the need for warnings and notices.
- Information in respect of any structures or equipment that may be in poor condition.
- Information about ground conditions if mobile cranes are used at site.

Site establishment checklist:

We will maintain checklists under following categories to ensure the plan is effective:

Site documentation

- Construction phase Health and Safety Plan.
- Risk assessments and method statements (documented safe method of working).
- Incident register.
- Site rules.
- Site inspection checklists.

Communication

- Telephone connection.
- Mobile phones.
- Radio communication.
- Site notice board.
- Local emergency contact numbers such as fire and ambulance.

Welfare

- Supply of clean drinking water.
- Toilets and washing facilities including soap and towels.
- Changing facilities and storage for clothing.
- Storage of personal protective equipment.
- First aid and medical facilities

Security

- Site security arrangements will include control at gate.
- Site fencing.
- Safety barriers.
- Site lighting.
- Secure storage areas and facilities for equipment and tools.
- Personal Protective Equipment for visitors.
- Vehicle parking area.

Signage

- Traffic flow.
- Speed limits.
- First aid.
- Fire and emergency requirements including evacuation and assembly area.
- Display importance of Personal Protective Attire and Equipment and what to utilize where.
- High visibility clothing.
- Site safety notice board.

Emergency equipment and procedure

- Fire detection.
- Fire alarm.
- Firefighting equipment.
- Medical emergency equipment including revival from electric shock

We will display site emergency procedure in the following manner:

- Course of action to take in an emergency, depending on the type event.
- Contacts to be made in an emergency and their telephone number.
- Assembly point.
- Roles of key personnel.

The emergency procedure shall be posted in all key areas and shall be briefed to all persons during the site induction.

Waste

We will provide the following for waste disposal:

- Facilities for disposal.
- Location receptacles for hazardous waste
- Suitable /receptacles to be provided for different types of waste.

Site Health and Safety Records

We will retain the following minimum site safety records for the period of the project, until completion and handover:

- Construction phase "Health and Safety Plan" in respect of the work packages being undertaken.
- Risk assessment for the work being undertaken.
- Method statements or equivalent for activities undertaken at site.
- Copies of relevant safety data sheets.
- Accident and incident register/record.
- Inspection reports in respect of plant and equipment.
- Emergency procedures including telephone numbers of emergency services.
- Health and Safety statistics to include man hours worked.
- Maintenance of records in respect of key equipment such as cranes, fork lift, trucks and others.

5. ACCESS AND EGRESS

We will have one entrance to every site which will serve as exit too. With this arrangement we will be in position to control all visitors as well as the staff. It will also ensure the workers will not meet with motor accidents at pipe-laying sites as they will be disciplined in using one opening.

We will use ladders up to 3m heights to enter and exit from trenches and chambers. We will use more suitable equipment for heights over 3m including fixed working platforms. Certain steps may be capable to provide access above 3 m. However, they must have handrails on both sides of the platform and at the top.

Ladders

Ladders are commonly used on construction sites and can often give rise to serious or major injuries if not used correctly. Common problems we have identified with ladders are:

- Being unsuitable for the purpose, either too long or too short.
- Being in poor condition due to damage.
- Being not secured in any way and so they may tend to slip
- When used on uneven ground.
- When workers over reach causing the ladder to slip and slide.
- When metal ladders are used in areas where there are live electrical conductors.

Control measures

1. A ladder is a means of access and shall not be used as a place of work. We will use suitable working platforms if work is required to be done at heights. This is particularly important when using tools or equipment.
2. We will inspect all ladders for sound construction. They should be of adequate strength and free from any patent defects.
3. Wooden ladders shall not be painted so that any defects could be covered.
4. All ladders on site shall be visibly inspected periodically to ensure that they are not damaged, buckled or warped and that no rungs are cracked or missing.
5. We will not on any account use domestically fabricated ladders.
6. We shall place ladders on firm and level ground to prevent slipping.
7. The ladder shall be angled so as to minimize the risk of slipping outwards. We will maintain a slope of 4:1 which is considered normal.
8. If the ladder is used to access a workplace such as a scaffold platform, we will either secure at the top or fix it at its base.
9. The ladder shall generally extend 1.00 m above any landing place.
10. We will always have 3 points of contact when using the ladder.
11. We will advise workers not to over reach when using a ladder.
12. Tools and materials required for work will be carried in a shoulder bag or a special belt or hoisted up to the working position.
13. We will provide safe landing areas at suitable intervals. If the ladder is over 9m then safe landing
14. When not in use after working hours, a plank or a board will be lashed between the rungs to prevent unauthorized access.

Step-ladders

We will apply the same rules for the safe use of step-ladders. :

- Treads or steps and hinges or fixings need must be in good condition
- Retaining cords or hinges need to be of equally length and in good condition.
- The step ladder must be stable when open and standing on a level base.
- The legs of the step ladder should be positioned as far apart as the retaining cord or hinge allows.
- The person using should face the ladder to avoid twisting or turning.
- We will not permit work to be carried out from the top of the step-ladder.

6. CHEMICAL SAFETY

Classification of substances

All chemical substances are classified according to their harmful effects. In addition the method of use or the process can also have a major effect on the risk to health.

Labeling

- All chemical substances on site must be in suitable containers and labeled as to their contents.
- Any containers not labeled shall be removed from site and disposed of correctly.
- Any substance or preparation that is hazardous will have the symbol as described, the name and address of the supplier or manufacturer, and the emergency telephone number.
- The label will also identify the risk phrases. These indicate the harmful effects.
- In addition it will also identify the relevant safety phrases. These are the precautionary measures that are required to be followed when handling the material.

Confined spaces

Some materials may be used in normal conditions and not represent a major risk to the operator. However when used in a confined space such as deep trenches, the risk will increase dramatically. In such situations a separate rigorous risk assessment must be carried out including checking the atmosphere in the confined space.

Training and Instruction

When chemicals are being used on site Material Safety Documents shall be available together with the relevant risk assessment the safety controls or precautions shall be briefed to the operators who will undertake the work.

This shall include information about the following details of the material, its hazardous properties and its effects on the human body. It will also indicate safety controls to be applied correctly, the use of personal protective equipment, and relevant emergency measures.

7. COMPRESSED GASES

Compressed Gases









Cylinders containing compressed gases can represent a serious hazard to workers if not handled carefully. We do use compressed gas in cylinders for welding and thus gas cylinders will be stored at some sites.

Cylinders have to be handled with care as in the event they are damaged they could release gas at high pressure which in turn will result the cylinder becoming a missile. We will check valves and gauges periodically to ensure that they are fit for our purpose and suitable for the application. A vital factor of safety when using compressed gases is the need to ensure that they are labeled according to their contents.

Compressed gases supplied in cylinders for use on site are colour coded to provide a working guide as to their contents.

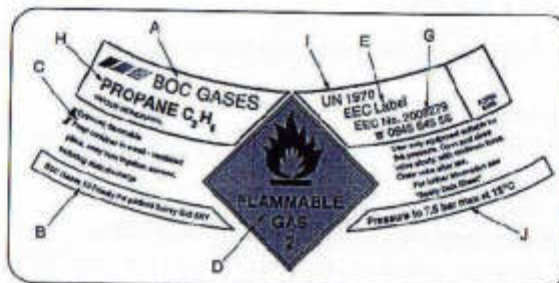
Colour coding

All cylinders of compressed gases are required to be colour coded according to their contents. There are four basic colours that apply as illustrated below.

GAS	TYPE	COLOUR CODE
INERT Bright Green	RAL 6018	
OXIDISING Light Blue	RAL 5012	
FLAMMABLE Red	RAL 3000	
TOXIC/CORROSIVE Yellow	RAL 1018	
Common specific gases		
ACETYLENE Maroon	RAL 3009	
OXYGEN White	RAL 9010	
CARBON DIOXIDE Grey	RAL 7037	
AMMONIA Yellow	RAL 1018	

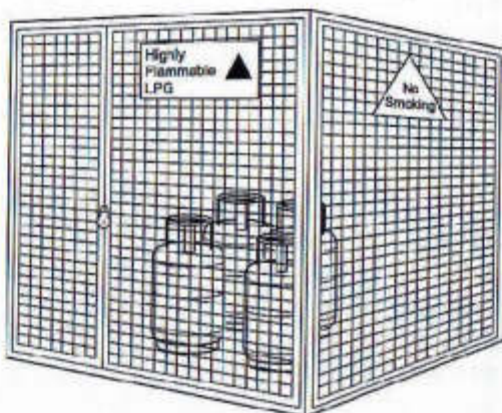
We will code the cylinder in both relevant colours when the gas in a cylinder has two properties:

Labeling of compressed gases



We will label cylinders according to their contents. Colour coding is only a guide.

- A - Company name.
- B - Address of the company in the country of origin.
- C - Risk and safety phrases relating to the product.
- D - Hazard symbols.
- E - EEC label (for pure substances only).
- F - EEC number, if applicable.
- G - UN identification number and proper shipping name.
- H - Any additional company information.



Typical hazards

We have identified the following hazards arising from compressed gas cylinders:

- Impact from blast of gas under pressure.
- Direct effects from the hazardous nature of the contents such as chlorine.
- Fire due to flammable gases.
- Impact from falling cylinders.
- Handling injuries from the sudden movement of cylinders.
- Leaking of gas from cylinders and potential build up to a high concentration such as oxygen enriched atmosphere in confined spaces.
- Poorly maintained hoses which leak as a result.

Control measures

We will enforce following controls to minimize accidents arising from gas cylinders:

- Store gas cylinders in a dry, safe and flat surface in the open air, but protecting valves from the weather. Ideal location would be in a large building with good natural ventilation.
- Ensure that fuel gases are stored away from oxygen.
- Store cylinders in an upright position, securely tightly to prevent them from toppling or being knocked over.
- Use suitable cradles and slings for lifting cylinders by hoist or crane.
- Refrain from using valves, shrouds or caps unless they have been designed for such purpose.
- When in use cylinders should be in a vertical position and secured to prevent falling over.
- Before connecting to pipe work check that installation is suitable.
- Cylinders should not be dragged or rolled, especially those which are full.
- Ensure that valves are always closed after use.
- Avoid using cylinders in confined space.
- Check hoses for wear and damage, and replace as necessary.
- Flashback arresters shall be fitted to all cylinders containing fuel gases.
- Ensure good hose connections by using crimped fittings.

8. CONFINED SPACES

Confined Spaces

Working in confined spaces can be highly dangerous and has caused significant number of fatal accidents to both workers and those attempting a rescue. There are a number of possible reasons for this, foremost being the lack of knowledge and understanding of the hazardous nature associated with such work. Trenches excavated for pipe-laying and chambers are confined spaces. However, we will deal with them under a separate category.

Typical hazards associated with such work include:

- Collapsing of trenches.
- Presence of a hazardous gas, vapour or fume.
- Lack of sufficient oxygen or fresh air due to displacement by another gas such as carbon dioxide.
- Oxygen has depleted owing to corrosion over time.
- Noxious fumes are generated as a result of disturbance of residues.
- Plant or processes are not properly isolated.
- Dangerous or hazardous conditions can arise directly as a result of the work activity itself.
- Heat exhaustion is also a possibility.

We will also have in mind that most gases or vapours are heavier than air and hence will tend to collect at the bottom of a container or collect in low lying areas.

Types of confined spaces

Confined space as that shown below. Other typical or similar examples include silos, chemical reactors, sewers and trenches. There are also other confined spaces which are not so obvious. These include:

- Open topped chambers
- Vats
- Combustion chambers in furnaces
- Ductwork, silos etc
- Rooms or areas where there is no ventilation or poor ventilation e.g. containers,
- Basements, vaults and cellars
- Trenches.

Control measures required

We will avoid working in confined spaces where possible. If we are compelled to carry out work within a confined space, we will make rigorous risk assessment. Work may only proceed once the supervisor has established and witnessed that the correct safety controls are in place. Once they are in place the permit to enter may be issued.



Fig 2 - Test the Atmosphere Prior to Entry

Test the atmosphere

We will implement a system of which shall be based upon the risk assessment and the control measures identified.

They shall include any or all of the following:

- Identify the potential for work in a confined space and avoid entry if practical.
- Isolate and ensure that the vessel or space is free of contents like noxious gas or vapour.
- Isolate the vessel or space to prevent any possible ingress of gas or fumes and also isolate any plant or machinery to ensure safety
- Ensure tank, vessel or area is cleaned.
- Check that the openings or access into the confined space is sufficiently large enough for quick entry or exit of an average sized worker.
- Provide suitable ventilation both, extraction and/or diluted

General Effects

We present the following possibilities of under different circumstances while working in confined spaces.

Oxygen enriched fire - 22.0%
 Normal condition - 20.8%
 Oxygen deficient - 19.5%
 Impaired judgment and breathing - 16.0%
 Faulty judgment and rapid fatigue - 14.0%
 Difficulty in breathing and death - 11.0%

Effects of Oxygen deficiency

We have observed that most accidents in confined spaces take place due lack of oxygen. Thus, we will take the following steps before permitting a worker into a confined space:

- Measure the atmosphere to check for the presence of hazardous gases etc and presence of sufficient oxygen. If results show that the atmosphere is safe we will proceed to prepare for work. If not a fully self contained breathing apparatus will be required. We will also provide non sparking special tools and flame proof lighting.
- The worker and his assistant will be trained and competent to carry out the task safely including the use of self contained breathing apparatus or air lines.
- Before entry the worker will be advised to wear a harness and a lanyard. The assistant will need to position outside of the confined space to assist the worker in the event he has difficulties.
- We will also provide additional personal protective equipment such as safety boots, safety helmets, gloves and eye protection.
- We will appoint a supervisor who is competent to oversee the operation. He will ensure that all safety measures are in place prior to entry.
- We will arrange an emergency procedure in case the operator succumbs to the hazard. Such a measure shall include communications, first – aid, resuscitation equipment and a vehicle standing by.
- We will a permit to work shall be issued to the persons who will undertake the work once all the precautions have been applied.
- Routine checks shall be carried out periodically to ensure that the conditions laid down in the permit are being followed.



Fig 3 - Rescue Equipment

Collapsing of trenches

We will use steel shoring plates of adequate thickness to prevent collapsing of trench walls. We will discuss this item at length under the topic "Excavation"

9. ELECTRICITY

Introduction

We are compelled to work at night at certain points so that the construction work does not obstruct the public. We will use generators to provide adequate lighting for night work and in the use of electrically operated equipment. In these circumstances we may have to take precautions to avoid accidents due to electricity. If not used correctly, electricity can prove to be a high hazard that can result in electrocution with fatal consequences. 30mA is sufficient to cause a cardiac arrest and death.

Portable Tools-Typical hazards

The main dangers that arise with the use of portable tools include:

1. Metal work becomes live when:
 - a) The earth wire is disconnected from its plug terminal due to a loose cord-grip and touches the live terminal.
 - b) Incorrect connections are made to the plug or apparatus terminals;
 - c) The earth wire has become disconnected causing a short circuit.
2. Damaged or missing covers on fuse boxes, socket outlets, terminal boxes which expose persons on site to bare live conductors.
3. Flexible cables are damaged when they are dragged over sharp or rough surfaces or run over by vehicles. As a result the outer insulation becomes damaged and exposes bare conductors.
4. Temporary repairs made fail because they are not good enough. Taped joints are a most common example.
5. Using equipment in the open, this is not weather proof and therefore unsuitable. It is particularly dangerous where any are used in wet or damp conditions.

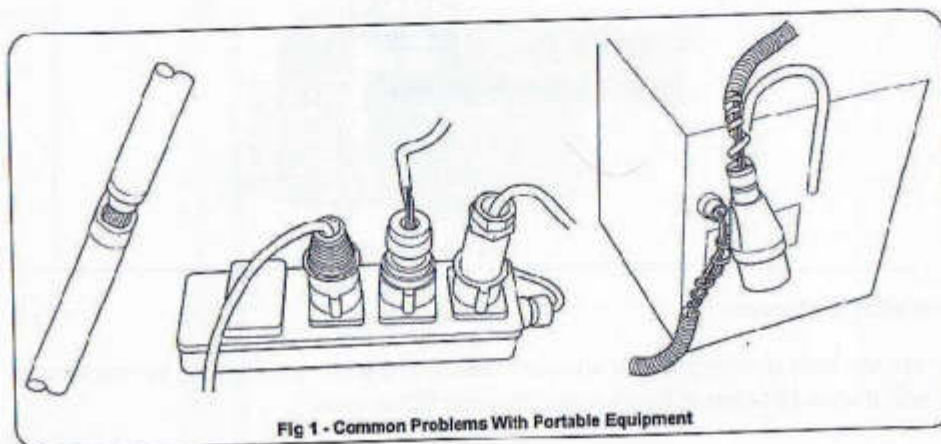


Fig 1 - Common Problems With Portable Equipment

Control measures

We will apply the usual hierarchy of control as with any other risk.

Hierarchy

- Where risks are high because the site is wet or because it constitutes a confined space, pneumatically powered tools should be used, thus eliminating any electrical risk.
- Battery operated tools are the safer option where electrically powered tools.
- Use a "Safety Extra Low Voltage System" which is separated from earth and limits the voltage supplied to a maximum of 50V. This can be used for lighting and some power tools but may not be suitable for motor drives.
- A reduced low voltage system which delivers 110V to the equipment which is designed so that the maximum voltage to earth is on 55 V in a single phase system (65V in a 3 phase system) is safer than using 230V.
- We will use a residual current device where a mains voltage system has to be used to supply the site offices and general welfare facilities
- A residual current device will also be used with a tripping current of 30mA where it is essential to use portable tools at 230V.

General controls.

We will implement the following controls to reduce electrical accidents.

- Temporary construction electrical supplies shall be of robust quality to withstand site conditions.
- Ensure that there are no bare conductor wires visible in any flexible leads or connectors.
- Ensure plugs, connectors and sockets are in good condition.
- There are no taped joints in any cables and leads.
- Ensure that there are no visible signs of burning on any equipment
- Check all equipment on a regular basis by a competent electrician and maintain records.

Inspection of equipment

We will schedule all portable electrical equipment as per the following schedule:

<u>Equipment Voltage</u>	<u>Use check</u>	<u>Formal visual inspection</u>	<u>Combined inspection and test</u>
110V portable and hand held tools, leads, site lighting and others	Secondary winding tapped to earth	Weekly Monthly	Before first use And then every 3 months.
230V portable and hand held tools, leads, site lighting and others	230V mains supply through 30mA RCD	Each shift/daily, Weekly	Before first use and and then every 3 months
230V equipment such as lifts, hoists and fixed floodlighting	230V supply with	Weekly Monthly	Before first use and then every 3 months
	Fixed RCD's	Each shift/daily Weekly	Before first use and then every 3 months

Table 1 - Recommended Frequency of Inspection

Working on equipment below 1kW

We will have the following issues in mind when working with electrical equipment below 1kw.

- Dangers:**
 It is possible that flashovers generating arcs can exist on low voltage systems, which can cause severe damage to equipment, serious injury to the operator, or even cause his death.
- High power low voltage**
 Such systems can generate a short circuit currents of many thousands of amps in the range 10,000 - 50,000 Amps. Clearances are small and although the voltage is below the level air will ionize to initiate a flashover. A small piece of conducting material can easily initiate a power arc that will be capable of causing serious injury or death.
- Electrical risk level**
 We will assess and control electrical risk at four risk levels. With risk level-1 being the objective for all work.

Level 1: Dead/de-energized

Work carried out dead with the circuits isolated and locked off to prevent conductors becoming energized.

Level 2: Totally Shrouded

Work carried out in the vicinity of live conductors which have been totally shrouded with insulating material. This insulating material shall have mechanical and impact strength as well as providing an insulating barrier between work zone and live conductors. The process of fitting the insulating barrier shall be basically safe. Exceptional circumstances will require formal prior approval for each job.

Level 3: Near Live Conductors

Sometimes work carried out in the vicinity of live conductors, require them to be exposed. In such situations only one conductor at a time shall be exposed and all other conductors including neutral and earth, and any adjacent earthed metalwork, will be fully shrouded. Work on switchboards and bus-bars will not be permitted.

Level 4: On live conductors

Also, some works carried out on live conductors require the conductors to be exposed. Only one conductor at a time shall be exposed/un-shrouded and all other conductors including neutral and earth and any adjacent earthed metalwork, shall be fully shrouded. Here too, work on switchboards and bus-bars will not be permitted.

We will enforce the following activities to prevent electricity induced accidents:

1. Physical barriers and warning notices:

- a) Barriers should be constructed to isolate the working area to create a safe zone and also keep unauthorized persons away.
- b) Approved warning notices to be displayed regarding electrical dangers, point of isolation and danger-test areas.
- c) All locks to secure points of isolation shall be individually keyed and readily identifiable. Master keys will not be permitted.
- d) Earthing and short circuits shall be of an approved design and of flexible aluminum with a clear protective covering.

2. Personal Protective Equipment:

- a) Only suitable personal protective equipment that is approved by us be used.
- b) Arc flash resistance clothing will be provided when in the vicinity of live apparatus.
- c) We will recommend that insulated gloves are used together with abrasion and puncture resistant outer gloves.
- d) Approved eye protection in the form of a face shield.

3. Insulated tools:

- a) All electrical work shall be carried out with insulated tools which will be maintained in good condition.
- b) Rules and measuring tape must be none conducting.

Key Requirements when Working on Equipment at High Voltage 1kV

The following procedure will be adopted when working with equipment that generates more than 1kV:

1. Electrical safety management:

- Written procedures drawn up in respect of the work to ensure that the "Safety Rules" can be properly applied and complied with.
- As with all work there shall be a suitable risk assessment in place and a safe method of working drawn up.
- All work on or near power systems shall be under the control of a nominated person who shall be responsible for electrical safety.
- All persons working on such systems must be trained and competent to undertake their work safely.

2. Application:

- All apparatus shall be treated as live unless it has been made safe and released for work in an approved manner.
- Electrical equipment is subject to the safety rules if it is capable of being energized from a power system.
- Where these safety rules cannot be applied then other equally effective measures shall be applied.

3. Communication & control

- There must be arrangements to ensure communications are clear and not subject to misinterpretation. Typically the following may apply:
 - a) Instructions are written down and repeated to the sender.
 - b) Instructions and confirmation times are noted
 - c) The use of standard phrases which cannot be misinterpreted
 - d) The use of standard schematics by all persons concerned.
- Work must not commence by pre-arranged signals or time.
- Where there are numerous work parties, a control person must be nominated and be responsible for safety co-ordination.

4. Work near live apparatus:

- Work will commence after a careful risk assessment by a competent person and the application of sufficient controls.
- Work will at all times be under the supervision of a competent person nominated to be in charge of safety, considering the nature of the work and risks involved.
- Flame resistant clothing will be worn where necessary.
- Other Personal Protective Equipment will be used according to local regulations and risk assessment controls.
- There shall be safe and proper means of escape in the event of failure of the live apparatus.
- These live apparatus will be separated by suitable screens or barriers, temporary warning notices, and identification of the safe working area, and access.
- Temporary demarcation and signage should be highly visible.

Contact with overhead power lines

We have observed that it will be necessary to work near electricity posts or overhead power lines during construction.

Contact with overhead power lines represents a significant hazard as they operate at high voltage. The most common causes of accidents are as a result of situations where physical contact with the overhead line is made. While excavating near electricity posts we will give special care and attention to support it well so that it will not collapse together with the wire.

Typical Hazards:

We have identified the following common hazards while working near Electricity posts and overhead power lines:

- Handling long scaffold tubes
- Handling long ladders
- Operating cranes and other similar vehicles
- Raising the body or inclined container of tipper lorries
- trucks

Using mobile elevated work platform

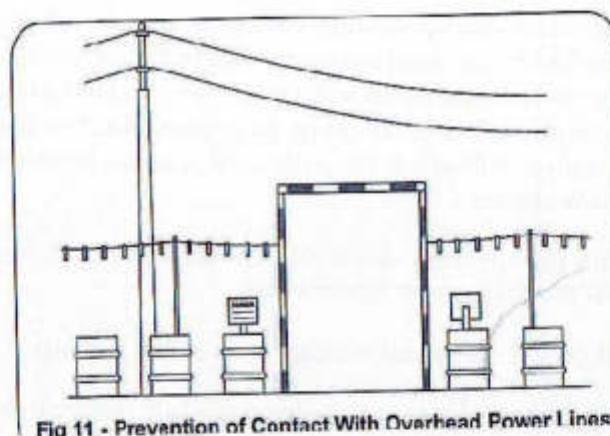


Fig 11 - Prevention of Contact With Overhead Power Lines

Contact with underground cables

Furthermore, serious injuries can also result during excavation work when there is a possibility of either penetrating electricity cables or crushing them. In such circumstances injuries can often be severe, potentially fatal with burns to the hands, face and body. We will adopt the following precautionary measures not only regarding underground electricity cable, but also other possible underground utilities:

- Observing the likely presence of any cables.
- Check with the utilities service provider and obtain any relevant drawings.
- Use locating devices and mark presence on ground and on the site drawing.
- Manually dig with caution in areas where cables may be present.

10. EXCAVATION

Major percentage of work will comprise of excavating trenches for pipe-laying. Thus, we will devote this section to the dangers we have identified during excavation and precautions that we intend in adapting to avoid accidents during such work.

Typical Hazards

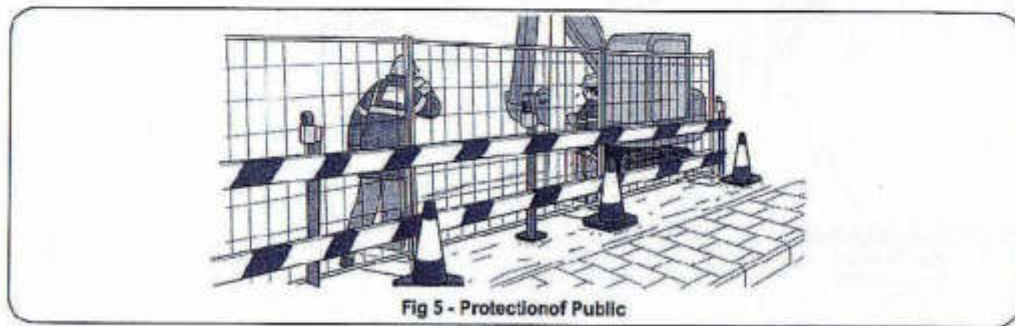
Excavations will present a number of different hazards:

- Contact with buried services such as gas, telecom and electricity.
- Engulfment due to collapse of sides.
- Undermining of nearby structures.
- People and/or vehicles falling into the excavation.
- Potential build up of fumes in the excavation.
- Possible accident to members of the public.

Risk Control Measures

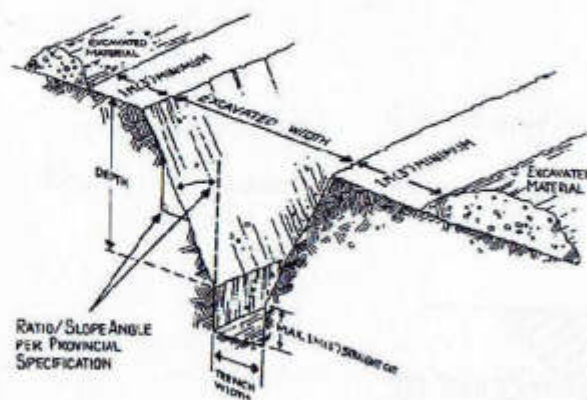
1. Prior to the start of excavation, utility services in the area, such as electrical, telecommunication, gas, water and sewer, must be located, identified and marked. For this purpose as-built drawings of each utility will be studied and located. In addition, series of trial pits shall be located along the proposed line. The facilities of first call should be utilized. All hazards that could result in worker injuries are to be identified, removed or controlled.
2. Trees, utility poles, rocks or similar objects near the area to be excavated must be removed or secured to ensure worker safety.
3. Pointed tools must not be used to locate gas or electric facilities.
4. Excavation slopes or shoring must be inspected daily or more frequently if required and must be determined to be sound.
5. The sides of an excavation must be trimmed or scaled to remove any loose material that could endanger workers.
6. A level area extending 1m (3 feet) back from the edge of the trench must be maintained free of materials and equipment.
7. In excavations over 1.5m (4 feet), a ladder must be available in the immediate area of the workers. The ladder shall be of such a length that it goes from the bottom of the excavation and extend 1m (3 feet) above the ground.
8. Manufactured or prefabricated support systems and shoring system must be available at site to avoid soil collapse.
9. We will consult specialist engineers when excavations are being carried out adjacent to existing structures which have potential to collapse and/or weaken the wall of the excavation itself.

10. All open excavations shall be fenced or barricaded, or covered. Where there is an interface with the public we will construct secure barriers or fencing within 2 m and also provided sufficient lighting during night work in areas where there is an interface with the public.

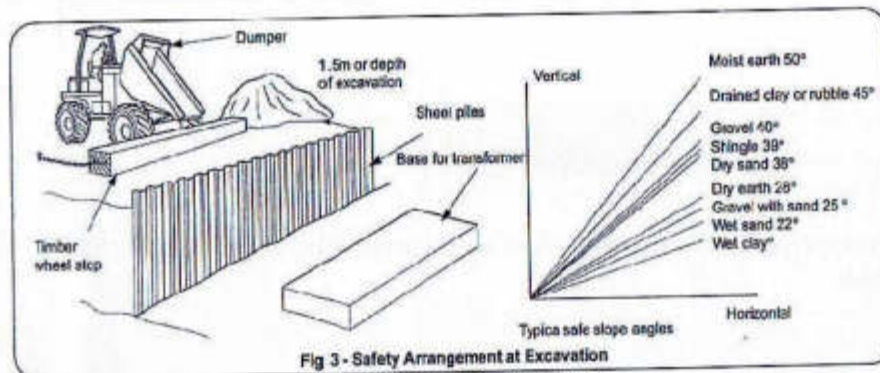
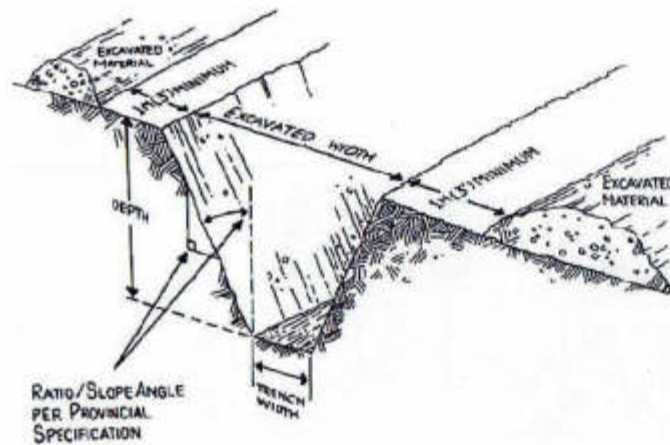


11. Following types of excavations sections are being identified as safer construction methods.

COMBINATION SLOPE AND VERTICAL FACE



FULLY SLOPED (VEE'D) EXCAVATION



11. Following modes of soil failures are being identified

1. General zone of exposure - the area where workers are exposed to mass soil/rock movement.

